SOURCES OF INFORMATION AND SELECTED VARIABLES
AND THEIR RELATIONSHIP TO TEACHERS’ KNOWLEDGE AND ATTITUDES
REGARDING ATTENTION DEFICIT HYPERACTIVITY DISORDER (ADHD)

by

Carole Blume-D’Ausilio

A Dissertation Submitted to the Faculty of
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This dissertation was prepared under the direction of the candidate’s advisor, Dr. Pat Maslin-Ostrowski, and has been approved by the members of her supervisory committee. It was submitted to the faculty of the College of Education and was accepted in partial fulfillment of the requirements for the degree of Doctor of Education.

SUPERVISORY COMMITTEE

Chairperson, Dr. Pat Maslin-Ostrowski

Dr. Sara Ashworth

Dr. Albert C. Jurenas

Dr. Jennifer Leiter-Klein

Chairperson, Department of Educational Leadership

Dr. John D. Morris

Dean, College of Education

Dean of Graduate Studies and Research

Date
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I am sincerely grateful to many people whose importance in my life is impossible to rank. Therefore, the order in which they are acknowledged was determined by five color-coded chips pulled randomly from a hat.

The family chip came out first. I am deeply indebted to my mother, Lotte Krasne, and my stepfather, Murray Krasne. Their constant support and encouragement got me through many difficult times during this process. To my two sons, Brandon and Tyler, thank you for putting up with me all those hours when I needed absolute quiet. I know that wasn’t easy for you. Always remember the power of perseverance.

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The third chip is for the principals and teachers who welcomed me into their schools and participated in my study. Had it not been for your precious gift of time, there would have been no data to analyze.

The fourth chip represents the authors whose instruments comprised much of my survey. Thanks to you, I was able to obtain valuable answers to my research questions.

Finally, to my friends (especially Marlene) and neighbors (especially Devon) who never stopped asking how it was going, thank you for holding me accountable and making it impossible to quit.
In loving memory of my father,

Irving Blume,

whose unwavering faith in me

continues to enrich my life;

and

In loving memory of my grandma,

Susi Postheim,

whose thirst for knowledge lives on

in me
The purpose of this study was to develop a predictive model for teacher knowledge about ADHD and teacher attitudes toward the disorder. The Attention Deficit Hyperactivity Disorder Knowledge Assessment (ADHDKA), developed by the researcher, was used to determine the nature of the relationship between teacher knowledge and attitudes regarding ADHD and various sources from which teachers are most likely to obtain information. Four teacher characteristics (teaching position, experience teaching children with ADHD, personal experience with ADHD, and confidence teaching children with ADHD) were also investigated for their predictive value.

The sample was comprised of 225 classroom teachers of grades K to 5 from seven elementary schools in Broward County, Florida. Teachers completed the ADHDKA which consisted of multiple choice, true and false, and open-ended statements about
ADHD.

Three research questions were posed before data were collected. Multiple regressions were run to determine the degree of association between each of the criterion variables (knowledge and attitude), and the 12 predictor variables investigated in this study. The degree of correlation between teacher knowledge and teacher attitude was examined using a Pearson product moment correlation. Qualitative analysis was used to uncover emerging themes from teacher responses to the open-ended statements.

Major findings in the study were as follows: (a) Primary (K – 2) teachers have a higher level of knowledge about ADHD than do intermediate (3-5) teachers (.159, \( p < .05 \)); (b) teachers who have personal experience with ADHD have a higher level of knowledge about ADHD than do teachers with no personal experience with ADHD (.147, \( p < .05 \)); (c) teachers with a high level of confidence about teaching children with ADHD have a higher level of knowledge about ADHD than do teachers with a low level of confidence (.280, \( p < .01 \)); and (d) a predictive model can be developed to determine teacher knowledge about ADHD (\( R^2 = .139 \)). The \( R \)-square indicates that 13.9% of the variance in teacher knowledge can be accounted for by the variation of the combined predictor variables. Although statistically significant (\( F [12, 188] = 2.521, p = .004 \)), the correlation is less than the predetermined critical effect size of 25% and may be of limited practical significance (.139 < .25).

Conclusions based on the findings from the study were: (a) Teachers do not have adequate information regarding strategies to accommodate behavioral and academic challenges for the child with ADHD; (b) teachers lack confidence teaching children with
ADHD; and (c) teachers do not receive adequate district-level, or school-based, administrative support (i.e., availability of appropriate ADHD in-service, assistance with parent support, classroom management issues).

Noteworthy recommendations for those in positions of educational leadership included the following: (a) more extensive ADHD training for pre-service teachers than is presently required; (b) a comprehensive choice of ADHD workshops offered by school districts to administrators, teachers, paraprofessionals, cafeteria staff, custodians, bus drivers, and any other school personnel who may interact with children; and (c) a district-level expert on ADHD for the specific purpose of advising administrators, teachers, and parents about practical solutions to everyday ADHD-related issues.

Recommendations for future research included the following: (a) Investigate why teachers with high levels of knowledge about ADHD have negative attitudes toward the disorder; (b) employ a mixed between – within design assessing teacher knowledge and attitude before and after attendance at an ADHD in-service; and (c) investigate the connection between teaching position and teacher knowledge about ADHD.
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CHAPTER I

INTRODUCTION

Background of the Study

Attention deficit hyperactivity disorder (ADHD) has become one of the most commonly diagnosed psychiatric disorders of childhood (Barkley, 2000). An estimated 3-5% of school-aged children in the United States are affected by ADHD (American Psychiatric Association [APA], 1994a). This percentage translates to between 2 and 3 million American children who have been diagnosed with ADHD. A recent statement made by the American Academy of Pediatrics (AAP, 2004) put the estimated range at 6-9%.

According to the criteria listed in the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) (American Psychiatric Association [APA], 1994a), children who are diagnosed with ADHD exhibit developmentally inappropriate degrees of inattention, and in many cases, impulsivity and hyperactivity. In the classroom, ADHD translates into behaviors such as calling out, interrupting instructional activities, getting out of an assigned seat without permission, and not completing tasks (Barkley, 1990; DuPaul, Eckert, & McGoey, 1997). The prevalence of ADHD, and the disruptive nature of the behaviors often associated with it, have attracted a great deal of attention from the education and medical communities.

Although it has recently become the focus of much controversy, ADHD is not a new disorder. It was initially described in 1902 by George Still, a British pediatrician (Barkley, 1990). Over the past century, however, ADHD has had
numerous labels ranging from *postencephalitic behavior disorder* to *minimal brain damage* (Armstrong, 1995, p. 8). The name was modified as research studies resulted in new insights about the possible causes and characteristics of the disorder. Skeptics often use the name change issue to their advantage when attempting to convince the public that ADHD does not exist (Armstrong, 1995; Baughman, 2001; O’Shea, 2000).

Another major area of controversy centers around the lack of objective medical findings associated with the ADHD diagnosis. There is no blood test or X-ray that can confirm the presence or absence of ADHD in an individual (Accardo & Blondis, 2000a). Checklists and rating scales are filled out by parents and teachers when a child demonstrates symptoms of the disorder. Due to the subjective nature of these instruments, there are many people who question the validity of the diagnosis (Daly, 1996; O’Shea, 2000).

