PRESERVICE TEACHERS' KNOWLEDGE AND OPINIONS

CONCERNING STUDENTS WITH

ATTENTION DEFICIT HYPERACTIVITY DISORDER (ADHD)

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This study examined the knowledge of preservice teachers concerning Attention Deficit Hyperactivity Disorder (ADHD) and their opinions reflecting both their perceptions of their experience, training and readiness to teach children with this disorder, and their attitudes concerning working with such children. A questionnaire based on current research in the area of ADHD was developed by the researcher and distributed to approximately one hundred students in their final semester of the B.Ed. program at the University of Regina. It was completed and returned by sixty-four of these preservice teachers. It included a series of questions pertaining to demographics, the knowledge of preservice teachers regarding ADHD and opinions reflecting their perceptions and attitudes concerning teaching children with this disorder. The results of the study indicated that the majority of preservice teachers had taken university classes which provided information concerning ADHD and had some experience working with children with this disorder. The majority of participants perceived themselves as somewhat knowledgeable about ADHD and somewhat ready to work with students with this disorder. However, feedback from the respondents indicated that there were a number of preservice teachers who felt unprepared by their training to effectively teach students with ADHD and desired more information about this disorder, further experiential training working with students with ADHD and additional learning of effective general classroom management techniques for use with students with this disorder.
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Finally, a thank you to my children: Sarah, Jonah, Misha, and Stephanie, whom I love and cherish dearly, and who ultimately are my most influential teachers in life.

This thesis is dedicated to those individuals who live with ADHD. It is my hope that as a community, we come to understand this disorder more fully.
This thesis is connected to my personal journey in living and working with individuals with ADHD. In facilitating groups for adolescents with this disorder and counselling young people, families and adults living with ADHD, I have heard similar stories describing the pain, suffering and frustration of individuals struggling to succeed at school, maintain meaningful relationships and achieve consistent performance at jobs. Many of the young people have failed, dropped out or been expelled from school. Most of these youth are highly frustrated, have low self esteem and lots of anger. They are hurting. Many of them have or are using drugs and alcohol to make themselves feel better and many of them are or have been in trouble with the law. Some still live with family members but a large number of them are in foster care. The are discouraged and so are their families. A few of these young people received a diagnosis of ADHD in the early grades of school. The majority of adolescents whom I see have only recently been diagnosed after years of failure in school and exhibiting disruptive behaviors. Somehow, these youths and families have not received the support which they have so badly needed. As a community, we have failed them.

Only one of the ways which we have failed these young people is in school. However, the impact education has on the cognitive, social, emotional and behavioral development of our children and the role education plays in determining the future success and employment opportunities for our children is significantly important. Finding a way to reach and teach children with ADHD is vital for these children, for their families and for the community.
concerning this disorder, and their perceptions regarding teaching students with ADHD, as well as to gather information from preservice teachers regarding their training in this area and their perceived readiness to teach children with this disorder. The positive outcome from the thesis is that the majority of preservice teachers expressed a desire to know more about this disorder and learn effective teaching strategies to facilitate success in school for students with ADHD.
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INTRODUCTION

The Impact of ADHD on Teachers and Students

Teachers today are faced with increasing challenges in meeting the diverse needs of students in their classrooms. With the mainstreaming of special needs and disabled students into the regular classroom setting, it is becoming crucial for teachers to gain knowledge and experience regarding a wide range of student learning challenges. Research indicates that the more knowledge teachers have concerning their student’s problems and the more accepting and positive their attitudes are, the better their interactions with their students. In turn, these positive attitudes have a direct effect on the student’s motivation and learning.

Attention Deficit Hyperactivity Disorder (ADHD) is a common childhood behavioral problem (Goldstein & Goldstein, 1991; Mahoney, 1994). A conservative estimate of the prevalence of ADHD in school aged children is between three percent and five percent (Barkley, 1990). A truly accurate figure is difficult to ascertain due to problems in defining and assessing this disorder, and changing variables noted in different populations and geographical regions studied (Barkley, 1990). However, the 1995-1996 figure representing the number of students in the Saskatchewan school system as provided by the Department of Education’s 1996 Update is 210,272. According to these statistics, there are anywhere between 6,308 and 10,514 students with ADHD in the school system in Saskatchewan.

Students with ADHD are children with particular needs in the school. As with all special and exceptional needs students, most are taught in the regular classroom setting.
likelihood that students with ADHD will be a part of many Saskatchewan classrooms, it is imperative that preservice teachers be knowledgeable about this disorder and have an understanding of the skills used in working with students with ADHD in the regular classroom setting.

The Goals of Education

The goals of education for Saskatchewan are inclusive of all children. The underlying guiding principles include the facilitation of the development of each student’s potential, the affirmation of a student’s sense of self-worth and the provision of a positive model for lifetime learning. The development of positive attitudes, knowledge and skills is encouraged for all children in accordance with their ability. These include basic skills such as communication, reading and writing; decisions regarding career choices; dealing with change and goal setting; life-long learning; being part of community and being able to work with others, respecting the rights of others and taking responsibility for self; living a positive lifestyle with appropriate use of alcohol and drugs, and keeping physically fit; development of healthy self concept; spiritual development and respect of differing cultures, religious values and the family; and understanding and relating to others in a positive way (Government of Saskatchewan, April 1996).

The experiences and knowledge of parents and teachers and human rights legislation have led to the current situation where the majority of children with exceptional behavioural and learning needs are part of the regular classroom setting and …"inclusion is the norm" (Government of Saskatchewan, 1996, p.12). Inclusion of children with special needs into the regular classroom is a current reality which poses
to meet the goals set out by the Department of Education. Challenges for the school system in meeting the individual needs of these students may involve the following: adaptations in curriculum materials, instructional methods, facilities, programs, settings, and technological aids (Department of Education, April 1996). If the fundamental goal of teachers is to provide students with the basic skills necessary to function in society in order for them to reach their maximum potential (Ysseldyke and Algozzine, 1995,) and if this is inclusive of all students, then it becomes essential that all teachers have a strong basic knowledge of child and adolescent development and the underlying concepts of normality and exceptionality. With inclusion, "special education" is part of the regular classroom setting and the regular classroom teacher is faced with meeting the needs of all students.

The ability of the education system to meet these goals is largely dependent upon individual teachers. Increasingly, teachers are challenged by the diversity of students in their classrooms, in particular with students whose needs fall outside the norm. Students with educational needs beyond the norm may be classified as special needs students. Special needs entail a variety of categories and labels including disability. Many students diagnosed with ADHD fall into the category of special needs.

The essence of special education is the recognition of the value in the uniqueness of each individual and the collective benefit of the integration of students with disabilities into the mainstream educational system. A disability as defined in the Special Education Policy Manual - Draft (Government of Saskatchewan, April 1996), “is a physical, mental or sensory impairment” (p. 60); a student with a disability is defined as a student who is
behavioral, communication, physical, or mental disorder (Government of Saskatchewan, 1995). The intention of special education is to offer educational opportunities and equal benefits to all children (Government of Saskatchewan, April 1996). Ysseldyke and Algozzine (1995) define special education for the regular classroom teacher as both a method and a process for teaching students who have differing learning needs, and state that it "must be an integral part of the general education system" (p. 34).

**Students with Special Needs**

In Saskatchewan at the present time, students with exceptional needs are identified within the following categories: chronic medical disorder, deaf and hard of hearing, gifted learners, intellectual disability, learning disabilities, mild and moderate disabilities, multiple disability, orthopedic disability, severe social, emotional or behavioural disability, speech or language disorders, and visual disability (Government of Saskatchewan, April 1996, p. 73). It is important for the regular classroom teacher to be knowledgeable about each of these categories. Although there are some overlapping of characteristics, there are also unique sets of distinguishing attributes for each category (Ysseldyke and Algozzine, 1995).

In the case of ADHD, it is in the classroom where the manifestations of the core symptoms of this disorder are often most noticeably evident (Pfiffner & Barkley, 1990). Children with ADHD have difficulty paying attention, staying on task and/or working independently. They are often disorganized and forgetful of homework assignments and school events. Children with this disorder may experience problems with remaining seated and following directions. They often interrupt lessons, engage in disruptive
can result in low academic achievement for the child with ADHD and rejection by his or her peers. As well, the teacher may experience a high degree of frustration in dealing with a child with this disorder. S/he may have more than one child with ADHD in the classroom and consequently has difficulty managing the chaos. If the child/teacher relationship is primarily negative, it will further add to the feelings of low self-esteem and sense of failure and frustration of the child. This can result in additional acting out which further strains the relationship. There is a need for information concerning this disorder and strategies pertaining to classroom management to be provided to general education classroom teachers in order to assist them in dealing with school problems experienced by students with ADHD (Reid, Maag, Vasa and Wright, 1994b).

The Role of the Classroom Teacher

Teachers in Saskatchewan, as in every other province in Canada, are currently faced with increasing responsibilities in dealing with the many challenges presented to them by children in the regular classroom setting. Children come to school from a wide variety of backgrounds, and each child comes with her or his own unique set of cognitive, emotional and physical needs. Today's children live in an "increasingly complex and changing society" (Government of Saskatchewan, 1995, p. 1). Children's experiences may not always be positive. There are children who are adjusting to changing family situations, children who come from families who have misused alcohol or drugs and who may misuse these substances themselves, and children who have been physically, emotionally and/or sexually abused. In addition, students come to the classroom with different temperaments and levels of maturity. Added to this are special needs such as
must both meet the needs of and effectively manage a classroom of very diverse students.

With the merging of special needs students into the regular classroom setting, the role of the teacher expands. The classroom teacher is often involved in the process of data collection used in the assessment of children with special needs, the outcome of which provides a picture of the areas of strengths, limitations and needs of each child. In conjunction with others the classroom teacher becomes further involved in the development, implementation and assessment of programs of individualized instruction for students with special needs. S/he becomes part of a team that is responsible for designing programs that adequately provide for the individual needs of students who meet the criteria of any of the above categories and for providing the academic, emotional and social support for these students. But s/he is often also the front-line implementer of these programs as well and therefore, the teacher’s knowledge and understanding of the skills and behaviours of children that fall within the category groupings enables her or him to better understand and more effectively utilize various instructional approaches in meeting the objectives of core curriculum through the adaptive dimension. The teacher invariably also becomes an advocate for the child with special needs. S/he often becomes the liaison between the child, the home, school officials, school resource personnel, and in some instances, the social worker, counsellor, and/or family physician.

The Knowledge, Perceptions and Attitudes of Teachers

Although there are many factors which contribute to the successful learning experience in the regular classroom of a child with a disability, the knowledge the teacher has about the specific disability, the perceptions the teacher has concerning her or his
concerning the disability and working with the child with a particular disability are paramount.

Research has indicated that both knowledge about the disability and interaction with students with disabilities has a positive bearing on the attitudes of teachers concerning mainstreaming and their ability to work with children with special needs (Cornett-Ruiz and Hendricks, 1993). Ysseldyke and Algozzine (1995) suggest that when teachers are accepting and supportive of the individual differences of students and have positive interactions with them, students in return develop more positive attitudes about school and learning and are more motivated to learn.

Teachers react differently to students within the different categories in special education. Category labels can influence attitudes and perceptions of teachers towards their students; for example, teachers tend to rate students who have acquired certain labels lower in academic potential and social skills than students who have not been labelled. The danger is that the behaviour and expectations of students can be influenced by the expectations of the teacher and this can lead to a "self-fulfilling prophecy" (Ysseldyke and Algozzine, 1995, p. 28). Teachers are also in a position to influence the attitudes held by the general public towards individuals with disabilities. The attitudes and perceptions of teachers can encourage a positive viewpoint or a negative and discriminatory stereotype (Ysseldyke and Algozzine, 1995). This, in turn, has an impact on individual students.

The attitudes of preservice teachers concerning mainstreaming and the educational training they receive regarding special needs students will largely determine the success
attitudes change is "critical to the future success of mainstreaming efforts" (Wilezenski, 1993, p. 6). Preservice teachers need adequate training and knowledge in the area of ADHD in order to understand the disorder and the impact students with ADHD have on regular classroom management. With this information it is hoped that preservice teachers will form attitudes which are sensitive to working with ADHD students. Without knowledge regarding ADHD, preservice teachers may have negative perceptions and form attitudes which are detrimental to their students. Once formed, attitudes can be very difficult to change or modify (Wilezenski, 1993).

ADHD

Myths

An important rationale for providing preservice teachers with information about ADHD and for studies which determine their attitudes and perceptions is the prevalence of myths regarding this disorder. Gordon and Asher (1994) have exposed a number of myths about ADHD which are useful to consider in their relationship to the formation of attitudes, perceptions and knowledge of this disorder. They are as follows: ADHD is a new psychological disorder that is occurring in epidemic proportions; it is the latest diagnostic fad only to be replaced shortly by another disorder; hyperactivity is the primary component of ADHD, which is the result of an overactive brain; children with ADHD exhibit the same behaviors in all situations and equally with all adults; girls do not have ADHD; all children with ADHD have learning disabilities; children with ADHD are emotionally disturbed; children with ADHD are found equally in all socioeconomic groups; ADHD is caused by poor parenting; the development and
diagnose in preschool children; it is a time-limited disorder, and children will naturally outgrow it as they mature; it can be cured if detected at an early age; it is impossible to foresee how a child with ADHD will manage as an adolescent or as an adult; only children with ADHD benefit from taking stimulant medication; and special education services are unavailable for children with ADHD.

Myths about stimulant drugs include: they are dangerous; they do not deal with the real problems of the child's ADHD; they are addictive; they stunt children's growth; and they can only be used by young children (Barkley, 1995).

**History**

Throughout the twentieth century, children have exhibited symptoms indicating problems with hyperactivity, attention and impulse control. Previous diagnostic labels used to describe children with these symptoms have included Moral Imbecile, Minimal Brain Damage, Hyperkinetic Impulse Disorder, and Minimal Brain Dysfunction (Barkley, 1990; Weiss, 1996). The diagnostic label of Organic Brain Syndrome appeared in the Diagnostic and Statistical Manual of Mental Disorders (DSM-I) (APA, 1952, 1st ed.) and later changed to Hyperkinetic Reaction of Childhood Disorder in the DSM-II (APA, 1968, 2nd ed.). The diagnostic label of Attention Deficit Disorder with or without hyperactivity (ADD +H or -H) was included in the DSM-III (APA, 1980, 3rd ed.). Only Attention Deficit Hyperactivity Disorder appeared in the DSM-III-R (APA, 1987, 3rd ed., revised). Currently, the DSM-IV (APA, 1994, 4th ed.) specifies three subtypes of the disorder: Attention-Deficit Hyperactivity Disorder, Combined Type; Attention-
Deficit/Hyperactivity Disorder, Predominantly Hyperactive-Impulsive type.