There is much debate over the nature of the symptoms characterizing ADHD. Some medical professionals contend that distractibility, impulsivity, and hyperactivity, the three defining characteristics of the disorder, are present in all human beings from time to time (Armstrong, 1995; O’Shea, 2000). The argument that everyone is occasionally disorganized and forgetful is one that makes sense and can create doubt in the minds of individuals searching for the truth about the disorder.

The most passionately debated issue in the literature about ADHD involves the use of stimulant medication to treat identified children. The media disseminate myths and misconceptions about the dangers of Ritalin and other stimulants that are commonly prescribed to treat ADHD (Ingersoll & Goldstein, 1993; O’Shea, 2000).
Controversial alternatives such as dietary interventions, megavitamins, and EEG biofeedback (CHADD, 2000; Rapp, 1991) continue to advertise their unproven benefits in books, web sites, magazine articles, and radio and television programs about ADHD. Parents, teachers, and concerned relatives opposed to the use of stimulant medication by children, often seek out alternative treatments. They are all too ready to accept the unsound claims made by those promulgating such misinformation.

Finally, there is a great deal of controversy about ADHD because of the growing number of children being diagnosed with the disorder. The actual figures vary greatly by source, as do the explanations for the increase (Baughman, 2001; Daly, 1996; Glass, 2001). Figures have been estimated to be as low as 1.3 million (Whitworth, Fossler, & Harbin, 1997) and as high as 7 million children (Baughman, 2001) diagnosed with ADHD.

The media have been commended as well as condemned for contributing to the growth in ADHD diagnoses (Hinshaw, 2000; Ingersoll, 1998). While media exposure has increased public awareness of ADHD, it has also attracted the attention of pseudo-experts who publish and broadcast myths and misconceptions about the disorder.

The APA has been blamed for allowing the diagnosis of ADHD to be oversimplified with the publication of the DSM-IV in 1994 (O'Shea, 2000). The DSM-IV outlines the symptoms of psychiatric disorders and is the manual used by medical professionals who diagnose ADHD. Pharmaceutical companies that produce Ritalin and other stimulant medications prescribed to treat ADHD are often depicted as
money-hungry monsters that are destroying our children (Baughman, 2001). One author, a California chiropractor, blames the entire field of psychiatry for the increase in ADHD diagnoses (O’Shea, 2000).

People who seek out information about ADHD find it increasingly difficult to separate fact from fiction (Hinshaw, 2000). Teachers and other education professionals are not exempt from this confusion. It is crucial, however, for teachers to have accurate information about ADHD due to the increasing number of affected students with which they come in contact every year.

**Conceptual Framework**

Research has shown that information, or the lack of it, constitutes the very foundation upon which we form our beliefs, expectations, and attitudes (Brophy & Evertson, 1981). Teachers who obtain misinformation about ADHD from unreliable sources may then develop negative attitudes toward students with the disorder.

Numerous studies have illustrated the strong connection between teacher attitudes and teacher behavior toward students (Good & Brophy, 1972; Silberman, 1969; Willis & Brophy, 1974). In 1968, Rosenthal and Jacobson’s *Pygmalion in the Classroom* applied the concept of self-fulfilling prophecy to the field of education. Their much debated theory was based on the idea that student performance matched teacher expectations. The underlying assumption was that such expectations translated into specific teacher behavior toward students. Because of the very nature of the teacher-student relationship, that being one of mentor-mentored, a teacher’s behavior can have far-reaching effects on a child’s emotional state and level of academic achievement.
Teacher attitude toward mainstreaming became a focus of concern after the passage of P.L. 94-142 in 1975. Studies such as the one by Larrivee and Cook (1979) investigated how teacher variables such as grade level affected teacher attitude toward mainstreaming. Their research found that teacher attitudes in regard to mainstreaming became more negative as grade level increased.

Researchers have also investigated the connection between teacher attitude and experience teaching children with a disability. For example, a review by Hannah and Pliner (1983) found that depending on the nature of the interaction, teacher attitude toward handicapped children can be affected in either a positive or negative way.

The literature has clearly indicated that there is a strong relationship between teacher attitude and teacher confidence teaching children with a disability. Larrivee and Cook (1979) investigated seven teacher variables in connection with teacher attitude toward mainstreaming. They found that teacher confidence (self-efficacy) was more significantly correlated with teacher attitude than any of the other variables.

Much of the research about teacher self-efficacy has focused on the precept that it is highly correlated with teacher knowledge. Studies such as the one done by Leyser and Abrams (1984) indicate that the more knowledge a teacher has about handicapped students, the more positive the teacher’s attitude will be toward such students.

There is a growing body of research on teachers’ knowledge and attitudes regarding ADHD (Hepperlen, Clay, Henly, & Barke, 2002; Sciutto, Terjesen, & Frank, 2000). These studies attempt to uncover relationships between teacher
knowledge about, and attitudes toward, the disorder and variables such as experience teaching students with ADHD. Sciutto, Terjesen, and Frank (2000) found that teachers’ knowledge about ADHD increased with their experience teaching students with the disorder.

While some studies have taken a cursory look at teachers’ sources of information about ADHD (Brook, Watemberg, & Geva, 2000; Hepperlen, Clay, Henly, & Barke, 2002), none has examined this variable in any great detail. A recent study found that teachers who had read more than 10 books and articles about ADHD were more knowledgeable about the disorder than those who had read less (Piccolo-Torsky & Waishwell, 1998). The researchers did not specify which books and articles were actually read by the participants. A study done in Israel concluded that teachers get most of their information about ADHD and learning disabilities from the television (Brook, Watemberg, & Geva, 2000). The study did not make any reference to teachers’ knowledge about ADHD in relationship to their sources of information.

An extensive review of the literature did not uncover any studies that dealt with the relationship between teacher knowledge and attitude regarding ADHD and the specific books, journals, and television programs accessed by teachers for information about the disorder. The literature did not, in fact, indicate that any studies have addressed the issue of Internet web sites and the misinformation they often promote as facts.

**Statement of the Problem**

The problem in this study is to determine teacher knowledge about, and attitude toward, ADHD. The number of students diagnosed with ADHD continues to
grow every year, and elementary school teachers are often the first individuals in a position to recognize symptoms of the disorder. It is crucial for teachers to be able to identify the characteristics of ADHD, go through the proper referral process, and implement appropriate classroom modifications. The research clearly indicates that teachers do not have enough accurate information about ADHD to properly serve students who have either been diagnosed with the disorder, or are in need of evaluation (Glass, 2001; Jerome, Gordon, & Hustler, 1994).

Teachers’ lack of knowledge about ADHD may have a ripple effect on their attitude toward children who exhibit symptoms as well as toward those diagnosed with the disorder. Without accurate information about what causes ADHD and how it can be effectively treated, teachers may develop negative attitudes toward children with ADHD. Such attitudes may lead to negative behaviors that can seriously impact a child’s feelings of self-worth. Low self-esteem can lead to problems ranging from mild depression to suicide (Barkley, 1990). These are concerns that are not to be taken lightly.

**Purpose**

The purpose of this study is to develop a predictive model for teacher knowledge and attitudes regarding ADHD. Four variables for teacher characteristics and eight variables for sources of information will be examined for their predictive value in relationship to teacher knowledge about ADHD and teacher attitude toward the disorder. The four variables for teacher characteristics are: teaching position, experience teaching children with ADHD, personal experience with ADHD, and confidence teaching children with ADHD. The eight categories of sources of
information are: professional publications, media, Internet, in-service workshops, college courses, personal people, professional people, and colleagues.

**Research Questions**

The following research questions will be explored:

1. To what degree is teacher knowledge about ADHD associated with the following teacher characteristics and sources of information: (a) teaching position, (b) experience teaching children with ADHD, (c) personal experience with ADHD, (d) confidence teaching children with ADHD, (e) professional publications, (f) media, (g) Internet, (h) in-service workshops, (i) college courses, (j) personal people, (k) professional people, and (l) colleagues?

2. To what degree is teacher attitude toward ADHD associated with the following teacher characteristics and sources of information: (a) teaching position, (b) experience teaching children with ADHD, (c) personal experience with ADHD, (d) confidence teaching children with ADHD, (e) professional publications, (f) media, (g) Internet, (h) in-service workshops, (i) college courses, (j) personal people, (k) professional people, and (l) colleagues?

3. To what degree is teacher knowledge about ADHD associated with teacher attitude toward ADHD?

**Hypotheses**

The following null hypotheses will be tested at the .05 level of significance:

1. The model composed of the variables for teacher characteristics and sources of information investigated in this study is no more accurate than chance in predicting teacher knowledge about ADHD. Teacher characteristics are: teaching
position, experience teaching children with ADHD, personal experience with ADHD, and confidence teaching children with ADHD. Sources of information are: professional publications, media, Internet, in-service workshops, college courses, personal people, professional people, and colleagues.

2. The model composed of the variables for teacher characteristics and sources of information investigated in this study is no more accurate than chance in predicting teacher attitude toward ADHD. Teacher characteristics are: teaching position, experience teaching children with ADHD, personal experience with ADHD, and confidence teaching children with ADHD. Sources of information are: professional publications, media, Internet, in-service workshops, college courses, personal people, professional people, and colleagues.

3. There is no significant relationship between teacher knowledge about ADHD and teacher attitude toward ADHD.

**Significance of the Study**

The significance of this study reaches far beyond the surface need for teacher education about ADHD. The issue of teacher attitudes is one that should be of grave concern to administrators, teachers, parents, and society at large. Research continues to show the powerful connection between the attitudes held by teachers toward students and students’ level of academic achievement (Tauber, 1998). Teachers’ attitudes affect students’ level of self-confidence and ultimately, their future level of personal and professional success. If the present study can establish that such attitudes are significantly related to teacher knowledge about ADHD, then increasing the accurate information teachers have would clearly increase student achievement.
Additionally, investigation of teachers’ primary sources of information may offer the education community insight into effective staff development options in this area.

**Assumptions**

For the purpose of this study, the following assumptions were made:

1. Teachers involved in the study will be able to follow the written directions on the survey instrument.

2. Teachers involved in the study will participate willingly and provide accurate, independent responses to the items on the survey instrument.

3. Teachers involved in the study have a general awareness of the disorder presently known as ADHD (also referred to as ADD).

**Limitations**

1. The sample in this study was limited to teachers whose principals agreed to participate in the study.

2. The data collection for this study was limited to one school semester (Fall 2004).

3. Teacher scores for Part Four of the ADHDKA did not distinguish teachers’ misperceptions (wrong answers) from teachers’ lack of knowledge (“Don’t Know” responses).

**Delimitations**

1. This study was only concerned with the knowledge and attitude of elementary school teachers. Any generalization of the findings to teachers at other levels may not be appropriate.

2. This study only investigated teacher knowledge and attitude in regard to
ADHD. Conclusions in regard to other disorders should not be made based on the findings from this study.

3. This study was limited to an investigation of elementary school classroom teachers from seven public schools in Broward County, Florida.

**Definitions**

For the purpose of this study, terms are defined as follows:

*Attention Deficit Hyperactivity Disorder (ADHD)* - Often still referred to as ADD. Defined by Hallowell and Ratey (1994) as “a neurological syndrome whose classic defining triad of symptoms include impulsivity, distractibility, and hyperactivity” (p. 6). ADHD-Predominantly Inattentive Type is diagnosed in the absence of hyperactivity.


*Comorbidity* - Two or more disorders co-occurring in an individual.

*Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV)* - Published by the American Psychiatric Association (APA, 1994a). It provides clear descriptions of mental disorders to enable clinicians to more accurately diagnose and treat patients.

*Knowledge* - “Facts, information, and skills acquired by a person through experience or education; the theoretical or practical understanding of a subject” (Jewell & Abate, 2001, p. 943).

*Oppositional Defiant Disorder (ODD)* - Defined in the DSM-IV (APA, 1994b) as “a
pattern of negativistic, hostile, and defiant behavior” (p. 68). ODD is a frequently occurring comorbid disorder with ADHD.

**Successful** - (adj.) “Favorable or desired outcome” (Mirriam-Webster, 2004, p. 714).

In the case of teachers being successful with students diagnosed with ADHD, a favorable outcome would mean that the student is achieving at grade level, demonstrating appropriate behavior that does not adversely affect learning, and displays a positive self-concept.

**Summary and Organization of the Study**

ADHD is one of the most prevalent childhood psychiatric disorders today (Barkley, 2000). It is generally characterized by developmentally inappropriate levels of inattention, impulsivity, and hyperactivity. A child presenting with these symptoms can create a difficult situation for the classroom teacher. It is therefore vital that teachers become better educated about what ADHD looks like and how interventions can be successfully implemented in the classroom. Research continues to show that increasing the accurate information teachers have about ADHD increases the positive attitudes they have toward the disorder (Jerome, Gordon, & Hustler, 1994). This study will further the research on ADHD by investigating the effect of the Internet as well as other sources of information on teachers’ knowledge and attitudes regarding the disorder.

Chapter 2 reviews the literature on ADHD and attitudes. The section on ADHD begins with a historical overview and concludes with a summary of the myths that have been disseminated about the disorder by the media. The section on attitudes includes definitions and theories, measurement instruments, and research on teacher
attitudes and the role they play in student achievement. Chapter 3 describes the methodology of the study and includes the following elements: research design, sample, instrumentation, data collection and data analysis. Chapter 4 details the results of the statistical analyses generated with SPSS software as well as the distribution of qualitative data in the study. Chapter 5 provides a thorough discussion of the findings from a perspective that exceeded the scope of the research questions and hypotheses. Additionally, the final chapter offers recommendations for researchers interested in expanding upon the results of this study.