At one time, the diagnostic criteria for ADHD as presented in the *DSM-IV* (APA, 1994, 4th ed.) were primarily tools used by the psychiatric profession. More and more, references to or inclusion of the diagnostic criteria for ADHD as well as for Conduct Disorder and Oppositional Defiant Disorder (ODD) are being included not only in psychology textbooks but as resource materials used for classes in educational psychology and special education (Borich and Tombari, 1997; Friend and Bursuck, 1996; Hunt and Marshall, 1994; Lefrancois, 1997; and Ysseldyke and Algozzine, 1995). It is important for the student in education to become more familiar with diagnostic criteria used for various disorders as the teacher finds herself/himself becoming more and more part of a team of experts involved in the assessment, intervention, and treatment, of students with special needs in the regular classroom setting.

**Symptomatology**

The diagnostic criteria for attention deficit hyperactivity disorder include symptoms of inattention, hyperactivity and impulsivity (see appendix A). These symptoms must have appeared prior to the age of seven, they must be present for a minimum of six months and to a degree that is inconsistent with the individual's level of development, and they must be present in two or more settings; there must be noticeable impairment in academic, occupational or social endeavors, and not be better diagnosed as another disorder. Six of the following nine symptoms of inattention must be met: carelessness in schoolwork, difficulty with maintaining attention in tasks, difficulty listening when spoken to directly, difficulty with following instructions and finishing
sustained mental concentration, loses things and/or is easily distracted by outside stimuli, forgetfulness; or six of the following symptoms of hyperactivity: fidgeting and or difficulty sitting still, difficulty remaining seated, excessive physical activity or ongoing restlessness, difficulty playing quietly, usually "on the go" or behaving as if "driven by a motor", excessive talking; impulsivity in answering questions; frequently interrupts others (APA, 1994, 4th ed., p. 84).

ADHD, Combined Type is present when six or more symptoms of inattention and hyperactivity-impulsivity are met for the past six months. ADHD, Predominantly Inattentive Type is present when six or more symptoms of inattention are met for the past six months but six or more symptoms of hyperactivity-impulsivity have not been met for the past six months. ADHD, Predominantly Hyperactive-Impulsive Type is present when six or more symptoms of hyperactivity-impulsivity are met for the past six months but six or more symptoms of inattention have not been met for the past six months (APA, 1994, 4th ed.).

Blau and Gullotta (1996) refer to the core symptoms of inattention, hyperactivity and impulsivity as primary symptoms and include difficulties experienced at home, at school and with peers and the issue of comorbidity as secondary symptoms or related problems. A reconceptualization of the disorder which places the deficit in motivation rather than in attention as the primary problem of ADHD with the emphasis on "biologically based deficiencies in the regulation of behavior by rules and consequences" is provided by Barkley (1990, p. 73).
While there are multiple causes involved in the development of ADHD, the primary factors according to Barkley (1995) are considered to be biological (neurological and genetic). There may be a genetic predisposition for children with ADHD to exhibit lower brain activity in the frontal regions as well as lower levels of the neurotransmitters dopamine and perhaps norepinephrine, chemicals that enable information to be transmitted from the nerve cells to other cells (Barkley, 1995). Studies using an electroencephalograph (EEG) have indicated that there is lower frontal brain electrical activity of children with ADHD, which can be increased by using stimulant medication (Barkley, 1995). Further studies have measured lower blood flow in the frontal brain area of the caudate nucleus region of children with ADHD. The striatum in this part of the brain is important in inhibiting behavior and sustaining attention. The caudate nucleus is connected to the limbic system which is responsible for controlling emotions, motivation and memory (Barkley, 1995). Again, by using stimulant medication, the blood flow in this region is increased. Using positron emission tomography (PET scan), pictures of the brain have shown lower levels of frontal brain activity in adults and adolescents with ADHD (Barkley, 1995). Stimulant drugs increase this activity level. Brain imaging has revealed lower frontal brain metabolic activity of individuals with ADHD. These brain areas also assist us in language use, such as instructions and rules which enable behaviour controls, and the ability to make future plans (Barkley, 1995).

**Assessment and Treatment**

Both the assessment and treatment of ADHD involve biopsychosocial factors and a developmental context (Shelton and Barkley in Barkley, 1990). The biopsychosocial
environmental, social-familial and socioeconomic and sociopolitical factors (Shelton & Barkley, 1990). Developmental considerations include the process of referral, the choice of an assessment battery and evaluation focus, the interpretation of results and diagnosis, the prognosis, treatment, and the general impact of the developmental perspective on specific age groups (Shelton & Barkley, 1990).

An assessment of ADHD involves a multiprocedural approach. It is imperative that the information gathered includes a longitudinal history from both parents and teachers, objective rating scales and testing, observations, current complaints from parents, teachers and others in contact with the individual, and that it meets the DSM-IV diagnostic criteria (Weiss, 1996).

The age of the child, her or his cognitive-developmental level and social factors will determine the kind of intervention for children with ADHD (Barkley, 1990). Parents and teachers play a key role in treatment procedures, regardless of these factors. Anastopoulos and Barkley (Barkley, 1990) stress the need for multiple treatment strategies. A treatment program usually involves a combination of the following: behaviour management for the child at home and at school, counselling for the family, parent training, medication, and social skills training group for the child.

Medication can include psychostimulants such as methylphenidate (ritalin), dextroamphetamine (dexamphetamine) and pemoline (cylert). It can also include tricyclic antidepressants such as imipramine (tofranil), and norpramin (desipramine). Clonidine (catapress), an antihypertensive and carbamazepine (tegretol), an anticonvulsant, have also proven to be effective for some children (Parker, 1992). The stimulants increase the
increase the ability to sustain attention and be compliant, and reduce restlessness, impulsiveness, and disruptiveness (Barkley, 1995).

There is no known cure for this disorder and most children do not outgrow it. A high incidence of comorbidity with ADHD involves language disorders, learning disabilities, family problems, depression, anxiety and conduct disorders. Between 20% and 30% of children with ADHD in elementary school have conduct disorder, 40% and 60% have oppositional defiant disorder, and 25% of these children are also struggling with learning disabilities (Fowler, 1992). Friedman and Doyal (1992) state that by high school 30% of students with ADHD have repeated one grade. “Most common, however, is the pattern of negative, provocative and oppositional behavior at least 50% of ADHD children and adolescents present” (Goldstein & Goldstein, 1991).

**Children with ADHD in the Classroom**

“Given the range and significance of ADHD children’s difficulties at school, a great need exists for effective school interventions” (Pfiffner & Barkley, 1990, p. 499). The use of behavioural and cognitive-behavioural techniques in teaching children with ADHD in the classroom have proven to be effective in increasing the opportunity for the child’s success. The use of effective management programs in the classroom require first of all, the identification of the target area in which change is desired. A functional analysis defines the behaviour in order to assist its reliable monitoring, identifies the antecedents and consequences of the behaviour and identifies the desired behaviour to replace the undesirable behaviour. Pfiffner & Barkley (1990) include adaptations of schoolwork, cognitive-behavioral interventions, home-based consequences, and teacher-
members of the team working closely together are strongly recommended.

Interventions that emphasize structure and rewards and de-emphasize reprimands have been found useful in changing behaviour of students with ADHD. The INCLUDE strategy (identification, noting, checking, looking, using, deciding, and evaluating) is used in the regular classroom with students with special needs (Friend and Bursuck, 1996). Additional instructional adaptations that have proven to be beneficial for special needs students include: organization of assignments into shorter parts, underlining important passages in text, setting realistic goals, taking up work shortly after it is completed, providing a written copy of notes and/or a study guide, frequent individual conferences with students, having the student close to the teacher, having the student work with a peer helper, giving extra time to complete assignments, providing short breaks between working, keeping a specific schedule, assigning less homework, shorter assignments and giving more frequent tests, and giving structured short-term deadlines (Friend and Bursuck, 1996).

Combined interventions may include the use of pharmacological approaches and instructional adaptations. General principles of classroom management of children with ADHD regardless of the use of medication include: short, clear and visible instructions and rules, frequent, immediate and meaningful consequences, frequent changes in strong incentives and reinforcement of positive behaviours, planning ahead, careful consideration of transitions and rule changes. These are based on the conceptualization of the model of ADHD as “primarily an impairment in the regulation of behavior by its
the motivational deficits of children with ADHD.

Most classroom management programs involve teacher-administered positive consequences: praise, tokens, and tangible rewards, and negative consequences: ignoring, response cost, time-out and verbal reprimands. Cognitive-behavioral interventions involve the use of self-monitoring and self-reinforcement by the child with ADHD. Self-instructional and self-management skills (self-monitoring, self-questioning and self-reinforcement) as well as problem-solving strategies are added components to this program. Peer-mediated programs have been found to be very powerful in encouraging appropriate behaviours from children with ADHD. However, success is often dependent upon the abilities of the peers. Home-based programs are effective if combined with classroom-based programs.

It is recommended that when teaching students with ADHD, demands be kept to a minimum and monitoring, feedback, and reinforcement be maximized (Borich, and Tombari 1997). An optimal situation is when abilities and academic tasks can be matched for children with ADHD, the teaching presentation and the materials are exciting, assignments can be brief, short periods of physical exercise are offered between class lectures, academic subjects are in the mornings, direct-instruction programs like DISTAR can be used, and drill skills are frequent and make use of computer programs (Pfiffner & Barkley, 1990).

It is important to note that in working with children with ADHD in the classroom setting, "the actual initial target of intervention is the teacher's knowledge of and attitude toward the disorder of ADHD" (Pfiffner & Barkley, 1990, p. 501). Behaviour
adequate knowledge concerning the nature and causes of the disorder and has misperceptions concerning methods of treatment. “As with parent training, then, the initial step in classroom management is educating teachers about the disorder” (Pfiffner and Barkley in Barkley, 1990, p. 501).

The Challenge for Preservice Teachers

Preservice teachers will be bringing their knowledge and skills, perceptions and attitudes of ADHD into the regular classroom setting and working with children diagnosed with this disorder as well as those children who have undiagnosed ADHD. They will be called upon to be part of the assessment and diagnostic process for all children with exceptional needs, including those who appear to have ADHD. They will be the professionals who will be part of program implementation and evaluation as well as dealing with the challenges of classroom management of children with this disorder. They may also be called upon to assess specific treatment programs involving the use of stimulant medications with children with ADHD. Preservice teachers will be teaching, supporting and encouraging children with this disorder in the regular classroom setting.

The Significance of the Study

The knowledge, perceptions, and attitudes of preservice teachers concerning children diagnosed with ADHD are important areas of concern for the acceptance, inclusion and success of these children in the regular classroom setting. "General education teachers' knowledge of ADHD, perceptions of ADHD students, and ability to intervene effectively would seem to be significant factors in the success or failure of students with ADHD in the mainstream" (Reid et al., 1994b, p. 124).
teachers for work with students with ADHD even though most of these students will be in
the regular classroom setting. "This information is important since the classroom teacher
is viewed as the major factor in the success or failure of any student and particularly those
with ADHD" (Reid et al., 1994a, p. 195). In addition, there is little current research
concerning teachers' perceptions of their ability to effectively teach students with ADHD
(Reid et al., 1994a). There is surprisingly little research in this area, and yet the
perceptions, attitudes and knowledge of teachers concerning ADHD will directly
influence how they respond to the problems faced by children with this disorder and to
the children themselves.

The purpose of this thesis is to explore the knowledge, perceptions, and attitudes
of preservice teachers regarding ADHD. Preservice teachers bring their knowledge,
perceptions and attitudes towards ADHD into the regular classroom setting where they
may work with students who have this disorder. The education of preservice teachers
regarding ADHD is a crucial component to successful classroom management of ADHD
(Pfiffner and Barkley in Barkley, 1990) and the successful negotiation through
mainstream education by students with the disorder (Reid et al., 1994a). The findings of
this study should help to clarify some of the educational needs of preservice teachers with
reference to successful learning experiences for children with this disorder.

Statement of the Research Questions

This study is an investigation of the knowledge and opinions reflecting the
perceptions and attitudes of preservice teachers concerning ADHD. The data collected
addressed the following questions:
1. What knowledge do preservice teachers have concerning behaviours of children with ADHD and teaching strategies that would facilitate successful learning experiences for these children?

3. What do preservice teachers report concerning their sources of knowledge and information concerning ADHD?

4. Do preservice teachers perceive their knowledge of ADHD to be adequate to teach children with this disorder?

5. What are the attitudes of preservice teachers concerning ADHD and children with this disorder: the nature of the disorder, the prevalence of the diagnosis, the use of medication, and the instruction of these children in a regular classroom setting?

**Summary**

The goals of education set out by our provincial government are inclusive of all children. Over the years, there have been increasing numbers of students with special needs being placed in the regular classroom setting. There has been a number of contributing factors in this movement but one of the core beliefs is that it is beneficial for the child. However, this poses unique challenges for the teacher. Students who are diagnosed with ADHD are most often in the regular classroom being taught by the regular classroom teacher. These children have special needs which the regular teacher may or may not have the training to deal with. “Special” education classes which cover the areas of learning disabilities and disorders such as ADHD may not have been part of the B.Ed.
the classroom teacher concerning teaching students with this disorder strongly effect the learning experience of the child.

This study gathers information about the knowledge and opinions of preservice teachers concerning ADHD, their understanding of effective classroom teaching strategies and their perceptions concerning their readiness to teach children with this disorder.

The purpose of this study was to investigate the current perspectives of preservice teachers regarding ADHD and teaching children with this disorder.
Introduction

The literature review of this study includes the available research studies which explored the knowledge, perceptions and attitudes of professionals who are involved with working with students with ADHD. This included teachers and preservice teachers, day care workers and health professionals. In addition, some of the literature which addresses general problems encountered by people with ADHD is also reviewed.

The chapter begins with research findings regarding a general response from teachers and other professionals regarding their knowledge, their perceptions and their attitudes of ADHD. The remainder of the chapter consists of literature which identifies preservice and current teacher perceptions of the treatment and management options utilized for ADHD, including stimulant medication and the controversy around its use.

Knowledge of ADHD by Professionals

Riley (1994) surveyed professionals (N=303) from public schools (61 counselors, 82 principals, and 160 teachers) concerning their level of knowledge of attention deficit disorder in school-aged children. The variables investigated were: amount of in-service training, gender, level of formal education, position, size of participant's school, and years of experience in education. Results indicated no statistically significant relationship among any of these variables and scores on the Knowledge of Attention Deficit Disorder questionnaire.

Griswold (1991) investigated the knowledge and attitudes of elementary educators concerning ADHD (N=298). Educators from a number of elementary public school
treatment of ADHD. Participants were from a number of specialty areas: administrators, mental health workers, nurses, regular class teachers, and special needs teachers. Additional variables included: the number of children with ADHD with whom the educators had worked, the source of knowledge of ADHD for educators, and years of experience.

The number of children with ADHD that the educator had worked with, the level of understanding concerning behavior management techniques, profession, source of information, and years of experience had a significant effect on the understanding of etiology and assessment of ADHD. Level of understanding of behavior management techniques; level of understanding of ADHD; number of children with ADHD worked with; profession; source of information and years of experience had a significant effect on the understanding of methods of assessment. Level of understanding of behavior management techniques; level of understanding of ADHD; profession; and source of information were found to have a significant effect on understanding of treatment modalities. Level of understanding of teacher-applied structure; level of understanding of ADHD; profession; and years of experience were found to have a significant effect on ratings of treatment goals.