CHAPTER II

REVIEW OF THE LITERATURE
The review of the literature focuses on ADHD and attitudes. The discussion on ADHD includes the following: (a) an historical overview, (b) etiology, (c) diagnosis, (d) treatment options, (e) classroom accommodations, (f) myths and misconceptions, and (g) teacher knowledge about ADHD. The topic of attitudes is examined within the following framework: (a) definitions and theories, (b) significance, (c) measurement, and (d) teacher attitudes toward students with and without disabilities.

Attention Deficit Hyperactivity Disorder (ADHD)

The History of ADHD

Attention deficit hyperactivity disorder (ADHD) is the newest name for one of the most common problems being referred to mental health professionals today (Barkley, 1990). Its history has been described as “mysterious and circuitous” (Cherkes-Julkowski, Sharp, & Stolzenberg, 1997, p. 14). It has also been characterized as “one of the most intriguing, beguiling, and complicated topics in the field of education” (Dowdy, Patton, Smith, & Polloway, 1998, p.13). Armstrong (1995) refers to the disorder as “the learning disease du jour of American culture” (p. 8). The only aspect of ADHD with which everyone may agree is that it is one of the most controversial medical disorders of our time (Armstrong, 1995; Barkley, 1990; Bender, 1997).

ADHD is not a new disorder; it has been discussed in the literature since the 1800s (Barkley, 1981). In 1845, Hoffmann, a German doctor, wrote *Struwwelpeter*, a book of nursery rhymes for his son. The following is an excerpt from Hoffmann’s poem, “The Story of Fidgety Philip” which has become associated with ADHD:

“Let me see if Philip can
Be a little gentleman;
Let me see if he is able
To sit still for once at table”:
Thus Papa bade Philip behave;
And Mamma looked very grave.
But fidgety Phil,
He won’t sit still;
He wriggles,
And giggles,
And then, I declare,
Swings backwards and forwards,
And tilts up his chair,
Just like any rocking horse-
“Philip! I am getting cross!” (p. 18)

The poem continues for two pages about Philip’s “rude and wild” behavior at the dinner table. The term fidgety Phils undoubtedly originated from Hoffmann’s 19th Century verse.

In 1890, William James theorized that inhibitory volition, moral control, and sustained attention, now associated with ADHD, were of neurological origin. Most researchers credit the beginning of ADHD as a medically recognized disorder, to Still, a British pediatrician (Barkley, 1990). In 1902, Still described 20 children in his practice who were “aggressive, defiant, and resistant to discipline” (as cited in Barkley, 1990, p. 4). Many of the children also had attention problems and were overactive. Still was the first to suggest that the disorder was associated with behaviors that were “unnatural relative to the behavior of normal children at a given age” (p. 4).

An outbreak of encephalitis in 1916 left many children with impairments in what Barkley refers to as “attention, regulation of activity, and impulse control (the ‘holy trinity’ of ADHD symptoms to the present day)” (1990, p. 6). The disorder was
labeled *postencephalitic behavior disorder* and was believed to be caused by damage to the central nervous system.

In the 1930s, Goldstein found that German soldiers with head injuries had “a variety of cognitive and behavioral problems that included poor impulse control, inattention, poor perceptual motor abilities, and difficulties with reading and memory” (as cited in Guyer, 2000, p. 12). Researchers became committed to finding the causes of brain damage in children (Barkley, 1990).

Orton (1937) investigated individuals with serious reading problems but no signs of brain damage. His work convinced many professionals that “there need not be a documented brain injury and that a structural or functional difference in the brain might be the cause of failure for the child to perform adequately” (as cited in Guyer, 2000, p. 13).

The terms “‘organic driveness [sic]’ (Kahn & Cohen, 1934) and ‘restlessness syndrome’ (Childers, 1935; Levin, 1938)” (as cited in Barkley, 1990, p. 6) were used in the 1930s to describe children with ADHD-like symptoms. In 1937, Bradley’s research marked the beginning of medication therapy for children with behavior disorders. Bradley, Bowen, Molitch and Eccles showed “the efficacy of the amphetamines in reducing the disruptive behavior and improving academic performance of behaviorally disordered children . . .” (as cited in Barkley, 1990, p. 8). Barkley cited later studies by Laufer, Denoff, and Solomons that confirm the positive effect of drug therapy on hyperactive hospitalized children.

Strauss, Lehtinen, and Werner theorized that brain injury may be caused by
non-genetic factors such as oxygen deprivation at birth and head injury and that “these injuries produced a cluster of symptoms, including . . . hyperactivity, distractibility, and inattention” (as cited in Guyer, 2000, p. 13). Studies investigating primates with frontal lobe lesions revealed behaviors similar to those of severely hyperactive children (Cherkes-Julkowski, Sharp, & Stolzenberg, 1997, p. 16). Such brain research led Strauss and Lehtinen to coin the term minimal brain damage syndrome in 1947. In 1957, Laufer et al. investigated the neurological origin of ADHD behaviors (Barkley, 1990). His work led to use of the term hyperkinetic impulse disorder. Laufer theorized that the cause of hyperactivity was damage to the thalamic region of the brain, the area that controls stimulation. He found that hyperactive children had an inability to filter out excess stimulation. This led to their being treated in “severely austere minimal stimulation educational classrooms or residential centers” (p. 9).

In the 1950s and 1960s, the term minimal brain damage was questioned when there was little or no evidence of such damage (Cherkes-Julkowski, Sharp, & Stolzenberg, 1997). The label was changed to minimal brain dysfunction (MBD) and grew in popularity (Guyer, 2000). Children classified as MBD were put into special classrooms, ostensibly to minimize distractions. Highly disruptive children with MBD were made to stay home, often without homebound instruction. These types of unfair practices led to federal legislation protecting the rights of individuals with disabilities.

By the end of the 1950s, the MBD label “was replaced by terms that were considered to reflect more specific and observable cognitive and behavioral traits” (Cherkes-Julkowski, Sharp, & Stolzenberg, 1997, p. 17). Chess called the disorder
hyperactive child syndrome (as cited in Barkley, 1990, p. 10). Unlike Still, who saw the disorder as chronic in nature, Chess believed that it disappeared by puberty. She supported a biological, rather than environmental, cause of hyperactivity (Guyer, 2000). According to Barkley, Chess’s “formulation removed the blame for the child’s problems from the parents” (Barkley, 1990, p. 10). Research by Chess and others led the APA (1968) to name the disorder Hyperkinetic Reaction of Childhood in the DSM-II.

The 1970s was a time of tremendous growth in ADHD research (Barkley, 1990) resulting in the enactment of three federal laws: (a) Section 504 of the Vocational Rehabilitation Act of 1973; (b) the Education for All Handicapped Children Act (P.L. 94-142) in 1975; and (c) the Americans with Disabilities Act (ADA) in 1990 (The School Board of Broward County [SBBC], Florida, 2002).

Section 504 “became the first federal civil rights law to protect the rights of persons with disabilities” (SBBC, 2002, p. vi). P.L. 94-142 was amended in 1990 and renamed the Individuals with Disabilities Education Act (IDEA). IDEA provides states with federal funds to improve educational programs for handicapped students. Finally, the ADA provides protection for handicapped individuals in such areas as employment, education, and public accommodations (SBBC, 2002).

The work done in the early 1970s led researchers such as Marwit and Stenner to associate ADHD with “impulsivity, short attention span, low frustration tolerance, distractibility, and aggressiveness” (as cited in Barkley, 1990, p. 12). Douglas pointed to deficits in sustained attention and impulse control, not hyperactivity, as the primary reasons that children with ADHD experienced difficulties.
Douglas’s research “was probably the major reason the disorder was renamed Attention Deficit Disorder (ADD) in the DSM-III (APA, 1980)” (Barkley, 1990, p. 14.) Both ADD with Hyperactivity (ADD/+H) and without Hyperactivity (ADD/-H) emphasized attention and impulse control, rather than activity level, as the primary symptoms (Cherkes-Julkowski, Sharp, & Stolzenberg, 1997). The symptoms had to begin before age seven, be present for over six months, and must not have been caused by other psychiatric disorders (APA, 1980).

When the revised third edition (DSM-III-R) was published in 1987 (APA), several changes were evident. The two categories of ADD were combined and the name of the disorder was changed to Attention Deficit Hyperactivity Disorder, or ADHD. Although the new label included the term hyperactivity, attention deficits remained as the core symptom. The three lists of symptoms were combined so that the presence of any 8 out of the 14 indicated a diagnosis of ADHD. The DSM-III-R allowed for the co-existence of ADHD and affective disorders, such as depression. Finally, the ADHD listing went from mental to developmental disorders, under the category of disruptive behavior disorders (along with Oppositional Defiant Disorder [ODD] and Conduct Disorder [CD]) (Cherkes-Julkowski, Sharp, & Stolzenberg, 1997, p. 21).

In 1994, the APA came out with its current manual, the DSM-IV. ADHD is currently listed “under the superordinate category of Attention-Deficit and Disruptive Behavior Disorders” (Cherkes-Julkowski, Sharp, & Stolzenberg, 1997, p. 22). Three primary subtypes are described: (a) ADHD, Predominantly Inattentive Type, (b) ADHD, Predominantly Hyperactive/Impulsive Type, and (c) ADHD, Combined Type.
Theories of Etiology

There are numerous theories about what causes ADHD (Armstrong, 1995; Barkley, 1990; Lensch, 2000; Rapp, 1991). Biederman, Faraone, Keenan, and Ming Tsuang point to a genetic transmission of the disorder (Barkley, 1998; Lensch, 2000). Others say that the brain of an individual with ADHD is physiologically different from that of a “normal” person (Fine, 2001). Still others believe that environmental factors such as maternal smoking can cause ADHD (Lensch, 2000).

The controversy over etiology, or what causes ADHD, has not been resolved. It is an important issue because etiological beliefs affect attitudes toward prognosis, treatment options, and diagnosed individuals. The two primary philosophies deal with organic and non-organic origins. Those favoring organic causes believe that genetic differences are at the root of ADHD (Accardo & Blondis, 2000a). They support the use of medication and view the symptoms as non-volitional.

Those who question the existence of ADHD claim that parents and teachers embrace the organic explanation as a means of avoiding blame (Armstrong, 1995; Reid, Maag, & Vasa, 1994). They believe that environmental factors, such as child-rearing practices are the cause of ADHD (Ingersoll, 1998). The non-organic paradigm attracts individuals who oppose medication (O’Shea, 2000) and perceive the disorder as over-diagnosed (Calhoun, Greenwell-Iorillo, & Chung, 1997).

Organic Origin of ADHD

Genetic Factors.

A growing body of research supports the belief that ADHD runs in families (Fine, 2001). According to Fine,
Children who have ADHD usually have at least one close relative who also has it. And at least a third of all fathers who showed symptoms of ADHD in their youth have children who display similar behavior. Even more suggestive of a genetic component to the disorder is that when one twin of a pair of identical twins has the disorder, the other is likely to have it, too, according to the NIMH. (p. 29)

Goodman and Stevenson’s twin research conducted in 1989 found that “genetic factors play a significant role in this disorder” (as cited in Barkley, 1990, p. 103).

Family studies provide evidence for the importance of genetic factors in ADHD (Cook, 2000; Whitman, 2000). In studies that compared genetic relatives of people with ADHD with relatives of adopted people with ADHD, there was a higher prevalence of ADHD among genetic relatives. Biederman et al. also found an increased risk of ADHD among relatives (as cited in Lensch, 2000).

Researchers have identified genes in the prefrontal cortex and basal ganglia that are associated with ADHD (Fine, 2001). They are “likely to be the ones that regulate and transport dopamine, one of the chemicals in the brain called neurotransmitters that help deliver messages from one nerve cell to another” (p. 29). Swanson states that “variations in dopamine receptors or transporters, or both, may result in underactivity of brain regions that are involved in attention and behavior” (p. 29).

The main objective of genetic research is to develop testing that will accurately identify ADHD (Fine, 2001). Research may also uncover other genes associated with the disorder and eventually help doctors determine accurate doses of medication. Finally, research supporting genetic transmission increases the legitimacy of ADHD in the eyes of the scientific community.

**Neurological Factors.**

The connection between ADHD and neurological involvement has been studied
since Still lectured in 1902 (Barkley, 1990). Technological advances have allowed more sophisticated analysis of the brain, and scientists assert that “in the next five to 10 years, they will be able to use brain scans and brain imaging to diagnose children with ADHD” (Fine, 2001, p. 27).

Castellanos found that “the right prefrontal cortex and two basal ganglia are significantly smaller in children with ADHD than in those without it” (as cited in Fine, 2001, p. 27). These areas of the brain are associated with the regulation of attention and impulse control.

Schweitzer studied the brains of adult men with and without ADHD as they performed mathematical tasks (as cited in Fine, 2001). Those with ADHD made inefficient use of the prefrontal cortex, the part of the brain used to remember numbers. They had “trouble keeping old information in mind while new information [was] being given to them” (p. 27). Schweitzer theorized that students with ADHD may blurt out answers because they are afraid of forgetting their thought.

The first study using a brain mapping technique called Positron Emission Tomographic (PET) scans was conducted by Zametkin et al. in 1990 (Gordon & Asher, 1994). This landmark study measured the rate at which glucose, associated with cognitive activity, was metabolized in the brains of adults with and without ADHD. Adults with ADHD had reduced levels of glucose metabolism as compared to undiagnosed adults when performing mental tasks involving attention, concentration, and inhibition of movement. These findings dispelled the myth that ADHD was caused by an overactive brain and suggested that individuals with the disorder suffered from underarousal in the frontal area of the brain (Bender, 1997). Additionally, Zametkin’s research gave credence
to the neurological basis for ADHD.