The group of professionals with the most experience in dealing with students with ADHD was the regular classroom teachers, then the mental health workers followed by the special needs teachers. Mental health workers ranked highest in personal level of understanding of ADHD, special educators were second, and regular classroom teachers were third. Participants who rated themselves to be quite knowledgeable about ADHD
those participants who rated themselves to be less knowledgeable about the disorder.

Malyn (1993) examined the understanding of regular education teachers, school psychologists and special education teachers (N=185) concerning the etiology of and treatment for ADHD as well as the effects and side effects of stimulant medication. Variables on the questionnaire used included: advice respondents would give a new professional in dealing with a child with ADHD, affiliation with professional organizations, causes not mentioned on the questionnaire, greatest difficulty respondents have experienced in dealing with children with ADHD, interventions not mentioned on the questionnaire, level of education, respondents' beliefs about what would help the most in dealing with children with ADHD, self-rating of knowledge level about ADHD, and years of experience. Results indicated that the knowledge of ADHD by most participants was in agreement with the literature. However, the beliefs held by a number of regular education teachers were not supported by the literature on the disorder. Many participants indicated a need for additional information and training.

Primary causes of ADHD were given as follows by the participants: genetics (70%), brain damage (40%), alcohol consumption by the mother during pregnancy (35%), abuse or neglect (30%), poor parenting (25%), and family or marital discord (25%). Approximately 40% of the regular educators thought that family and marital discord was a cause of ADHD. Additional causes given by participants were: sexual abuse (regular education teachers), drug use during pregnancy, lack of parental care, mother too young when pregnant (school psychologists) and Dad exposed to Agent Orange during Vietnam and dysfunctional homes (special education teachers).
behavioral management (85%), parent training (80%), social skills training (70%),
cognitive-behavioral management (60%), counselling (60%), stimulant medication
(45%), and family therapy (45%). Additional management techniques provided by
respondents were: teacher change (regular education teachers), prenatal care and
education of pregnant women (school psychologists), and use of colored paper for dittos
(special education teachers).

Participants listed mood swings and lack of attention (regular education teachers),
rebound effect and parents' attitude regarding medication (school psychologist), and
drowsiness and impulsivity (special education teachers) as the greatest difficulty in
dealing with children with ADHD. Smaller class load (regular education teachers), more
information (special education teachers), and teacher training (school psychologist) were
listed as what would help the most in dealing with children with ADHD. Being patient
(regular education teachers, and special education teachers), and reading Barkley (school
psychologists), were listed as advice to give a new professional in dealing with a child
with ADHD.

Brunk (1995) examined levels of education and experience among day care staff
at three local YMCAs (N=37) as well as their understanding of ADHD. A questionnaire
was developed by the researcher consisting of 39 questions. Participants were asked
questions pertaining to causes, characteristics, and potential treatment modalities for
children with ADHD. The answers to these questions were compared to the experience
in working with children with ADHD and level of education of the participants. The
results suggested that experience in working with children with ADHD and levels of
staff with higher levels of education and experience corresponded more accurately with
the literature in this field. All participants indicated their desire for additional
information on ADHD.

Perceptions of Teachers Concerning ADHD

Reid et al. (1994a) gathered data concerning perceptions of grade three public
school teachers with regards to their confidence in actualizing educational goals (N=449)
as well as perceived barriers to successful programming instruction (N=375) within the
context of teaching students with ADHD. Information regarding previous experience and
training of teachers was also collected and results from the study indicated that there were
differences in perceptions between these groups of teachers with prior experience and
training with students with ADHD and those without.

Barriers to effective programming included the following possible obstacles:
complexity and severity of students' problems, confidence in working with students with
ADHD, demands of nonteaching duties, insufficient training, lack of administrative
support, lack of communication with parents, lack of communication/support from
special education personnel, lack of resource materials for use with students,
noncommunication with physicians with regards to needs and problems of children,
students unable to benefit from regular classroom instruction, size of class, time to
implement specialized interventions, and unsuccessful implementation of interventions
suggested by specialists.

Participants rated each item on a scale of 1 (not important) to 5 (extremely
important) and chose three barriers they perceived as the most applicable in preventing
most important and the most likely to impede the successful implementation of an
instructional program: time to implement specialized interventions, insufficient training,
size of class, and complexity and severity of students' problems. Results also indicated
that there were no differences between teachers with and without previous training in
ADHD. However, there were differences between teachers with and without previous
experience teaching students with ADHD.

Confidence in attaining goals (self-efficacy) included the following activities,
tasks, or goals: communicate effectively to parents of students with ADHD, establish a
supportive classroom environment, individualize instruction and materials for children
with ADHD, plan an effective behavior contract with a student with ADHD, prevent
problems in behavior from occurring, provide understanding of ADHD for the entire
class, put in place an effective method of evaluation, and set up an effective program of
intervention and stress management in relationship to stress caused by teaching students
with ADHD. Participants rated their confidence for successfully performing each goal or
activity on a scale of 1 (no confidence) to 5 (strong confidence).

In comparing teachers with and without previous experience teaching students
with ADHD and prior training in ADHD, results indicated that there were higher
differences in perceived confidence in attaining instruction goals between teachers who
had or had not received previous training in ADHD. Teachers without previous
experience rated lack of training and lack of communication with physicians significantly
higher than those with previous experience. Results indicated that proportionally more
strong barrier than did experienced teachers.

Teachers with previous experience revealed greater confidence in their ability to teach students with ADHD effectively, to implement an intervention, and to conduct an evaluation than those teachers without prior experience. Teachers with previous training also revealed greater confidence in their ability to establish a successful behavior contract, to individualize instruction and materials for students with ADHD, to carry through an intervention, and to conduct an evaluation of behaviour than those teachers without prior training. "While there is little disagreement that teachers need training in ADHD, there is no research at present that addresses how teachers perceive their ability to successfully work with students with ADHD (i.e., their self-efficacy) and what problems teachers perceive as salient in the education of students with ADHD" (Reid et al., 1994a, p. 196).

Attitudes of Preservice Teachers Towards Inclusion of Students with Disabilities

The type of disability.

"The shaping of positive attitudes toward the inclusion of children with disabilities is an important aspect of the education of university students preparing to become teachers in regular education" (Reber, Marshak, and Glor-Scheib, 1995, p. 3). These researchers investigated if attitudes of preservice teachers toward inclusion were influenced by type of disability. The participants (N=182) were students enrolled in a teacher education program. The following ten disability categories were ranked from most to least positive attitudes by the preservice teachers: orthopedic disorder, learning disability, deafness, visual disorder, mental retardation, fine motor control, autism, speech
expressed towards students with seizure disorders. Children with behavior disorders elicited the second most negative attitudes from preservice teachers. According to this study, children displaying the behaviors that are part of the symptoms of ADHD would be at high risk in eliciting negative attitudes from teachers. There was a significant variation of attitudes of preservice teachers in accordance with the type of disability of the child. Although preservice teachers who participated in the practicum program indicated more positive attitudes about each disability category than the preservice teachers who completed an overview course or a self-study program, the order of ranking remained the same.

Folsom-Meek, Nearing, & Krampf (1995a) compared the attitudes of physical education majors concerning teaching students in three different types of disability classifications: behaviorally disordered (BD), learning disabled (LD), and mildly mentally retarded (MiMR). "The attitude of the regular physical education teacher toward students with disabilities is important in contributing toward the success of students with disabilities in regular physical education classes" (p. 4). The participants (N=1,081) were students majoring in physical education and enrolled in an introductory adapted physical education (APE) course in a college or university in one of thirty states. They completed the Physical Educators' Attitude Toward Teaching Individuals with Disabilities (PEATID-III) Preservice Version (PS) during the final two weeks of their semester. The PEATID-III PS uses a 5 point Likert scale. The results ranked positive attitudes of preservice physical education teachers, in descending order to LD, MiMR, and BD. This
would be at high risk for eliciting negative responses from physical education teachers.

Burgstahler (1994) summarized research indicating that faculty and staff at the university level have little understanding of the nature and needs of students with disabilities, especially concerning learning disabilities. While faculty conveyed positive attitudes towards inclusion of students with disabilities, their attitudes were less favorable toward students with emotional problems and learning disabilities. This is important to consider in that the faculty member who teaches preservice teachers often becomes a role model for the class in how to teach and deal with students. It is applicable to the problem at hand in that a high percentage of students with ADHD have learning disabilities and emotional problems.

**Academic preparation.**

Reber et al. (1995) evaluated the effects of three different types of preservice training experiences on attitudes toward inclusion: a self study program which prepared students to pass a special education competency test, an overview course on students with disabilities, and a guided practicum experience. The results indicated that the attitudes of preservice teachers are influenced by the type of academic preparation received. Preservice teachers who participated in a guided practicum (N=23) indicated significantly more positive attitudes concerning inclusion of students with disabilities into the regular classroom setting than preservice teachers who completed the overview course (N=59) or who completed the self study program (N=100). While attitudes of the students in the overview course and the self study program were comparable, the students in the
each of ten different classifications of disabilities.

While contact with students with disabilities in a structured practicum experience can be influential in the development of positive attitudes of preservice teachers concerning inclusion (Reber et al., 1995), there are situations where contact with students with disabilities has resulted in the formation of negative attitudes. Wilczenski (1993) examined the attitudes of undergraduate education students as well as changes in these attitudes as a result of a practicum experience. The Attitudes Toward Mainstreaming Scale (ATMS) was given to undergraduate education majors prior to student teaching (N=229) and in a follow-up study (N=110). The ATMS consists of eighteen attitudinal statements presented in a six point Likert-type format. While the preservice teachers in general conveyed positive attitudes concerning mainstreaming, the more advanced students expressed more favorable attitudes than the beginning students. However, following the practicum experience, these attitudes were no longer so positive. "Negative trends in attitudes toward mainstreaming among teachers apparently begin with student teaching...there is a need to increase student teachers' confidence and competence in teaching mainstreamed students so children with special needs are not met with initial rejection" (p. 15). The preservice teachers expressed concern with the following issues: adaptive programming to meet the needs of individual students, behavior management, facilitating social interaction of all students, policy dealing with issues of safety in regards to students with physical disabilities (e.g., fire drills), setting reasonable expectations for students at different developmental levels, and working with classroom aides and special consultants. "The success of the mainstreaming movement will depend to a large extent
preparation they receive for new teaching roles" (Wilczenski, 1993, p. 5).

Reber et al. (1995) strongly recommended that the practicum experience be "a planned systematic intervention" (p. 9). While the preservice teachers generally were supportive of inclusion regardless of the type of program they were enrolled in, they indicated negative attitudes towards inclusion of students with behavior disorders and those with seizure disorders.

Folsom-Meek et al. (1995a) suggested the need for offering preservice physical education teachers structured practical experiences to foster acceptance of students with behavioral disorders and mild mental retardation. They raised the question of whether or not regular physical education teachers have been prepared adequately to teach students with disabilities integrated into their regular classes.

Attributes of Preservice Teachers

In another study Folsom-Meek et al. (1995b) examined the relationships between preservice physical education teacher attributes and attitude towards teaching individual handicapped students. The following attributes were analysed: age, certification level, hands-on experience, introductory APE course requirement, number of courses taken, number of other courses taken relating to individuals with disabilities, overall educational preparation, perceived competence, and year in school. Results indicated that hands-on experience course requirement, overall educational preparation, and perceived competence were strong predictors of positive attitude scores. Preservice physical education teachers who had firsthand experiences with individuals with disabilities as a requirement of the introductory course, perceived themselves to be competent, and rated
Burgstahler (1994) identified factors associated with different attitudes of college faculty and staff toward students with disabilities. These included: academic discipline, gender, level of knowledge concerning individuals with disabilities, prior experience with individuals with disabilities, and terminology used to depict individuals with disabilities. The "learning disabled" label influenced the expectations of faculty in a negative way.

**Attitudes of Teachers and Peers Towards Students Labeled as ADHD.**

"Considerable concern has been expressed regarding the potential negative impact of diagnostic labels on young children. Most of the literature has focused on more negative consequences" (Cornett-Ruiz & Hendricks, 1993, p. 349). These researchers used videotapes to study the impact of the ADHD label and behavior of children with ADHD on primary education teachers (N=39) and fourth- through sixth-grade students (n=81). The participants viewed two 4.5 minute videotapes in which a child either exhibited stereotypical behavior of children with ADHD or normal behavior and was labeled either ADHD or normal. Participants then completed an evaluation of a hand-written essay and rating scales of first-impressions, and made predictions regarding subsequent success.

Results indicated that the behaviour of the child with ADHD, but not the label, influenced peers and teachers on their predictions of future success and rating scales of first-impressions in a negative way. The results of the study suggested that children are not so much effected by the label of ADHD but rather, the behaviors exhibited by the child with ADHD. The study raised the issue regarding the context in which labelling...
treated, and placed that needs to be explored. The impact of labels on teachers is especially important because of the pivotal role these educators play in dealing with children with special needs. Teachers may convey negative messages about labeled children to peers, parents, other teachers, and to the labeled child" (Cornett-Ruiz & Hendricks, 1993, p. 349).

**Attitudes of Teachers Towards the Use of Stimulant Medication.**

Davino, Lehr, Leighton, Miskar, & Chambliss (1995) investigated perceptions by teachers regarding the use of medication to treat ADHD in relation to knowledge of etiology, support of parents, social variables, teacher training, and experience and involvement with students with ADHD. Participants were teachers (N=206) from eleven elementary, middle, and high schools. They completed a forty four item survey which used a 5 point Likert format. The results indicated no significant relationship between attitudes of teachers towards the use of stimulant medication, with age, knowledge of etiology or the degree of experience with students with ADHD. However, those teachers who supported the use of ritalin more often viewed “genetics” as the cause of ADHD, and had a greater understanding of the academic, medical and social problems related to the disorder.

Most teachers supported the idea that their role involved responsibility and commitment in assisting those students with ADHD. More experienced and older teachers indicated their dissatisfaction concerning their teacher training as well as in-service training with regards to the use of stimulant medication in the treatment of children with ADHD. The majority of respondents (64%) indicated that they had
treatment of ADHD and approximately 83% expressed dissatisfaction with their teacher training concerning the use of stimulant medication in treatment of ADHD. "Teachers play an important role in monitoring the effects of stimulant medication used to treat ADHD. Any negative attitudes they hold toward ADHD students or the students' parents, doctors, or medication, can compromise treatment efficacy" (p.2).

The Need for Teacher Education in Working with Students with ADHD

Reid et al. (1994b) examined academic achievement, demographic data, disability categories, educational treatment and placement of children clinically diagnosed as having ADHD (N=136) among a group of 14,229 students in a public school district. Of these, 121 (89%) were male, 15 (11%) were female, and 77 (57%) were receiving special education services. Over half of this latter group (n=40) were identified as behaviorally disordered and 22 as learning disabled. The majority of these students (75%) were in the regular classroom most or all of the time. Over 90% of the students with ADHD were taking medication, and of these 94% took at least one dose at school. The types of medication primarily used were ritalin and cylert. The growing use of medication in the treatment of ADHD and the taking of medication at school by children requires the need for teachers and school personnel to be aware of the effects and potential side effects of medication.