**Non-Organic/Environmental Origin of ADHD**

*Food Allergies.*

In the 1960s, Feingold developed a diet that was “free of artificial flavorings . . .” (Armstrong, 1995, p. 72). He claimed that up to 50% of the hyperactive children he worked with improved on his diet. The media gave Feingold’s diet widespread attention in 1975 however, numerous studies over the next few years could not support his findings (Barkley, 1990). Barkley noted the following:

> While a small percentage (<10%) of preschool-age children may have shown a slight increase in activity or inattentiveness, no evidence was ever provided either that normal children can acquire ADHD by consuming such substances or that ADHD children are made considerably worse by them. (p. 99)

Interest in the Feingold Diet diminished by the 1980s and was replaced by new concerns about food allergies and their possible connection to ADHD (Ingersoll, 1998). Rapp (1991) coined the phrase *allergic tension fatigue syndrome* (ATFS) and stated that “children with ATFS have behavior and activity problems in school and at home. They are often thought to have attention deficit disorder (ADD)” (p. 327). According to Ingersoll (1998), “Rapp’s claims and methods lack scientific backing and are considered questionable by the scientific community in general and by pediatric allergists in particular” (p. 74).

*Sugar.*

Smith popularized the notion that refined sugar caused hyperactivity (Barkley, 1990; Ingersoll, 1998). Although there was, and continues to be, no scientific proof for this contention, pediatricians began recommending low-sugar diets to treat hyperactivity
and attention problems. Many professionals and laypeople continue to support the sugar/hyperactivity theory even though “research findings do not justify eliminating sugar in the diets of ADHD children” (Ingersoll, 1998, p. 74).

**Lead Toxicity (Plumbism).**

Blondis and Chisolm (2000) reviewed the studies on lead toxicity (plumbism) and ADHD. Their first reference was to Byers and Lord who correlated lead poisoning with inattention, impulsivity, and underachievement in school. Needleman et al. found that “inattentive and disruptive classroom behavior measured by teacher questionnaires was higher in children with higher lead levels” (p. 348). Winnecke et al. “found that mothers reported distractibility, fidgeting and restlessness, and inability to stay on task in association with lead determined by tooth lead levels” (p. 348). Blondis and Chisolm’s review also uncovered research that found no connection between plumbism and ADHD.

**Fetal Alcohol Syndrome (FAS).**

Fetal alcohol syndrome (FAS), a term coined by Jones and Smith in 1973, has been linked to numerous cognitive and behavioral problems (Clarren, 2000). Streissguth’s longitudinal study found a correlation between increasing levels of alcohol and decreasing intelligence, fine and gross motor difficulties, and attentional problems (as cited by Clarren, 2000, p. 366).

Individuals with ADHD are more likely to drink as adolescents and young adults than those who are not diagnosed with the disorder (Cherkes-Julkowski, Sharp, & Stolzenberg, 1997). This predisposition to drinking may be “due to a genetically linked ADHD in both parent and child” (p. 28) rather than to exposure to alcohol in utero.

**Smoking.**
Studies by Denson et al. and Streissguth et al. have documented a higher rate of smoking among mothers of children with ADHD than control children (as cited in Barkley, 1990). Longitudinal studies found that “maternal cigarette smoking was significantly associated with the degree of hyperactivity and inattention in the children of those pregnancies (Nichols & Chen, 1981; Streissguth et al., 1984)” (as cited in Barkley, 1990, p. 100). Barkley emphasized that these results are correlational in nature, and do not prove that smoking causes ADHD. Diagnosed individuals had higher incidences of smoking as adolescents and young adults than undiagnosed individuals (Cherkes-Julkowski, Sharp, & Stolzenberg, 1997). This finding supports the genetic link between parents and children with ADHD, rather than smoking as the possible cause of the disorder.

**Fluorescent Lighting.**

In the mid 1970s, a photographic engineer theorized that hyperactivity was caused by cool-white fluorescent lighting (Barkley, 1990). The theory generated concern because public schools often use this type of lighting in classrooms. Results of a poorly designed study by Mayron, Ott, Nations, and Mayron in 1974 supported the connection between cool-white fluorescent lighting and hyperactivity (as cited in Barkley, 1990). In 1978, O’Leary, Rosenbaum, and Hughes conducted a methodologically sound study in an unsuccessful attempt to replicate those findings (as cited in Barkley, 1990). The theory quietly disappeared.

**Poor Parenting.**

Poor parenting is perhaps, the most controversial environmental theory associated
with ADHD (Ingersoll, 1998). Some researchers claim that hyperactivity is the result of "poor parental management of children" (Barkley, 1990, p. 103). Reid, Maag, and Vasa (1994) suggested that ADHD, like the LD label that preceded it, is "a pill much easier for parents to swallow than being told their child’s problems resulted from a deprived environment" (p. 208). However, as early as 1902, Still argued against the theory that poor parenting skills caused ADHD. Barkley (1990) summarized Still’s findings:

Although a chaotic family life was reported in many children, many others came from households with seemingly adequate upbringing. In fact, Still believed that cases where poor child rearing was clearly involved should be exempt from this category, and that it should be reserved for children who displayed a morbid failure of moral control despite adequate training. (p. 5)

Johnston studied the behaviors of parents of children with ADHD, without ADHD, and with ADHD comorbid with ODD (as cited in Lensch, 2000). No differences were found in parent behaviors across groups.

There continues to be support for both sides of the argument. Barkley (1990) reported the following:

. . . the overly critical, commanding, and negative behavior of mothers of hyperactive children is most likely a reaction to the difficult, disruptive, and noncompliant behavior of these children rather than a cause of it. This is not to say that the manner in which parents attempt to manage their children’s ADHD behavior cannot exacerbate it or serve to maintain higher levels of conflict between mothers and children over time. (p. 104)

Television.

In recent years, the syndicated columnist John Rosemond and others have argued that too much television-watching causes ADHD (Barkley, 2000). The theory centers on the idea that watching television shortens the attention span. According to Barkley,
The greatest evidence against Rosemond’s idea comes from twin studies that have found that the rearing environment that twins and siblings share growing up in the same family makes no significant contribution to differences among children in their degree of ADHD symptoms. Television viewing is a part of that shared environment, so these studies indicate that too much television does not contribute to ADHD. (p. 82)

When ADHD can be diagnosed with the use of objectively administered tests such as those used to identify other medical disorders, its etiology will no longer be the subject of debate. Until that time, controversy will continue to surround the nature of what actually causes the disorder.

**Diagnosis**

ADHD is diagnosed by psychiatrists, psychologists, and physicians (Dowdy, Patton, Smith, & Polloway, 1997). Although teachers are neither legally nor professionally qualified to make the diagnosis (Lensch, 2000), it is important for them to be able to recognize the symptoms. According to the American Academy of Pediatrics (2004),

pediatricians and mental health professionals must rely on parents’ and caregivers’ observations of how the child is functioning, information obtained from a child’s teachers or other school professionals, and the results of well-designed questionnaires structured to evaluate whether specific problems may be interfering with a child’s life on a daily basis (p. 19).

The classroom teacher often identifies a child’s problems with organization, attention, and self-control. These concerns are brought to the parents, and the child may then be referred to the school’s Child Study Team (CST) or Intervention Assistance Team (IAT). Through a collaborative effort, the team decides whether evaluation and placement are warranted (SBBC, 2002).
There is no single test for ADHD (Rief, 1998) which is why some people question its existence (Armstrong, 1995; Baughman, 2001). A standardized, objective instrument needs to be developed so that ADHD can be more accurately diagnosed (Accardo & Blondis, 2000a). At present, data is evaluated from various sources (DuPaul & Stoner, 1994) such as the DSM-IV (APA, 1994a). According to Barkley (1990), “This process of diagnosis is accomplished mainly through the differentiation of the condition from other potentially applicable disorders – the process of differential diagnosis” (p. 169). The clinician rules out other conditions by accurately identifying the DSM-IV criteria for the diagnosis of ADHD.