Reid et al. (1994b) write there is "...a very real need exists to provide general education classroom teachers with both knowledge of ADHD and a repertoire of techniques to deal with the problems students with ADHD may experience in the general
Behavior therapy techniques that Reid et al. (1994b) have found to be successful in working with students with ADHD include: contingency contracting, positive reinforcement, response cost, time-out, and token economies. The researchers advocated parental involvement in behavior modification programs and suggest that support and training for parents be provided through the school. They recommended that an important component of treatment is the working relationship between home and school. The knowledge of general education teachers of ADHD, their perceptions of students with ADHD, and their "ability to intervene effectively would seem to be significant factors in the success or failure of students with ADHD in the mainstream" (Reid et al., 1994b, p. 124).

Conclusion

The literature clearly indicates that teachers' knowledge, attitudes and perceptions make a difference in their ability to manage and teach students with ADHD. Griswold (1991), Malyn (1993) and Brunk (1995) determined that previous experience in working with children with this disorder benefit teachers and daycare workers by helping them develop realistic perceptions of ADHD behaviors and problems. Reid et al. (1994a) indicate that teachers with previous experience teaching students with ADHD felt more confident about their ability to effectively work with these children. Reber et al. (1995) found preservice teachers with practicum experience with students with ADHD also had more positive attitudes towards the disorder then those without this experience. Conversely, Reber et al. (1995) and Folsom-Meek et al. (1995b) discovered that teachers
likely to have negative attitudes towards the disorder and other disabilities in general.

In conclusion, the current literature indicates that preservice and inservice teachers benefit from knowledge and experience with ADHD. This knowledge and experience helps them to develop realistic perceptions of ADHD and reduce harmful, negative attitudes towards the disorder. In addition Reid et al. (1994b) have determined that teachers’ knowledge, level of general education and repertoire of techniques help them to work more effectively and constructively with students who exhibit ADHD symptoms.
**METHOD**

**Introduction**

The methodology for this study was designed to determine the knowledge and opinions preservice teachers have about ADHD and teaching students with this disorder. A self report questionnaire was used as the primary method of gathering data (see appendix B). Although this is a measure predominantly used in quantitative research and scores were computed to determine the degree of knowledge preservice teachers had about ADHD and additional statistical computations were made as well, there was not a theory to be proven with the thesis work itself. The thesis had qualitative elements in that it was an investigation into the knowledge and opinions of preservice teachers concerning this disorder and provision was made to gather the thoughts, feelings and experiences of the preservice teachers in this area.

**Selection of the Sample**

The participants (N=64) were students enrolled in their final semester of one of the B.Ed elementary and/or secondary programs offered through the Faculty of Education at the University of Regina. The programs in elementary education include: B.Ed. program in elementary education (K-5 and middle years 5-9 options) and Baccalauréat en education élémentaire, française; B.Ed. (BEAD) program in elementary education (K-5 and middle years 5-9 options) and Baccalauréat en education élémentaire, française for graduates with approved degrees; and B.Ed. (BEAD) program for certified teachers with approved degrees.
education and Baccalauréat en éducation secondaire, française; B.Ed. (BEAD) program in secondary education and Baccalauréat en éducation secondaire, française for graduates with approved degrees; B.Ed. (BEAD) program for certified teachers with approved degrees; and B.Ed. (General) for individuals who have a two-year certificate and would like to complete a program for teaching in secondary schools.

Other programs include the B.Ed. (Arts Education) and BEAD (Arts Education).

These students were chosen as they were in the final stages of their teacher training program, had completed their teaching practicum in the school system, and would be eligible for teaching positions once graduated.

The Survey Instrument

The questionnaire was developed by the researcher following an extensive review of the literature (see appendix B). It consists of four parts. Part I includes demographic information such as age, gender, type of B.Ed. program and area of concentration. Previous university classes taken which provided any information about ADHD and specific classes which the participant had taken are also part of the data collected in this section. This part of the questionnaire was based on similar survey instruments and in particular, Brink (1995), Griswold (1991) and Malyn (1993) with the addition of the question regarding type of B.Ed. program.

Part II contains questions concerning perceptions of preservice teachers with regard to: amount of personal experience with children or adolescents with ADHD, degree of knowledgeability about students with this disorder, and level of readiness concerning teaching students with ADHD. The questions use a four point numeric scale
knowledge and 3=high degree of knowledge, 1=not at all prepared and 3=well prepared). The preservice teachers are asked how important and useful they perceive certain activities to be in preparing them to work effectively with students with ADHD. Again, Brunk (1995), Griswold (1991), and Malyn asked similar questions in their research.

In Part III, data concerning attitudes of preservice teachers about ADHD are obtained. It consists of ten questions and a five point Likert type scale (1=strongly disagree, 3=uncertain, and 5=strongly agree). The attitude scale is based on similar attitude scales used in current research.

Part IV includes the knowledge base of preservice teachers concerning ADHD. It is comprised of twenty multiple choice questions for which there is one correct answer. The questions gather information concerning the nature, etiology, prevalence, assessment and diagnosis, symptoms, treatment of ADHD, side effects of taking stimulant medication, and classroom management of children with this disorder. The knowledge scale is also based on similar scales used by Brunk (1995), Griswold (1991) and Malyn (1993). In addition to this, educational psychology text books currently used in teacher training programs in Canadian universities including the University of Regina: Borich and Tombari (1997), Friend and Bursuck (1996), Lefrançois (1997) and Ysseldyke (1995) were used as a basis to formulate the questions used in this section. Participants are invited to use the last page to provide feedback concerning ADHD, the questionnaire, working with children with this disorder, and/or their program of teacher training.
The pilot study was conducted with a total of five graduating students reflective of four different types of B.Ed. programs: the four year elementary K-5 B.Ed., the four year secondary B.Ed., the four year Baccalaureat Secondary Arts Education B.Ed., and the five year secondary B.Ed. The inclusion of the students from the Baccalaureat program was one of the changes that occurred as a result of the pilot project. Initially the students from the Baccalaureat program had not been included. This was due to the fact that I had no contact with those students, whatsoever. However, one of the initial four students in the pilot study came to my office with the completed questionnaire and a friend who was part of the Baccalaureat program and interested in participating in the study. A second change was to include several additional questions concerning classroom management of students with ADHD in Part IV of the questionnaire and to eliminate several questions dealing with treatment and assessment. Feedback was provided from one of the faculty teaching educational psychology suggested that the area of classroom management would be more relevant to preservice teachers than assessment and treatment of this disorder.

The nature of the study was outlined to the students, the pretesting of the questionnaire was explained as well as the value of their input in improving the questionnaire. The participants understood that this was a voluntary activity on their part and that they would remain anonymous in the reporting of the study.

Procedures for the Collection of Data

Following the approval of the research procedures by the University Research Ethics Review Committee (see appendix C), faculty who taught graduating B.Ed. students were approached with a letter describing the study and requesting their
come into their class to speak to the students. A package including a letter of introduction explaining the study and the questionnaire was distributed to those students who wished to participate. In addition to this, a number of packages with a stamped self-addressed envelope were mailed to graduating students who were contacted by telephone.

**Analysis of the Data**

The data from the completed questionnaires were analyzed using the SPSS system. Frequencies and percentages of responses in each category and correlation of numerical scales were determined. A numeric score was derived by quantifying the responses for each participant based on her/his level of knowledge, attitudes and perceived readiness to teach children with ADHD. These three scores were correlated using a Pearson \( r \) correlation. In addition, qualitative responses were coded and categorized.

**Reliability and Validity**

An effort to increase the reliability of the research was made in the careful instruction of the test items such as: clarity of wording, providing simple directions, and using items that were neither too difficult or too easy; having a second person check the scoring and conducting a pilot study; and allowing the participants to choose when and where they filled out the questionnaire. By using currently used educational psychology text books as sources for test items in the knowledge part of the questionnaire, content validity was enhanced.
The primary objective of this study was to gather information concerning the knowledge and opinions of preservice teachers regarding ADHD and teaching students with this disorder. In order to do this a questionnaire was developed which incorporated the areas of knowledge, perceptions and attitudes of the preservice teachers. The data was analyzed using the SPSS system which generated frequencies and percentages of responses and further correlations were made using the Pearson r method. Although the method used was primarily quantitative, an attempt to gather more qualitative information was made through the provision in the questionnaire for additional feedback from the participants. Many of the preservice teachers chose to do this and this information was coded and included in the study.
RESULTS

Introduction

The order of presentation for the results of this study follows the format of the questionnaire in Parts I, II and III. In Part IV, the findings regarding knowledge of the preservice teachers are included under the following categories: the nature of ADHD, the prevalence of ADHD, primary and secondary symptoms of ADHD, etiology of ADHD, assessment and diagnosis of ADHD, treatment of ADHD and classroom management of ADHD.

Patterns of responses were evident in the personal comments provided by the preservice teachers in the questionnaire. These were coded and included following the appropriate Table.

Part I: Demographic Information

The majority of the preservice teachers who took part in this study were female students in the 20-25 years of age category and enrolled in one of the four year B.Ed. programs. These figures are shown in Table 1. The term “Other” refers to the five year B.Ed. (n=3) and BACC (n=2) programs.
Age & Gender of Preservice Teachers & Type of Program

<table>
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<th>Age</th>
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<th>Percent</th>
<th>Gender</th>
<th>n</th>
<th>Percent</th>
<th>Program</th>
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<td>20-25</td>
<td>44</td>
<td>68.8</td>
<td>Female</td>
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<td>71.9</td>
<td>4 Yr B.Ed.</td>
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<tr>
<td>Other</td>
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<td>4.7</td>
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<td>64</td>
<td>100</td>
<td></td>
<td>64</td>
<td>100</td>
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</tr>
</tbody>
</table>

As reported in Table 2, the majority of the study group had taken a university class which provided them with information concerning ADHD. These classes are listed. In addition, the following classes were also mentioned by a small number of participants: EPSY 225 (n=2), EPSY 324 (n=2), EPSY 325 (n=2), EPSY 326 (n=2), and EPSY 350 (n=3).

Table 2

University Classes Taken With ADHD Content

<table>
<thead>
<tr>
<th>Classes</th>
<th>n</th>
<th>Percent</th>
<th>Specified</th>
<th>n</th>
<th>Percent</th>
<th>Classes</th>
<th>n</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>41</td>
<td>64.1</td>
<td>Yes</td>
<td>38</td>
<td>59.4</td>
<td>EPSY 322</td>
<td>21</td>
<td>32.8</td>
</tr>
<tr>
<td>No</td>
<td>23</td>
<td>35.9</td>
<td>No</td>
<td>26</td>
<td>40.6</td>
<td>PAS 290</td>
<td>7</td>
<td>10.9</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>PSYC 210</td>
<td>4</td>
<td>6.3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>PSYC 100</td>
<td>4</td>
<td>6.3</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Totals</td>
<td>64</td>
<td>100</td>
<td>64</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Although the self rating scale in this section of the questionnaire indicated that the majority of preservice teachers had contact with children or adolescents with ADHD and perceived themselves as knowledgeable of this disorder and prepared to teach students with ADHD, there were a number of participants who noted that they had very little contact with youth with this disorder, perceived themselves as having little knowledge of ADHD and were unprepared to teach students with this disorder. These results are given in Tables 3 and 4.

The preservice teachers provided feedback which indicated their desire to learn more about ADHD. One student wrote that she felt “very confused” about ADHD. She acknowledged that there were “conflicting opinions regarding what causes it and what works to control it” and suggested that “student teachers definitely need more information, not just speculation and opinion about this disorder”. Another individual added the following:

“I would like to learn more about the disorder (scientific facts & studies) and also teaching strategies to better my communication and teacher role with students.”

In terms of perceived readiness to work with students with ADHD, the following feedback was provided by the preservice teachers:

“I do not feel adequately prepared to work effectively with ADHD students.”

“This (ADHD) is definitely a growing concern in today’s schools and the 1980's mentality of the university is really missing the boat. As teachers we have to be able to deal with students with all types of disabilities, and going out into the work
Work or life experiences with children and/or adolescents with ADHD were perceived by the majority of respondents as essential and/or useful in their preparation to work effectively with such students. Similar results for informal contacts with parents
to be essential and the latter to be useful. University classes were primarily rated as somewhat useful and useful. Almost the equivalent number of preservice teachers rated classes as being useful in relationship to the number of those who rated classes as not being useful.

There was a great deal of feedback concerning preservice teachers' opinions regarding the importance of university classes in providing information about ADHD. These comments include the following:

“A class during one's University education on various disorders found in children would be very beneficial to student teachers, especially concerning ADD & ADHD.”

“We have had no training for dealing with ADHD students in our program. Professor X spoke to one of our classes on one occasion and there was a brief mention of Ritalin (but nothing of ADHD). I think that all students should be required to take a class in how to deal with students with special needs.”

“I feel that secondary students would very much benefit from taking a compulsory special needs course that deals with ADHD as well as ADD and other learning disabilities. I think that some forget that this disorder does not manifest in elementary school and stop in high school. Teachers need to understand what this is and how to deal with it rather than ignoring it and becoming frustrated at the students.”

“I believe teachers in the field and preservice teachers have a fear of kids with ADHD. Definitely more information and training is required. The more
be to know how to deal with each child's individual symptoms.’”

Table 5

<table>
<thead>
<tr>
<th></th>
<th>Work/Life Experiences</th>
<th>Informal Contacts</th>
<th>University Classes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>Percent</td>
<td>n</td>
</tr>
<tr>
<td>Essential</td>
<td>31</td>
<td>48.4</td>
<td>20</td>
</tr>
<tr>
<td>Useful</td>
<td>24</td>
<td>37.5</td>
<td>30</td>
</tr>
<tr>
<td>Somewhat</td>
<td>6</td>
<td>9.4</td>
<td>8</td>
</tr>
<tr>
<td>Not Useful</td>
<td>1</td>
<td>1.6</td>
<td>3</td>
</tr>
<tr>
<td>No Response</td>
<td>2</td>
<td>3.1</td>
<td>3</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>64</td>
<td>100</td>
<td>64</td>
</tr>
</tbody>
</table>

The practicum experience was primarily considered useful and/or essential by the majority of the respondents. These figures are given in Table 6. The majority of the study group rated printed materials (books, journal articles) to be useful and/or somewhat useful, as shown in Table 6. Ratings for popular media (television, newspapers, magazines) were similar although higher for the former as useful and for the latter as somewhat useful. There were a number of individuals who considered popular media to be not useful. Not one person perceived popular media as essential.

Several participants wrote that they had very little exposure to children with ADHD and that the only experience they had with the disorder was during their internship. Two respondents wrote:

“I do believe that it seems to be the catch phrase of the day to talk about ADHD and Ritalin. However, I also believe that it is a real problem that needs to be
know I was at a complete loss when I began just a few months ago and was faced with a student with ADHD!"