**DSM-IV Criteria**

There are three subtypes of ADHD outlined in the DSM-IV (APA, 1994a). A diagnosis of ADHD, Predominantly Inattentive Type is made if six of the following nine symptoms of inattention are present:

**Inattention**

(a) often fails to give close attention to details or makes careless mistakes  
(b) often has difficulty sustaining attention  
(c) often does not seem to listen  
(d) often does not follow through on instructions; fails to finish work  
(e) often has difficulty organizing tasks and activities  
(f) often avoids tasks that require sustained mental effort  
(g) often loses things  
(h) is often easily distracted by extraneous stimuli  
(i) is often forgetful in daily activities (APA, 1994b, p. 63)

A diagnosis of ADHD, Predominantly Hyperactive-Impulsive Type may be made if six of the following nine symptoms of hyperactivity/impulsivity are present:

**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 when 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” 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) (APA, 1994b, p. 64)

A diagnosis of ADHD, Combined Type is appropriate if the criteria are met for the inattentive as well as the hyperactive/impulsive subtypes. The DSM-IV requires that these symptoms be present for at least six months, show up before the age of seven, be evident in two or more settings, and not be caused by other mental disorders. Finally, the symptoms must be present to an extent that is “maladaptive and inconsistent with developmental level” (APA, 1994b, p. 63). The DSM-IV criteria can be identified using behavior rating scales, continuous performance tests (CPTs), interviews, observations, school records, and intellectual and academic tests (Dowdy, Patton, Smith, and Polloway, 1997).

**Behavior Rating Scales**

In 1969, Conners developed parent and teacher rating scales to assess levels of hyperactivity (Barkley, 1990). Several scales have been developed (Gordon & Asher, 1994) to determine the presence of ADHD symptoms, and comorbid or co-existing conditions (Fowler, 1992). Some scales were designed for teachers to complete; others
were made for parents to fill out. A list of commonly used behavior rating scales can be found in Appendix D.

Rating scales are considered valuable by some researchers because they attempt “to quantify the data collection process and to establish some measure of objectivity” (Dowdy, Patton, Smith, & Polloway, p. 45). Others find them lacking due to rater bias and vague rating criteria (Hagin & Deson, 2000). Experts in the field of ADHD research recommend that rating scales be used in conjunction with other assessment tools. It is unfortunate that they are often the only tool used to diagnose ADHD (Hagin & Deson, 2000).

DuPaul and Stoner (1994) suggest that the referring teacher complete an instrument such as the Teacher Report Form of the Child Behavior Checklist (TRF-CBCL) developed by Achenbach. They further recommend that the teacher fill out additional scales addressing specific ADHD-related behaviors. Results should still be considered as only a part of the entire evaluative process.

Continuous Performance Tests (CPTs)

The most common type of continuous performance test (CPT) asks that the child press a button when a specified letter, number, or other stimulus, appears on the computer screen (Guyer, 2000). The score indicates how frequently the child was able to choose correct responses (measure of attention) as well as avoid incorrect ones (measure of impulsivity). Researchers such as Douglas (1983) consider CPTs to be highly reliable. Others question their validity because they present a novel task and are administered one-on-one. Children with ADHD perform at their best under these two conditions and may therefore, not demonstrate typical classroom behavior during a CPT. The Test of
Variables of Attention (TOVA) and the Gordon Diagnostic System (GDS) are two of the better known CPTs available to assist clinicians in the diagnostic process (Guyer, 2000).

**Interviews/Observations**

An important part of the diagnostic process consists of structured interviews with parents, teachers, and the individual being assessed (Dowdy, Patton, Smith, & Polloway, 1997). The observation component has been included in this section. It is during the interview that parents and teachers reveal observations about the child’s behavior. Additionally, the interviewer makes observations about the teacher, parents, and child during the interviews. The two components are related and will, therefore, be discussed together.

During parent interviews, information is obtained in regard to the family’s medical history, the child’s behavior at home, previous testing, school performance, and any other concerns that may have led to the referral (Dowdy, Patton, Smith, & Polloway, 1997). Medical history includes information about the mother’s health, use of medication, alcohol, cigarettes, and/or caffeine during pregnancy, and any complications during delivery (Barkley, 1990). The child’s medical history outlines illnesses, ear infections, and/or surgeries during early childhood. The developmental history includes the age at which the child reached developmental milestones such as crawling, sitting up, walking, talking, and toilet-training.

The teacher interview reveals the child’s academic, behavioral, and social performance in the classroom (Dowdy, Patton, Smith, & Polloway, 1997). Information is gathered regarding the child’s work habits and ability to attend during instruction and independent seatwork. Questions concerning the presence or absence of behaviors
associated with oppositional defiant disorder (ODD), conduct disorder (CD), and depression need to be asked as well. The psychiatric disorder most commonly associated with ADHD is ODD, occurring in 35 - 65% of diagnosed children (Barkley, 2000).

Teachers can be a vital source of information in the assessment of ADHD because they spend a good deal of time with students and have the opportunity to observe them in a variety of settings (Dowdy, Patton, Smith, & Polloway, 1997). They are also able to identify behaviors considered inappropriate for a child’s age and/or grade level. Additionally, teachers are more objective than parents in regard to accurately assessing a child’s areas of difficulty (p. 32).

While the child interview can be a crucial part of the assessment process, Barkley (1990) cautions against placing too much emphasis on information obtained from it. First, the child’s behavior during the interview is often not representative of his or her typical behavior. Children with ADHD usually behave more appropriately in one-on-one situations than they do in group settings. It is recommended that the examiner observe the child’s behavior in naturalistic surroundings such as the home or classroom to avoid missing an ADHD diagnosis. Second, research has shown that “children are not particularly reliable in the reporting of information about themselves . . .” (Barkley, 1990, p. 249).

**School Records**

School records may offer “evidence of the ongoing symptoms of ADHD, specifically the type of behaviors noted and their frequency, degree, and duration” (Dowdy, Patton, Smith, & Polloway, 1997, p. 43). Teacher notations can shed light on the impact of the child’s behavior on relationships with peers and adults. School records
can facilitate future placement if it can be determined that the child was more successful with a particular teacher or teaching style.

**Intelligence and Academic Tests**

The diagnosis of ADHD is not based on the results of intelligence and academic tests (Dowdy, Patton, Smith, & Polloway, 1997). These tests are used to rule out the existence of mental retardation or learning disabilities and may also determine the child’s eligibility for services under IDEA. A child whose primary diagnosis is ADHD may be eligible for special education and/or related services under the category Other Health Impaired (OHI) which includes “all chronic and acute conditions that result in limited alertness and adversely affect educational performance” (p. 20).