"Experience working with children who have these disorders is better than if information is simply given to students. Information & experience combined would be ideal. We need to know how to help diagnose the problem but we also need to learn how to work with them so that all can learn."

Table 6

**Practicum, Printed Materials and Popular Media**

<table>
<thead>
<tr>
<th></th>
<th>Practicum</th>
<th>Printed Materials</th>
<th>Popular Media</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>Percent</td>
<td>n</td>
<td>Percent</td>
</tr>
<tr>
<td>Essential</td>
<td>20</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>31.3</td>
<td>6.3</td>
<td>0</td>
</tr>
<tr>
<td>Useful</td>
<td>22</td>
<td>29</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>34.4</td>
<td>45.3</td>
<td>32.8</td>
</tr>
<tr>
<td>Somewhat</td>
<td>12</td>
<td>24</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td>18.8</td>
<td>37.5</td>
<td>48.4</td>
</tr>
<tr>
<td>Not Useful</td>
<td>6</td>
<td>3</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>9.4</td>
<td>4.7</td>
<td>17.2</td>
</tr>
<tr>
<td>No Response</td>
<td>4</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>6.3</td>
<td>6.3</td>
<td>1.6</td>
</tr>
<tr>
<td>Totals</td>
<td>64</td>
<td>64</td>
<td>64</td>
</tr>
<tr>
<td></td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

A large majority of the respondents did not perceive anything else as important and useful in their preparation to work effectively with students with ADHD (n=58). Those that responded to this question (n=6) included: books, discussions with S.P.E.D. teachers in other public school systems, peer discussion (sharing information and scenario experience), talking with others and volunteer experience.
Approximately one half of the preservice teachers disagreed and/or strongly disagreed with the statement that ADHD is a current fad and an equivalent number of respondents agreed that a diagnosis of ADHD is helpful for children to understand and take responsibility for their behaviour. There were a number of individuals who were uncertain about both of these statements, as indicated in Table 7. The majority of respondents agreed and/or strongly agreed that too many children are being diagnosed with ADHD.

The following comments were written by a number of the preservice teachers:

"I don't think it (ADHD) is just a fad of the 90's but I'm afraid many people will continue to view it as such unless more information is provided to them. It would also be beneficial for teachers and school divisions to have access to more information (possibly a seminar or booklet)."

"ADHD is a label and children often react strongly against such and especially if it seems to make life more difficult instead of easier."

"I do believe there is a true diagnosis of ADHD, and that many do have it. However, I also think that it's being misdiagnosed. Some kids do have behaviour problems and parents/teachers don't own up to it."
ADHD is a Current Fad, A Diagnosis is Helpful and ADHD is Overdiagnosed

<table>
<thead>
<tr>
<th>Response</th>
<th>Fad</th>
<th></th>
<th>Percent</th>
<th>Helpful</th>
<th></th>
<th>Percent</th>
<th>Overdiagnosis</th>
<th></th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly agree</td>
<td>2</td>
<td>3.1</td>
<td></td>
<td>3</td>
<td>4.8</td>
<td></td>
<td>18</td>
<td>28.1</td>
<td></td>
</tr>
<tr>
<td>Agree</td>
<td>16</td>
<td>25.0</td>
<td></td>
<td>30</td>
<td>46.9</td>
<td></td>
<td>24</td>
<td>37.5</td>
<td></td>
</tr>
<tr>
<td>Uncertain</td>
<td>13</td>
<td>20.3</td>
<td></td>
<td>16</td>
<td>25.0</td>
<td></td>
<td>16</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>Disagree</td>
<td>24</td>
<td>37.5</td>
<td></td>
<td>11</td>
<td>17.2</td>
<td></td>
<td>6</td>
<td>9.4</td>
<td></td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>7</td>
<td>10.9</td>
<td></td>
<td>3</td>
<td>4.7</td>
<td></td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>No Response</td>
<td>2</td>
<td>3.1</td>
<td></td>
<td>1</td>
<td>1.6</td>
<td></td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Totals</td>
<td>64</td>
<td>100</td>
<td></td>
<td>64</td>
<td>100</td>
<td></td>
<td>64</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

Over three quarters of the preservice teachers agreed and/or strongly agreed that students with ADHD would benefit from being taught in the regular classroom. Over one half of the study group agreed and/or strongly agreed that too many children diagnosed with ADHD are being given stimulant medication while an equivalent number of participants were uncertain about whether children outgrow this disorder, as displayed in Table 8.

One participant wrote:

"Some people, perhaps ignorantly, worry an ADHD child in the "regular" classroom will rob other students of the teacher's attention. I've been involved in a situation where an ADHD child was placed in a classroom of older children in hopes they would have a calming influence on him."

Another response given was:
such a young age can only affect the development of the brain and create a dependency on medications later in life."

Table 8

**Inclusion, Overuse of Stimulant Medication and A Lifelong Disorder**

<table>
<thead>
<tr>
<th>Response</th>
<th>Inclusion</th>
<th></th>
<th></th>
<th>Overuse</th>
<th></th>
<th></th>
<th>Lifelong</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>Percent</td>
<td></td>
<td>n</td>
<td>Percent</td>
<td></td>
<td>n</td>
<td>Percent</td>
<td></td>
</tr>
<tr>
<td>Strongly agree</td>
<td>15</td>
<td>23.4</td>
<td></td>
<td>18</td>
<td>28.1</td>
<td></td>
<td>3</td>
<td>4.7</td>
<td></td>
</tr>
<tr>
<td>Agree</td>
<td>34</td>
<td>53.1</td>
<td></td>
<td>19</td>
<td>29.7</td>
<td></td>
<td>18</td>
<td>28.1</td>
<td></td>
</tr>
<tr>
<td>Uncertain</td>
<td>14</td>
<td>21.9</td>
<td></td>
<td>24</td>
<td>37.5</td>
<td></td>
<td>35</td>
<td>54.7</td>
<td></td>
</tr>
<tr>
<td>Disagree</td>
<td>1</td>
<td>1.6</td>
<td></td>
<td>2</td>
<td>3.1</td>
<td></td>
<td>8</td>
<td>12.5</td>
<td></td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>0</td>
<td>0</td>
<td></td>
<td>0</td>
<td>0</td>
<td></td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>No Response</td>
<td>0</td>
<td>0</td>
<td></td>
<td>1</td>
<td>1.6</td>
<td></td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Totals</td>
<td>64</td>
<td>100</td>
<td></td>
<td>64</td>
<td>100</td>
<td></td>
<td>64</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

As indicated in Table 9, over three quarters of the participants disagreed and/or strongly disagreed with the statement that students with ADHD just need to try harder, while almost two thirds of the respondents agreed and/or strongly agreed that ADHD is a serious disorder that requires more attention. Almost one third of the study group were uncertain about the latter statement. Slightly over one half of the preservice teachers disagreed and/or strongly disagreed that adolescents should never be given ritalin, while close to one third were uncertain. A little over one third of the participants were uncertain whether parents of children with ADHD need to take more responsibility for their child's behaviour, while slightly less numbers agreed.
"During my internship, I worked closely with a student with severe problems getting through the day without something going wrong. I do think that a program that combined medication with anger management and social skill development would be best for R!"

"The students that I have worked with have been using Ritalin. They are male and all of them were very small for their ages. I am concerned that Ritalin affects their physical development (I am speaking about 5 teenage boys - all of whom for this is true)."

Table 9

Management and Treatment of ADHD, Adolescents and Ritalin and Parents and Responsibility

<table>
<thead>
<tr>
<th>Response</th>
<th>Try Harder</th>
<th></th>
<th>Serious Disorder</th>
<th></th>
<th>Ritalin</th>
<th></th>
<th>Parents</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>Percent</td>
<td>n</td>
<td>Percent</td>
<td>n</td>
<td>Percent</td>
<td>n</td>
<td>Percent</td>
</tr>
<tr>
<td>Strongly agree</td>
<td>0</td>
<td>0</td>
<td>8</td>
<td>12.5</td>
<td>1</td>
<td>1.6</td>
<td>7</td>
<td>10.9</td>
</tr>
<tr>
<td>Agree</td>
<td>6</td>
<td>9.4</td>
<td>33</td>
<td>51.6</td>
<td>6</td>
<td>9.4</td>
<td>20</td>
<td>31.3</td>
</tr>
<tr>
<td>Uncertain</td>
<td>7</td>
<td>10.9</td>
<td>18</td>
<td>28.1</td>
<td>20</td>
<td>31.3</td>
<td>23</td>
<td>35.9</td>
</tr>
<tr>
<td>Disagree</td>
<td>33</td>
<td>51.6</td>
<td>2</td>
<td>3.1</td>
<td>30</td>
<td>46.9</td>
<td>10</td>
<td>15.6</td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>17</td>
<td>26.6</td>
<td>1</td>
<td>1.6</td>
<td>5</td>
<td>7.8</td>
<td>3</td>
<td>4.7</td>
</tr>
<tr>
<td>No Response</td>
<td>1</td>
<td>1.6</td>
<td>2</td>
<td>3.1</td>
<td>2</td>
<td>3.1</td>
<td>1</td>
<td>1.6</td>
</tr>
<tr>
<td>Totals</td>
<td>64</td>
<td>100</td>
<td>64</td>
<td>100</td>
<td>64</td>
<td>100</td>
<td>64</td>
<td>100</td>
</tr>
</tbody>
</table>
Table 10A

**The Nature of ADHD**

Which one of the following statements is most accurate concerning ADHD?

<table>
<thead>
<tr>
<th>Response</th>
<th>n</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. serious disorder that emerges after the age of 7</td>
<td>3</td>
<td>4.7</td>
</tr>
<tr>
<td>b. disorder of the 90's used to describe children with problem behavior</td>
<td>6</td>
<td>9.4</td>
</tr>
<tr>
<td>*c. life long disorder that emerges in early childhood and continues into adolescence and adulthood</td>
<td>37</td>
<td>57.8</td>
</tr>
<tr>
<td>d. disorder describing children and/or adolescents who are hyperactive</td>
<td>17</td>
<td>26.6</td>
</tr>
<tr>
<td>No Response</td>
<td>1</td>
<td>1.6</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>64</td>
<td>100</td>
</tr>
</tbody>
</table>

Although both hyperactivity and inattention are primary symptoms of ADHD, the key issue in understanding this disorder is impulse control. This concept was understood by 25% of the preservice teachers, as indicated in Table 10B. This fundamental understanding of ADHD is critical knowledge for preservice teachers.

Table 10B

**The Nature of ADHD**

According to current theories, which of the following is primary in understanding ADHD?

<table>
<thead>
<tr>
<th>Response</th>
<th>n</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. hyperactivity</td>
<td>15</td>
<td>23.4</td>
</tr>
<tr>
<td>b. inattention</td>
<td>22</td>
<td>34.4</td>
</tr>
<tr>
<td>*c. impulse control</td>
<td>16</td>
<td>25.0</td>
</tr>
<tr>
<td>d. toxins</td>
<td>6</td>
<td>9.4</td>
</tr>
<tr>
<td>No Response</td>
<td>5</td>
<td>7.8</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>64</td>
<td>100</td>
</tr>
</tbody>
</table>
in understanding ADHD (n=35), a number of the sample group thought that heredity (n=11), or abnormalities of the brain (n=8) were also irrelevant. These figures are shown in Table 10C. Both hereditary and brain dysfunction are key concepts in the etiology of this disorder and preservice teachers need to know this information.

Table 10C

**The Nature of ADHD**

Which of the following is not a current theory about ADHD?

<table>
<thead>
<tr>
<th>Response</th>
<th>n</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. caused by brain dysfunction</td>
<td>4</td>
<td>6.3</td>
</tr>
<tr>
<td>*b. caused by brain damage</td>
<td>35</td>
<td>54.7</td>
</tr>
<tr>
<td>c. heritable with a neurological basis</td>
<td>11</td>
<td>17.2</td>
</tr>
<tr>
<td>d. caused by anomalies in the brain</td>
<td>8</td>
<td>12.5</td>
</tr>
<tr>
<td>No Response</td>
<td>6</td>
<td>9.4</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>64</td>
<td>100</td>
</tr>
</tbody>
</table>

As indicated by Table 10D, the majority of preservice teachers understood that ADHD is a complex disorder with varying symptomatology among individuals (n=56).
The Nature of ADHD

Which one of the following statements is most true about ADHD?

<table>
<thead>
<tr>
<th>Response</th>
<th>n</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. can be cured if the proper treatment program is followed</td>
<td>5</td>
<td>7.8</td>
</tr>
<tr>
<td>b. can be easily diagnosed with the aid of teacher and parent rating scales</td>
<td>1</td>
<td>1.6</td>
</tr>
<tr>
<td>*c. complex disorder with patterns of symptoms differing with each individual</td>
<td>56</td>
<td>87.5</td>
</tr>
<tr>
<td>d. can be prevented with good parenting skills</td>
<td>1</td>
<td>1.6</td>
</tr>
<tr>
<td>No Response</td>
<td>1</td>
<td>1.6</td>
</tr>
</tbody>
</table>

Totals: 64

Approximately one third of the preservice teachers thought the prevalence of ADHD to be considerably higher than the current acceptable figure of 3%-5% as shown in Table 11.

Table 11

The Prevalence of ADHD

Approximately what percentage of school-aged children are affected by ADHD?

<table>
<thead>
<tr>
<th>Response</th>
<th>n</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. 0%- 1%</td>
<td>1</td>
<td>1.6</td>
</tr>
<tr>
<td>*b. 3%- 5%</td>
<td>29</td>
<td>45.3</td>
</tr>
<tr>
<td>c. 10%- 15%</td>
<td>32</td>
<td>50.0</td>
</tr>
<tr>
<td>d. 16%- 20%</td>
<td>2</td>
<td>3.1</td>
</tr>
</tbody>
</table>

Totals: 64

As indicated in Table 12A, the majority of the preservice teachers knew that hyperactivity, impulsivity and inattention are primary symptoms of ADHD (n=39).
Primary and Secondary Symptoms of ADHD

The primary symptoms of ADHD are:

Response  | n | Percent |
-----------|---|---------|
a. hyperactivity and aggressive behavior | 2 | 3.1 |
b. peer rejection and social immaturity | 0 | 0 |
c. hyperactivity, impulsivity and inattention | 39 | 60.9 |
d. inattention and inability to focus | 20 | 31.3 |
No Response | 3 | 4.7 |
**Totals** | **64** | **100** |

A large number of preservice teachers were aware that academic underachievement and family difficulties are secondary symptoms and related problems of ADHD (n=46). However, there were a number of individuals who thought that loss of memory (n=12), and muscular deterioration and/or language and speech problems (n=6) are also secondary symptoms. These figures are shown in Table 12B. There is no evidence in the research to support these two viewpoints.

Table 12B

Primary and Secondary Symptoms of ADHD

Secondary symptoms and related problems in ADHD cases often include:

Response  | n | Percent |
-----------|---|---------|
*a. academic underachievement and family difficulties* | 46 | 71.9 |
b. loss of memory for factual information and retrieval cues | 12 | 18.8 |
c. muscular deterioration and loss of motor coordination | 4 | 6.3 |
d. a language deficiency and a speech impediment | 2 | 3.1 |
**Totals** | **64** | **100** |
children and adolescents with ADHD have difficulty with rules and regulations (n=30). However, the remaining responses are not descriptive of individuals with this disorder as the latter have a great deal of difficulty sustaining effort and interest, doing what they know and doing well with low-demand situations.

Table 12C

**Primary and Secondary Symptoms of ADHD**

Which of the following is descriptive of children and adolescents with ADHD?

<table>
<thead>
<tr>
<th>Response</th>
<th>n</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. little difficulty sustaining effort and interest</td>
<td>13</td>
<td>20.3</td>
</tr>
<tr>
<td>b. little difficulty in doing what they know</td>
<td>12</td>
<td>18.8</td>
</tr>
<tr>
<td>*c. difficulty with rules and regulations</td>
<td>30</td>
<td>46.9</td>
</tr>
<tr>
<td>d. difficulty with low-demand situations</td>
<td>7</td>
<td>10.9</td>
</tr>
<tr>
<td>No Response</td>
<td>2</td>
<td>3.1</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>64</td>
<td>100</td>
</tr>
</tbody>
</table>

The majority of preservice teachers were aware that disruptive behaviour and learning disabilities contributed to peer rejection of children with ADHD (n=50). However, perfectionist and compulsive tendencies and/or shyness and social withdrawal are not normally considered to be descriptive of children with this disorder (n=9). These figures are given in Table 12D.
Primary and Secondary Symptoms of ADHD

Children and adolescents with ADHD are more likely to be rejected by their peers because of:

<table>
<thead>
<tr>
<th>Response</th>
<th>n</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. shyness and social withdrawal</td>
<td>4</td>
<td>6.3</td>
</tr>
<tr>
<td>*b. disruptive behavior and learning disabilities</td>
<td>50</td>
<td>78.1</td>
</tr>
<tr>
<td>c. perfectionist and compulsive tendencies</td>
<td>5</td>
<td>7.8</td>
</tr>
<tr>
<td>d. parent and/or teacher favoritism</td>
<td>1</td>
<td>1.6</td>
</tr>
<tr>
<td>No Response</td>
<td>4</td>
<td>6.3</td>
</tr>
<tr>
<td>Totals</td>
<td>64</td>
<td>100</td>
</tr>
</tbody>
</table>

As indicated in Table 12E, over two thirds of the preservice teachers understood that lower IQ scores are not descriptive of adolescents with ADHD (n=44). While a number of participants thought that antisocial behaviour, depression and low self-esteem are not descriptive of this disorder (n=18), each of these can be comorbid with ADHD.

Table 12E

Primary and Secondary Symptoms of ADHD

Which of the following is not descriptive of adolescents with ADHD?

<table>
<thead>
<tr>
<th>Response</th>
<th>n</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. antisocial behavior</td>
<td>13</td>
<td>20.3</td>
</tr>
<tr>
<td>b. anxiety and depression</td>
<td>3</td>
<td>4.7</td>
</tr>
<tr>
<td>c. low self-esteem</td>
<td>2</td>
<td>3.1</td>
</tr>
<tr>
<td>*d. lower than average IQ scores</td>
<td>44</td>
<td>68.8</td>
</tr>
<tr>
<td>No Response</td>
<td>2</td>
<td>3.1</td>
</tr>
<tr>
<td>Totals</td>
<td>64</td>
<td>100</td>
</tr>
</tbody>
</table>

The majority of preservice teachers understood that interpreting social cues is a problem for children and adolescents with ADHD (n=44). However, a number of
(n=13), and impulsivity and/or waiting turns was not a problem (n=5). These figures are given in Table 12F. All three of these descriptors are features of this disorder.

Table 12F

**Primary and Secondary Symptoms of ADHD**

Which of the following is not descriptive of children and adolescents with ADHD?

<table>
<thead>
<tr>
<th>Response</th>
<th>n</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. difficulty controlling their motor activity in social situations</td>
<td>13</td>
<td>20.3</td>
</tr>
<tr>
<td>b. seldom allow time to think before they act</td>
<td>3</td>
<td>4.7</td>
</tr>
<tr>
<td>c. often have difficulty with waiting their turn</td>
<td>2</td>
<td>3.1</td>
</tr>
<tr>
<td>*d. seldom have difficulty encoding social cues</td>
<td>44</td>
<td>68.8</td>
</tr>
<tr>
<td>No Response</td>
<td>2</td>
<td>3.1</td>
</tr>
<tr>
<td>Totals</td>
<td>64</td>
<td>100</td>
</tr>
</tbody>
</table>

As indicated in Table 13, the majority of the preservice teachers understood the underlying genetic base of this disorder (n=42). However, there were a number of the preservice teachers who believed that environmental toxins are a primary cause of the disorder (n=15). There is no current research to support the view that either environmental toxins or parenting play any role in the etiology of ADHD.

There was an equal number of preservice teachers who chose the **DSM-IV** as the best source of information with regards to the assessment and diagnosis of ADHD as those who chose not to respond to this question (n=16). **Handbook of Psychological Assessment** was considered the best source by the highest number of preservice teachers (n=22). These figures are presented in Table 14.
**Etiology of ADHD**

Which of the following is believed to be the primary cause of ADHD?

<table>
<thead>
<tr>
<th>Response</th>
<th>n</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>birth trauma</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>environmental toxins</td>
<td>15</td>
<td>23.4</td>
</tr>
<tr>
<td>*genetics</td>
<td>42</td>
<td>65.6</td>
</tr>
<tr>
<td>poor parenting</td>
<td>2</td>
<td>3.1</td>
</tr>
<tr>
<td>No Response</td>
<td>5</td>
<td>7.8</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Table 14

**Assessment and Diagnosis of ADHD**

What is the best source of information concerning the assessment and diagnosis of ADHD?

<table>
<thead>
<tr>
<th>Response</th>
<th>n</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Mental Measurements Yearbook</td>
<td>3</td>
<td>4.7</td>
</tr>
<tr>
<td>*b. DSM-IV</td>
<td>16</td>
<td>25.0</td>
</tr>
<tr>
<td>c. Tests In Print</td>
<td>7</td>
<td>10.9</td>
</tr>
<tr>
<td>d. Handbook of Psychological Assessment</td>
<td>22</td>
<td>34.4</td>
</tr>
<tr>
<td>No Response</td>
<td>16</td>
<td>25.0</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>64</td>
<td>100</td>
</tr>
</tbody>
</table>

Although communication and cooperation between home and school is important in the success of a treatment program for students with ADHD, as indicated by 67% of
multi modal treatment program. See Table 15A.

Table 15A

**Treatment of ADHD**

Which is considered to be crucial in the treatment of children and adolescents with ADHD?

<table>
<thead>
<tr>
<th>Response</th>
<th>n</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. communication and cooperation between home and school</td>
<td>43</td>
<td>67.2</td>
</tr>
<tr>
<td>b. respect and consideration between the child or adolescent and parent</td>
<td>3</td>
<td>4.7</td>
</tr>
<tr>
<td>c. anger management and social skills training</td>
<td>5</td>
<td>7.8</td>
</tr>
<tr>
<td>*d. the use of medication as part of a multi treatment program</td>
<td>13</td>
<td>20.3</td>
</tr>
</tbody>
</table>

**Totals**

|                                      | 64  | 100     |

As indicated in Table 15B, almost one half of the participants thought dizziness and tiredness are common side effects of taking ritalin (n=31). The side effects most often include headaches, insomnia and stomachaches, as was known by a smaller number of the participants (n=24). It would be important for the teacher to understand that a student's complaint of a stomachache or headache might be related to the use of ritalin, as well as the student starting the school day being tired and/or irritable due to lack of sleep. These side effects would impact on the student's performance during school, especially the ability to concentrate.
Treatment of ADHD

Common side effects of taking ritalin include:

<table>
<thead>
<tr>
<th>Response</th>
<th>n</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. chest pain and shortness of breath</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>b. feelings of dizziness and being tired all the time</td>
<td>31</td>
<td>48.4</td>
</tr>
<tr>
<td>c. increased appetite and weight gain</td>
<td>4</td>
<td>6.3</td>
</tr>
<tr>
<td>d. stomachaches, headaches and insomnia</td>
<td>24</td>
<td>37.5</td>
</tr>
<tr>
<td>No Response</td>
<td>5</td>
<td>7.8</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>64</td>
<td>100</td>
</tr>
</tbody>
</table>

While over one half of the participants were aware that ignoring behaviour was not part of a behaviour-management program in the classroom \((n=38)\), there were a number of individuals who thought that response costs are also not part of a program \((n=20)\). These figures are shown in Table 16A.

Table 16A

**Classroom Management of ADHD**

Which of the following would not be part of a behavior-management program in the classroom?

<table>
<thead>
<tr>
<th>Response</th>
<th>n</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. response costs</td>
<td>20</td>
<td>31.3</td>
</tr>
<tr>
<td>*b. ignoring behavior</td>
<td>38</td>
<td>59.4</td>
</tr>
<tr>
<td>c. time-out</td>
<td>1</td>
<td>1.6</td>
</tr>
<tr>
<td>d. reward menus</td>
<td>4</td>
<td>63</td>
</tr>
<tr>
<td>No Response</td>
<td>1</td>
<td>1.6</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>64</td>
<td>100</td>
</tr>
</tbody>
</table>
checking comprehension after short reading passages is a beneficial teaching strategy for students with ADHD (n=41).

Table 16B

**Classroom Management of ADHD**

Which of the following teaching strategies benefit students with ADHD?

<table>
<thead>
<tr>
<th>Response</th>
<th>n</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. providing lengthy and elaborate oral instructions for tasks</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>*b. checking comprehension after short reading passages</td>
<td>41</td>
<td>64.1</td>
</tr>
<tr>
<td>c. highlighting spelling words with colour cues before practising the words</td>
<td>15</td>
<td>23.4</td>
</tr>
<tr>
<td>d. shortening time allotted to complete math assignments</td>
<td>2</td>
<td>3.1</td>
</tr>
<tr>
<td>No Response</td>
<td>6</td>
<td>9.4</td>
</tr>
<tr>
<td>Totals</td>
<td>64</td>
<td>100</td>
</tr>
</tbody>
</table>

The majority of preservice teachers understood that the simplification of tasks into short steps is a successful teaching strategy as indicated in Table 16C (n=57).

As indicated in Table 16D, a high percentage of the participants were aware that shorter assignments, immediate feedback and positive reinforcement are successful teaching strategies (n=53). It would be important as well, for the preservice teachers to know that grade retention has proved to be an unsuccessful strategy, as has sending homework home.
Classroom Management of ADHD

Successful strategies used in teaching students with ADHD include:

### Response

- **a. simplification of tasks into a number of short steps**
  - **n = 57**
  - **Percent = 89.1**
- **b. elimination of notetaking**
  - **n = 3**
  - **Percent = 4.7**
- **c. discouragement of working with partners**
  - **n = 3**
  - **Percent = 4.7**
- **d. reduction of physical activity in the classroom**
  - **n = 0**
  - **Percent = 0**

**No Response**
- **n = 1**
- **Percent = 1.6**

**Totals**
- **n = 64**
- **Percent = 100**

Table 16D

Classroom Management of ADHD

Which of the following has proven to be successful in working with children and adolescents with ADHD?

### Response

- **a. shorter assignments, immediate feedback and positive reinforcement**
  - **n = 53**
  - **Percent = 82.8**
- **b. infrequent breaks and preferential seating**
  - **n = 1**
  - **Percent = 1.8**
- **c. frequent breaks and sending uncompleted homework home to finish**
  - **n = 2**
  - **Percent = 6.3**
- **d. grade retention and being with other children at the same level**
  - **n = 2**
  - **Percent = 3.1**

**No Response**
- **n = 4**
- **Percent = 6.3**

**Totals**
- **n = 64**
- **Percent = 100**

Slightly over one half of the sample group knew that frequent monitoring of behavior and enforcement of consequences are key tools for the teacher to use in facilitating a successful learning experience for the student with ADHD (n=35). It would
rules (n=13) and/or a high degree of structure and a detailed lists of rules and regulations are necessary (n=11) to understand that a high degree of structure, a brief list of key rules and regulations and a high degree of discipline and enforcement of consequences have proven to be crucial in a successful learning experience for students with ADHD (see Table 16E).

Table 16E

**Classroom Management of ADHD**

In order to facilitate a successful learning experience for the child or adolescent with ADHD, it is most important for the teacher to provide:

<table>
<thead>
<tr>
<th>Response</th>
<th>n</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. high degree of structure and a detailed list of rules and regulations</td>
<td>11</td>
<td>17.2</td>
</tr>
<tr>
<td>b. minimal structure and a few basic rules and regulations</td>
<td>13</td>
<td>20.3</td>
</tr>
<tr>
<td>*c. frequent monitoring of behavior and enforcement of consequences</td>
<td>35</td>
<td>54.7</td>
</tr>
<tr>
<td>d. minimal discipline and enforcement of consequences</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>No Response</td>
<td>5</td>
<td>7.8</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>64</td>
<td>100</td>
</tr>
</tbody>
</table>

**Summary**

**The Knowledge of Preservice Teachers**

The responses given in three questions pertaining to the nature of the disorder and teaching strategies which focus on building successful learning experiences for students with ADHD in Part IV of the questionnaire indicate that these are the strongest areas of knowledge about this disorder by the participating preservice teachers. Table 17 provides
The highest percentage of participants endorsement is evident in question thirteen regarding the teaching strategy of simplifying tasks into a number of short steps. It would also be important for preservice teachers to be aware that working with a "buddy" has proven to be very helpful for these students. The second highest endorsement by the preservice teachers concerns the understanding of ADHD as a complex disorder showing itself in a variety of symptoms differing with each individual.

The weakest areas of knowledge about ADHD by the participating preservice teachers was evident in the more technical responses dealing with the diagnosis and treatment of this disorder. Only one quarter of the participants knew that the DSM-IV was the best source of information in this area (n=16). The DSM-IV is quoted and/or reproduced in a number of textbooks currently used in teaching classes in educational psychology. These include: Borich & Tombari, 1997, Friend & Bursuck, 1996, Hunt & Marshall, 1994, Lefrancois, 1997, and Ysseldyke & Algozzine, 1995. One of the standard rating scales used in assessment and diagnosis of ADHD requires the input by the teacher. Thus one would expect that preservice teachers be aware of the criteria used for assessment and diagnosis of ADHD.
### Areas of Knowledge and Correct Responses

<table>
<thead>
<tr>
<th>Area of K</th>
<th>Question Number and Response</th>
<th>n</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>classroom management</td>
<td>13: simplification of tasks</td>
<td>57</td>
<td>89.1</td>
</tr>
<tr>
<td>nature</td>
<td>17: complex disorder with differing symptoms</td>
<td>56</td>
<td>87.5</td>
</tr>
<tr>
<td>classroom management</td>
<td>16: feedback and positive reinforce</td>
<td>53</td>
<td>82.8</td>
</tr>
<tr>
<td>symptoms</td>
<td>14: disruptive behaviour and LD</td>
<td>50</td>
<td>78.1</td>
</tr>
<tr>
<td>symptoms</td>
<td>8: academic and family difficulties</td>
<td>46</td>
<td>71.9</td>
</tr>
<tr>
<td>symptoms</td>
<td>15: lower IQ scores</td>
<td>44</td>
<td>68.8</td>
</tr>
<tr>
<td>symptoms</td>
<td>19: encoding social cues</td>
<td>44</td>
<td>68.8</td>
</tr>
<tr>
<td>etiology</td>
<td>4: genetics</td>
<td>42</td>
<td>65.6</td>
</tr>
<tr>
<td>classroom management</td>
<td>10: checking comprehension</td>
<td>41</td>
<td>64.1</td>
</tr>
<tr>
<td>symptoms</td>
<td>3: hyperactivity, impulsivity and inattention</td>
<td>39</td>
<td>60.9</td>
</tr>
<tr>
<td>classroom management</td>
<td>7: ignoring behaviour</td>
<td>38</td>
<td>59.4</td>
</tr>
<tr>
<td>nature</td>
<td>1: life long disorder</td>
<td>37</td>
<td>57.8</td>
</tr>
<tr>
<td>etiology</td>
<td>11: brain damage</td>
<td>35</td>
<td>54.7</td>
</tr>
<tr>
<td>classroom management</td>
<td>20: monitoring and consequences</td>
<td>35</td>
<td>54.7</td>
</tr>
<tr>
<td>symptoms</td>
<td>12: rules and regulations</td>
<td>30</td>
<td>46.9</td>
</tr>
<tr>
<td>prevalence</td>
<td>2: 3%-5%</td>
<td>29</td>
<td>45.3</td>
</tr>
<tr>
<td>treatment</td>
<td>18: stomachaches, headaches and insomnia</td>
<td>24</td>
<td>37.5</td>
</tr>
<tr>
<td>diagnosis</td>
<td>5: DSM-IV</td>
<td>16</td>
<td>25</td>
</tr>
<tr>
<td>nature</td>
<td>9: impulse control</td>
<td>16</td>
<td>25</td>
</tr>
<tr>
<td>treatment</td>
<td>6: multi treatment program</td>
<td>13</td>
<td>20.3</td>
</tr>
</tbody>
</table>
a multimodal treatment program is considered to be crucial \( (n=13) \). Instead, as revealed in question six, over two thirds of the preservice teachers thought that communication and cooperation between home and school is critical \( (n=43) \). While the latter is extremely important in any treatment program, the multimodal model involving home, school, the medical and other professionals, counselling and skill training sessions together with the use of medication is considered ideal by experts in the field.

**The Perceptions of Preservice Teachers**

The self rating scale in this section of the questionnaire indicated that although the majority of preservice teachers had some contact with children with ADHD \( (n=41) \), perceived themselves to have some knowledge concerning children with this disorder \( (n=47) \), and felt somewhat prepared to teach students with ADHD \( (n=52) \).

The majority of preservice teachers perceived work or life experiences as \( (n=31) \), informal contacts as useful \( (n=30) \), university classes as somewhat useful \( (n=16) \), the practicum experience as useful \( (n=22) \) or essential \( (n=20) \), printed material as useful \( (n=29) \), and popular media as somewhat useful \( (n=31) \) in their preparation to work effectively with students with ADHD.

**The Attitudes of Preservice Teachers**

In Part III of the questionnaire dealing with attitudes of preservice teachers towards ADHD, there was a high number of participants who choose uncertain as their response to the ten attitude statements. Of the ten, the following three statements were selected most often: children with ADHD do not outgrow this disorder; too many children diagnosed with ADHD are being given stimulant medication and parents of
Table 18

**Attitude Statements Rated Uncertain**

<table>
<thead>
<tr>
<th>Statement</th>
<th>N</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>6: does not outgrow this disorder</td>
<td>35</td>
<td>54.7</td>
</tr>
<tr>
<td>5: overuse of stimulant medication</td>
<td>24</td>
<td>37.5</td>
</tr>
<tr>
<td>10: responsibility of parents</td>
<td>23</td>
<td>35.9</td>
</tr>
<tr>
<td>9: ritalin and adolescents</td>
<td>20</td>
<td>31.3</td>
</tr>
<tr>
<td>8: serious disorder</td>
<td>18</td>
<td>28.1</td>
</tr>
<tr>
<td>2: diagnosis is helpful</td>
<td>16</td>
<td>25</td>
</tr>
<tr>
<td>3: overdiagnosis of ADHD</td>
<td>16</td>
<td>25</td>
</tr>
<tr>
<td>4: inclusion of students with ADHD</td>
<td>14</td>
<td>21.9</td>
</tr>
<tr>
<td>1: ADHD is a current fad</td>
<td>13</td>
<td>20.3</td>
</tr>
<tr>
<td>7: students with ADHD need to try harder</td>
<td>7</td>
<td>10.9</td>
</tr>
</tbody>
</table>

**The Interrelationship of Knowledge, Perception and Attitude**

Correlation of numerical scores for Knowledge, Attitude and Perceived Readiness to Teach Students with ADHD which had been derived from the data indicated that there was a strong relationship between the preservice teachers’ knowledge of ADHD and their attitude towards ADHD ($r=.42$, $N(64)$, $p<.001$). Similarly, by using the Perceived Readiness to Teach Students with ADHD derived quantitative score and also the Number of University Classes Taken Providing Information about ADHD it was found that the greater the number of university classes providing information concerning ADHD which
students with this ($r = -0.24$, $N(64)$, $p < 0.05$).
**DISCUSSION**

**Introduction**

This study gathered information concerning the knowledge and opinions of preservice teachers concerning ADHD and working with students with this disorder. A five part questionnaire was developed to realize this objective. The preservice teachers were encouraged to provide additional feedback on the final page of the questionnaire. The findings of this study provided answers to the research questions indicated that:

1. In general, the preservice teachers were fairly knowledgeable concerning the nature, symptoms and etiology of ADHD.

2. In general, the preservice teachers were fairly knowledgeable about teaching strategies that would enhance effective learning experiences for children with this disorder.

3. While the majority of preservice teachers had taken a university class which provided them with information about ADHD, only one fifth of the students thought that classes were useful. In contrast, approximately two thirds of the students thought that the practicum experience was either essential or useful.

4. The majority of preservice teachers perceived themselves to be somewhat knowledgeable about ADHD and somewhat ready to teach children with this disorder. However, there were a number of students who perceived themselves as having little knowledge of ADHD and not ready to work with children with this disorder.

5. A large number of the preservice teachers chose the response “uncertain” in completing the attitude scale. Approximately two thirds of the students thought
stimulant medication is overused in the treatment of this disorder and two fifths of the students thought that parents need to become more responsible for the behavior of their children. Approximately 75% of the preservice teachers thought that inclusion of students with ADHD in the regular classroom setting is beneficial for the student.

Conclusion

Course descriptions for the twenty Educational Psychology (EPSY) classes outlined in the University of Regina calendar, of which six specifically deal with Special Education do not identify course content dealing with ADHD. However, one third of the preservice teachers indicated that they had received some information concerning ADHD from EPSY 322 (Students with Special Needs). A small number of participants indicated that they had received some information concerning this disorder from Physical Activity Studies (PAS) 290 (Introduction to Adapted Physical Activities). Fewer numbers mentioned Psychology (PSY) 100 (Introduction to Psychology) and PSY 210 (Developmental Psychology). Several preservice teachers mentioned EPSY 225 (Student Learning and Achievement), EPSY 324 (Individual Assessment and Instructional Adaptation for Students with Special Needs), EPSY 325 (The Psychology of Adjustment and Mental Health), EPSY 326 (Change, Collaboration and Consulting: Students with Special Needs), and EPSY 350 (The Psychology of Learning and Adolescent Development).

Respondents indicated that they wished to take university classes that provided more information about ADHD. Comments made by the preservice teachers indicated a
teaching strategies following the practicum experience. A number of participants wrote that it was through taking psychology classes rather than education classes that they had gathered information concerning ADHD. Respondents addressed the issue that perhaps either more education classes could provide course content dealing with ADHD or there could be one education class that specifically deals with learning disabilities, behavioral disorders and ADHD.

The feedback with regards to the preservice teachers' perceptions of their degree of knowledge and levels of readiness to teach students with ADHD strongly indicated their desire for further knowledge of the disorder and concerns with regards to their perceived lack of readiness to teach students with ADHD. A number of preservice teachers indicated that they did not have sufficient information about ADHD to effectively deal with students with this disorder in the classroom. They felt that this was an important aspect of teacher training but that it was missing from their program. Additional feedback indicated that a number of preservice teachers felt totally unprepared to teach students with this disorder and felt "cheated" that they were not ready to tackle working with students with ADHD. Again, it would seem reasonable for preservice teachers to take a class dealing with the various disorders they may encounter with children in the classroom setting. There are growing numbers of children being diagnosed with ADHD. The 3% to 5% estimate of children in the school system with this disorder is a conservative one. Respondents were very clear in expressing their wish for further information and training.
school system which further necessitates the training for all teachers in what was once considered "special education". The majority of children and adolescents with ADHD are in the regular school system thereby increasing the importance of education classes in their preparation to deal with this disorder.

Many preservice teachers emphasized the importance of the practicum experience as it was in this situation that they encountered students with ADHD. Furthermore, several respondents saw the benefit of classroom knowledge and experiential learning. Many preservice teachers voiced the desire for learning effective classroom management strategies for working with students with this disorder. The successful school program for these students is one that incorporates the knowledge and understanding of the disorder in effective learning and behavior strategies.

There were a number of preservice teachers who thought that ADHD was a fad until they went into the schools to intern and had to deal with students displaying some of the symptoms of this disorder. Participants expressed concerns about the labelling of ADHD and the impact the label had on children, their peers and their teachers. They perceived that students and teachers used the label as an "excuse" for inappropriate behaviour. Respondents also expressed concern about whether children diagnosed with ADHD had undergone proper testing and assessment procedures. They did not know what this involved but thought that this information was important. The practicum experience appeared to facilitate a greater recognition of the disparity between theory and practice on the part of the preservice teachers. Specifically, they wished to learn more about the criteria used in the diagnosis of ADHD and the kinds of behaviours displayed
in diagnosing of ADHD was due to a combination of overcrowded classrooms and two working parent families which reduces adults’ tolerance levels and adds to adults’ and children’s stress levels. Participants also queried whether every child with a behaviour problem was being “dumped” into the category of ADHD.

Preservice teachers’ knowledge of ADHD was found to be fairly substantial, especially in the areas of classroom management and symptoms of ADHD. The results of this research indicate that depth of knowledge of ADHD and degree of practical experience in working with students with ADHD is related to preservice teachers’ attitudes and perceptions of ADHD. This research confirms the current findings on ADHD in relation to preservice and inservice teachers. Griswald (1991), Brunk (1995), Reid et al. (1994a), and Reber (1995) all found that teachers, preservice teachers and others who worked with ADHD children felt they benefited from actual experience in terms of better being able to manage and support children with this disability. Folsom (1995), Reber (1995) and Reid et al. (1994) determined that teachers and others who have experience working with ADHD children have attitudes regarding ADHD which differ from those who have no actual experience working with children with ADHD. While this study did not specify this factor, the preservice teachers in this study did have a substantial positive correlation between their level of knowledge of ADHD and their attitudes towards ADHD.

Burgstahler (1994) determined that inservice teachers were affected by their post-secondary education instructor’s attitudes regarding children with disabilities. Results of this study indicate that preservice teachers were also influenced in their perceptions
addition, the preservice teachers who participated in this study indicated that their level of knowledge regarding ADHD affected their perceptions of their ability and confidence to work with students exhibiting ADHD behaviors. Specifically, the more university classes providing information about ADHD that the participant had taken, the less they perceived themselves ready to teach students with this disorder. Perhaps as they became aware of the complexities of ADHD, the preservice teachers became conscious of their lack of knowledge and training in this area. They expressed the need for information and the practical component. Perhaps the option of inservice teaching after the first few years of classes would be a valuable asset to the training component of the B.Ed. program.

Davino’s (1995) research indicates that teachers lacked knowledge and felt they had insufficient training regarding the use of stimulant medication in the treatment of ADHD. Participants in this research confirmed that findings indicated they felt lacking in knowledge regarding medication, its role, benefits and side-effects in the treatment of ADHD. From the results of this study it is apparent that the preservice teachers who participated in this research are lacking knowledge of ADHD which affects their attitudes and perceptions towards children with this disorder. There is a need for information on ADHD in training programs for preservice teachers. As indicated in this research, these preservice teachers thought learning more about ADHD would be a valuable and necessary component of their university education.
The validity of the findings of this study is limited somewhat by the sample size and the type of measures used.

**Possible Implications of Study**

There were several areas of concern which arose out of this study. The following issues could be discussed by faculty involved in the training of our teachers.

1. The knowledge, perceptions and attitudes of faculty concerning ADHD and the teaching of children with this disorder have a direct impact on the degree of emphasis on ADHD in the core classes of the B.Ed. program. Individual differences or opinions and personal biases faculty may impede program changes in this direction.

2. The knowledge, perceptions and attitudes of preservice teachers concerning ADHD and the teaching of children with this disorder have a direct impact on the learning experiences of such children in the classroom setting. Personal biases concerning this disorder on part of the teacher may directly affect the student’s sense of self worth.

3. A structured practicum experience and a required class which includes considerable detail on teaching strategies appropriate for children with this disorder would be highly beneficial for preservice teachers.
The findings of this study as well as the pertinent literature reviewed suggest that further research is needed in order to:

1. Investigate the knowledge base of regular classroom teachers at the elementary and high school levels regarding ADHD and assess the inservice education needs of these teachers.

2. Assess changes in preservice teachers' knowledge, attitudes and perceptions after taking classes which contain information on ADHD.

3. Assess the experience of first or second year preservice teachers with students with ADHD and their perceived need for inservice.

4. Survey a sample of school divisions to access the existing educational policies and practices regarding teaching students with ADHD.


Diagnostic Criteria For Attention Deficit Hyperactivity Disorder:

A. Either (1) or (2):

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

Inattention

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

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

1 Reproduced from DSM-IV with permission from APA.
Hyperactivity

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

Impulsivity

(g) often blurts out answers before questions have been completed
(h) often has difficulty awaiting turn
(i) often interrupts or intrudes on others (e.g., butts into conversations or games)

B. Some hyperactive-impulsive or inattentive symptoms that caused impairment were present before age 7 years.

C. Some impairment from the symptoms is present in two or more settings (e.g., at school [or work] and at home).

D. There must be clear evidence of clinically significant impairment in social, academic, or occupational functioning.

E. The symptoms do not occur exclusively during the course of a Pervasive Developmental Disorder, Schizophrenia, or other Psychotic Disorder and are not better accounted for by another mental disorder (e.g., Mood Disorder, Anxiety Disorder, Dissociative Disorder, or a Personality Disorder).
Attention-Deficit/Hyperactivity Disorder, Combined Type:
if both the Criteria A(1) and A(2) are met for the past 6 months

Attention-Deficit/Hyperactivity Disorder, Predominantly Inattentive Type:
if Criterion A(1) is met but Criterion A(2) is not met for the past 6 months

Attention-Deficit/Hyperactivity Disorder, Predominantly Hyperactive-Impulsive Type:
if Criterion A(2) is met but Criterion A(1) is not met for the past 6 months (APA, 1994, 4th ed., p. 83-85).
ATTENTION DEFICIT HYPERACTIVITY DISORDER (ADHD)

QUESTIONNAIRE FOR PRESERVICE TEACHERS
AND RESPONSES TO THE QUESTIONNAIRE

PART I

Please check the appropriate box.

1. AGE: n %
   - 20 - 25 □ 44 (68.8)
   - 26 - 30 □ 15 (23.4)
   - 31 - □ 5 (7.8)

2. GENDER:
   - Female □ 46 (71.9)
   - Male □ 15 (23.4)

3. TYPE OF B.ED. PROGRAM:
   - 4 YEAR B.ED. 35 (54.8) □
   - 5 YEAR B.ED 3 (4.7) □
   - BACCALAUREAT 2 (3.1) □
   - B.E.A.D 24 (27.5) □

4. HAVE YOU TAKEN UNIVERSITY CLASSES WHICH HAVE PROVIDED YOU WITH ANY INFORMATION CONCERNING ADHD?
   - YES □ 41 (64.1)
   - NO □ 23 (35.9)

5. IF YOUR ANSWER TO THE ABOVE QUESTION IS YES, PLEASE SPECIFY THESE CLASSES:

<table>
<thead>
<tr>
<th>Education</th>
<th>Psychology</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPSY 322</td>
<td>PSY 210</td>
<td>PAS 290</td>
</tr>
<tr>
<td>21 (32.8)</td>
<td>5 (7.8)</td>
<td>7 (10.9)</td>
</tr>
<tr>
<td>PSY 100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 (6.3)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
1. HAVE YOU HAD ANY EXPERIENCE WITH CHILDREN OR ADOLESCENTS WITH ADHD? Please check the appropriate box.

Considerable Experience  Some Contact  Very Little Contact  No Experience

☐ 7 (10.9)  ☐ 41 (64.1)  ☐ 13 (20.3)  ☐ 2 (3.1)

2. HOW KNOWLEDGEABLE DO YOU CONSIDER YOURSELF TO BE ABOUT CHILDREN OR ADOLESCENTS WITH ADHD? Please check the appropriate box.

High Degree of Knowledge  Some Knowledge  Little Knowledge

☐ 4 (6.3)  ☐ 47 (73.4)  ☐ 12 (18.8)

3. DO YOU FEEL WELL PREPARED TO TEACH STUDENTS WITH ADHD? Please check the appropriate box.

Well Prepared  Somewhat Prepared  Not At All Prepared

☐ 2 (3.1)  ☐ 52 (81.3)  ☐ 10 (15.6)

4. HOW IMPORTANT AND USEFUL DO YOU THINK EACH OF THE FOLLOWING HAS BEEN IN PREPARING YOU TO WORK EFFECTIVELY WITH STUDENTS WITH ADHD?

a. Work or life experiences with children and/or adolescents:

   Essential  Useful  Somewhat Useful  Not useful

   31 (48.4)  24 (37.5)  6 (9.4)  1 (1.6)

b. Informal contacts with parents, teachers, etc.

   Essential  Useful  Somewhat Useful  Not useful

   30 (46.9)  8 (12.5)  3 (4.7)

c. University classes:

   Essential  Useful  Somewhat Useful  Not useful

   5 (7.8)  12 (18.8)  16 (25.0)  11 (17.2)

d. Practicum

   Essential  Useful  Somewhat Useful  Not useful

   20 (31.3)  22 (34.4)  12 (18.8)  6 (9.4)

e. Printed Materials:

   Essential  Useful  Somewhat Useful  Not useful

   4 (6.3)  29 (45.3)  24 (37.5)  3 (4.7)

f. Popular Media:

   Essential  Useful  Somewhat Useful  Not useful

   0 (0)  21 (32.8)  31 (48.4)  7 (10.9)

g. Other: Response 6 (9.4)

   Essential  Useful  Somewhat Useful  Not useful

   No Response 58 (90.6)
THE FOLLOWING ARE A NUMBER OF STATEMENTS ABOUT ADHD. PLEASE CIRCLE THE APPROPRIATE RESPONSE.

<table>
<thead>
<tr>
<th></th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Uncertain</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. ADHD is a current fad used to label students who are behaviour problems.</td>
<td>SA 2 (3.1)</td>
<td>A 16 (25.0)</td>
<td>U 13 (20.3)</td>
<td>D 24 (37.5)</td>
<td>SD 7 (10.9)</td>
</tr>
<tr>
<td>2. A diagnosis of ADHD enables children to better understand and be more responsible for their behaviour.</td>
<td>SA 3 (4.8)</td>
<td>A 30 (46.9)</td>
<td>U 16 (25.0)</td>
<td>D 11 (17.2)</td>
<td>SD 3 (4.7)</td>
</tr>
<tr>
<td>3. Too many children are being diagnosed with ADHD.</td>
<td>SA 18 (28.1)</td>
<td>A 24 (37.5)</td>
<td>U 16 (25.0)</td>
<td>D 6 (9.4)</td>
<td>SD 0 (0)</td>
</tr>
<tr>
<td>4. Students with ADHD benefit from being taught in the regular classroom.</td>
<td>SA 15 (23.4)</td>
<td>A 34 (53.1)</td>
<td>U 14 (21.9)</td>
<td>D 1 (1.6)</td>
<td>SD 0 (0)</td>
</tr>
<tr>
<td>5. Too many children diagnosed with ADHD are being given stimulant medication.</td>
<td>SA 18 (28.1)</td>
<td>A 19 (29.7)</td>
<td>U 24 (37.5)</td>
<td>D 2 (3.1)</td>
<td>SD 0 (0)</td>
</tr>
<tr>
<td>6. Children with ADHD do not outgrow this disorder.</td>
<td>SA 3 (4.7)</td>
<td>A 18 (28.1)</td>
<td>U 35 (54.7)</td>
<td>D 8 (12.5)</td>
<td>SD 0 (0)</td>
</tr>
<tr>
<td>7. Students with ADHD just need to try harder.</td>
<td>SA 9 (0)</td>
<td>A 6 (9.4)</td>
<td>U 7 (10.9)</td>
<td>D 33 (51.6)</td>
<td>SD 17 (26.6)</td>
</tr>
<tr>
<td>8. ADHD is a serious disorder and more attention needs to be given to it.</td>
<td>SA 8 (12.5)</td>
<td>A 33 (51.6)</td>
<td>U 18 (28.1)</td>
<td>D 2 (3.1)</td>
<td>SD 1 (1.6)</td>
</tr>
<tr>
<td>9. Adolescents with ADHD should never be given Ritalin due to the dangers of drug abuse.</td>
<td>SA 1 (1.6)</td>
<td>A 6 (9.4)</td>
<td>U 20 (31.3)</td>
<td>D 30 (46.9)</td>
<td>SD 5 (7.8)</td>
</tr>
<tr>
<td>10. Parents of children with ADHD need to take more responsibility for their child's behaviour.</td>
<td>SA 7 (10.9)</td>
<td>A 20 (31.3)</td>
<td>U 23 (35.9)</td>
<td>D 10 (15.6)</td>
<td>SD 3 (4.7)</td>
</tr>
</tbody>
</table>
1. Which one of the following statements is most accurate concerning ADHD?

   a. It is a serious disorder that emerges after the age of 7. 3 (4.7)
   b. It is a disorder of the 90's that is used to describe children with problem behavior. 6 (9.4)
   c. It is a life long disorder that emerges in early childhood and continues into adolescence and adulthood. 37 (57.8)
   d. It is a disorder describing children and/or adolescents who are hyperactive. 17 (26.6)

2. Approximately what percentage of school-aged children are affected by ADHD?

   a. 0%- 1% 1 (1.6)
   b. 3%- 5% 29 (45.3)
   c. 10%- 15% 32 (50.0)
   d. 16%- 20% 2 (3.1)

3. The primary symptoms of ADHD are:

   a. hyperactivity and aggressive behavior 2 (3.1)
   b. peer rejection and social immaturity 0 (0)
   c. hyperactivity, impulsivity and inattention 39 (60.9)
   d. inattention and inability to focus 20 (31.3)

4. Which of the following is believed to be the primary cause of ADHD?

   a. birth trauma 0 (0)
   b. environmental toxins 15 (23.4)
   c. genetics 42 (65.6)
   d. poor parenting 2 (3.1)

5. What is the best source of information concerning the assessment and diagnosis of ADHD?

   a. Mental Measurements Yearbook 3 (4.7)
   b. DSM-IV 16 (25.0)
   c. Tests In Print 7 (10.9)
   d. Handbook of Psychological Assessment 22 (34.4)
treatment of children and adolescents with ADHD?

a. communication and cooperation between home and school 43 (67.2)
b. respect and consideration between the child or adolescent and her or his parent 3 (4.7)
c. anger management and social skills training 5 (7.8)
d. the use of medication as part of a multi treatment program 13 (20.3)

7. Which of the following would not be part of a behavior-management program in the classroom?

   d. response costs 20 (31.3)
   e. ignoring behavior 38 (59.4)
   f. time-out 1 (1.6)
   g. reward menus 4 (6.3)

8. Secondary symptoms and related problems in ADHD cases often include:

   d. academic underachievement and family difficulties 46 (71.9)
   e. loss of memory for factual information and retrieval cues 12 (18.8)
   f. muscular deterioration and loss of motor coordination 4 (6.3)
   g. a language deficiency and a speech impediment 2 (3.1)

9. According to current theories, which of the following is primary in understanding ADHD?

   d. hyperactivity 15 (23.4)
   e. inattention 22 (34.4)
   f. impulse control 16 (25.0)
   g. environmental toxins 6 (9.4)

10. Which of the following teaching strategies benefit students with ADHD?

    a. providing lengthy and elaborate oral instructions for tasks 0 (0)
    b. checking comprehension after short reading passages 41 (64.1)
    c. highlighting spelling words with colour cues before practising the words 15 (23.4)
    d. shortening time allotted to complete math assignments 2 (3.1)
It represents a neuroanatomical, neurochemical and neurophysiological dysfunction of the brain. 4 (6.3)

b. It is caused by brain damage due to brain infection, trauma, or complications during pregnancy and/or delivery. 35 (54.7)

c. It is heritable with a neurological basis. 11 (17.2)

d. It is caused by anomalies in the brain which produce a circuit malfunction requiring stimulant medication for functioning to improve. 8 (12.5)

12. Which of the following is descriptive of children and adolescents with ADHD?

d. They have little difficulty sustaining effort and interest. 13 (20.3)

e. They have little difficulty in doing what they know. 12 (18.8)

f. They have difficulty with rules and regulations. 30 (46.9)

g. They have difficulty with low-demand situations. 7 (10.9)

13. Successful strategies used in teaching students with ADHD include:

a. simplification of tasks into a number of short steps 57 (89.1)

b. elimination of notetaking 3 (4.7)

c. discouragement of working with partners 3 (4.7)

d. reduction of physical activity in the classroom 0 (0)

14. Children and adolescents with ADHD are more likely to be rejected by their peers because of:

a. shyness and social withdrawal 4 (6.3)

b. disruptive behavior and learning disabilities 50 (78.1)

c. perfectionist and compulsive tendencies 5 (7.8)

d. parent and/or teacher favoritism 1 (1.6)

15. Which of the following is not descriptive of adolescents with ADHD?

a. antisocial behavior 13 (20.3)

b. anxiety and depression 3 (4.7)

c. low self-esteem 2 (3.1)

d. lower than average IQ scores 44 (68.8)
adolescents with ADHD?

a. shorter assignments, immediate feedback and positive reinforcement 53 (82.8)
b. infrequent breaks and preferential seating 1 (1.8)
c. frequent breaks and sending uncompleted homework home to finish 2 (6.3)
d. grade retention and being with other children at the same emotional, social and cognitive level 2 (3.1)

17. Which one of the following statements is most true about ADHD?

a. It can be cured if the proper treatment program is followed. 5 (7.8)
b. It can be easily diagnosed with the aid of teacher and parent rating scales. 1 (1.6)
c. It is a complex disorder with patterns of symptoms differing with each individual. 56 (87.5)
d. It can be prevented with good parenting skills when the child is between the ages of 2 and 5. 1 (1.6)

18. Common side effects of taking ritalin include:

a. chest pain and shortness of breath 0 (0)
b. feelings of dizziness and being tired all the time 31 (48.4)
c. increased appetite and weight gain 4 (6.3)
d. stomachaches, headaches and insomnia 24 (37.5)

19. Which of the following is not descriptive of children and adolescents with ADHD?

a. They often have difficulty controlling their motor activity in social situations. 13 (20.3)
b. They seldom allow time to think before they act. 3 (4.7)
c. They often have difficulty with waiting their turn. 2 (3.1)
d. They seldom have difficulty encoding social cues. 44 (68.8)

20. In order to facilitate a successful learning experience for the child or adolescent with ADHD, it is most important for the teacher to provide:

a. a high degree of structure and a detailed list of rules and regulations 11 (17.2)
b. minimal structure and a few basic rules and regulations 13 (20.3)
c. frequent monitoring of behavior and enforcement of consequences 35 (54.7)
d. minimal discipline and enforcement of consequences 0 (0)
THANK YOU FOR PARTICIPATING IN THIS STUDY!
TO: Susan Robin  
Faculty of Education

FROM: G.W. Maslany, Chair  
Research Ethics Review Committee

Re: Perceptions, Attitudes and Knowledge of Preservice Teachers Concerning Students with Attention Deficit Hyperactivity Disorder (ADHD)

Please be advised that the committee has considered this proposal and has agreed that it is:

1. Acceptable as submitted.  
(Note: Only those applications designated in this way have ethical approval for the research on which they are based to proceed.)

2. Acceptable subject to the following changes and precautions (see attached):  
Note: These changes must be resubmitted to the Committee and deemed acceptable by it prior to the initiation of the research. Once the changes are regarded as acceptable a new approval form will be sent out indicating it is acceptable as submitted.  
Please address the concerns raised by the reviewer(s) by means of a supplementary memo.

3. Unacceptable to the Committee as submitted. Please contact the Chair for advise on whether or how the project proposal might be revised to become acceptable (ext. 4161/5186.)

W. Maslany

cc: Dr. F. Bessai, supervisor  
Dr. J. Schner, supervisor

(Ethics2.doc)