Intelligence and academic tests are also used to help determine appropriate intervention plans (Dowdy, Patton, Smith, & Polloway, 1997). A child with high intellectual functioning may benefit from self-monitoring and self-regulation techniques. Some behavior contracts may also be more effectively implemented with children of higher cognitive abilities.

**Physical Exams**

Although there is no laboratory test for ADHD, a physical exam is used to rule out the existence of other disorders (Dowdy, Patton, Smith, & Polloway, 1997). A medical examination can also reveal an intolerance to commonly used ADHD medications. Medical exams may not be required for a school’s diagnostic team to identify ADHD, however, if the school does mandate such an exam, federal law requires that the school pay for it.
Treatment Options

Medication

Stimulants.

Bradley is credited with being the first to document the use of stimulant drugs with hyperactive children in 1937 (Barkley, 1990; Ingersoll, 1998). He reported that these central nervous system drugs had a calming effect on hyperactive children. When methylphenidate became available commercially in 1957, there was renewed interest in stimulant medication. By 1970, more than 150,000 children were taking stimulants to manage behaviors associated with ADHD (Barkley, 1990). Powers (2000) reported that “approximately 1.5 million children per year (2.8% of youths) currently receive pharmacological therapy for the disorder in the United States (Safer et al., 1996)” (p. 479).

Until recently, the most commonly prescribed stimulant was Ritalin, the brand name for methylphenidate (Barkley, 1990). Adderall, a mixture of four amphetamine salts, is believed to be longer-acting and is now prescribed regularly. Stimulants that are offered in extended-release (ER) forms have become popular. The first form of ER stimulant medication was Concerta (methylphenidate), approved by the FDA in August 2000 (McNeil Consumer & Specialty Pharmaceuticals, 2000). Metadate ER was approved in April 2001 and Adderall XR in October 2001.

A great deal of controversy surrounds the use of stimulants with children diagnosed with ADHD (Armstrong, 1995; Ingersoll, 1998; O’Shea, 2000). Much of the misinformation about medication was disseminated in the late 1980s by the Church of Scientology and its Citizens Commission on Human Rights (CCHR) (Barkley, 1990).
They claimed that Ritalin “was a dangerous and addictive drug often used as a chemical straitjacket to subdue normally exuberant children because of intolerant educators and parents and money-hungry psychiatrists” (Barkley, 1990, p. 35). The CCHR went on television talk shows, wrote letters to newspapers, and distributed leaflets to parents around the country spreading misinformation about Ritalin. They reported that its use “could frequently result in violence or murder, suicide, Tourette’s syndrome, permanent brain damage or emotional disturbance, seizures, high blood pressure, confusion, agitation, and depression” (Barkley, 1990, p. 35). Controversy about stimulants is also promulgated by the media. As Ingersoll (1998) stated,

Even when an article or broadcast treats the subject in an evenhanded and objective fashion, editors can’t seem to resist sensational headlines, like “Ritalin: Are We Overmedicating Our Kids?” (Newsweek, March 18, 1996) and “Children’s Cure or Adult’s Crutch?” (The Washington Post, April 11, 1995). (p. 84)

The research confirms that stimulants are highly effective in the treatment of ADHD (American Academy of Pediatrics, 2004; Barkley, 1990; CHADD, 2000; Ingersoll, 1998; Pfiffner, 1996). By 1996, 161 randomized controlled trials had been published (Rabiner, 2003). Results indicated a 65 to 75% improvement rate among individuals who received stimulant medication. Most of the studies followed participants for less than 12 weeks.

In 1999, the Multimodal Treatment Study of Children with ADHD (the MTA Study) set itself apart from previous studies that examined the use of stimulant medication (Rabiner, 2003). The MTA study followed children with ADHD for a period of 14 months and carefully monitored their progress using medication management, behavioral treatment, combined treatment, or community care (MTA Cooperative Group,
Results revealed that “combined behavioral intervention and stimulant medication – multimodal treatment, the current criterion standard for ADHD interventions – yielded no significantly greater benefits than medication management for core ADHD symptoms” (p. 1078). Children receiving medication through the study, whether alone or combined with behavioral therapy, “experienced greater reductions in ADHD symptoms than children treated with medication by community physicians” (Rabiner, 2003, p. 42). These findings suggest that physicians need to carefully monitor the use of stimulants to insure optimal effectiveness. The MTA study found such monitoring to be the exception rather than the rule in communities around the country (Barkley, 2002).

In January 2003, the first non-stimulant medication for the treatment of ADHD was approved by the FDA (Goldstein, 2002). The new drug, atomoxetine, is sold under the brand name Strattera and is believed to have fewer side effects than stimulants. Future research will determine its level of efficacy in the treatment of ADHD.

**Antidepressants.**

Stimulant medication is usually a physician’s first choice for treatment of ADHD (Barkley, 1990). When a child does not respond positively to stimulants, antidepressants can be effective alternatives. Tricyclic antidepressants such as imipramine (sold as Tofranil) last longer than stimulants and have a positive effect on mood and anxiety (Ingersoll, 1998). Although they reduce hyperactivity and aggression, antidepressants are less effective than stimulants in the improvement of attention.

**Combinations of Medications.**

Physicians commonly prescribe more than one medication for the treatment of ADHD with comorbid conditions (Ingersoll, 1998). Research has found that “as many as
40 to 60\% of children with ADHD have at least one other major disorder” (CHADD, 2000, p. 9). An antidepressant is often prescribed in addition to a stimulant when depression coexists with ADHD. Combinations may also lower the dosage of each prescribed medication, reducing negative side effects that medications often produce.

**Psychotherapy**

The term psychotherapy “encompasses a wide variety of methods and techniques aimed at helping people make changes in their attitudes, emotions, and behavior patterns” (Ingersoll, 1998, p. 105). In the 1980s, parents were advised to try every possible intervention, including psychotherapy, before turning to medication (Ingersoll, 1998). Today, it is well known throughout the medical community that medication is the most effective treatment for ADHD (MTA Cooperative Group, 1999). Experts agree that psychotherapy does not eliminate the core symptoms of ADHD (Ingersoll, 1998) however it can benefit children with comorbid psychiatric conditions such as depression.

Behavior therapy, often referred to as behavior modification, is perhaps, the most well known type of mental health intervention for children with ADHD (Ingersoll, 1998). It is based on the work of Skinner who believed that “behavior is affected most strongly by consequences that immediately follow the behavior” (p. 114). Desired behaviors should be reinforced while unacceptable behaviors should be followed by negative consequences. Behavior therapists recommend point programs or token economy systems because they allow immediate consequences to follow a given behavior.
Numerous studies have investigated the use of behavior modification for the treatment of children with ADHD (Barkley, 1990; Ingersoll, 1998). According to Barkley, behavior techniques have been shown to manage inattentive and hyperactive behaviors to some extent, but they are not as effective as stimulant medication. He is careful to add that “stimulant drugs should never be used as a sole intervention, but should be combined with parent training and behavioral intervention in the classroom” (p. 18).

**Controversial Treatments**

A fierce battle continues to rage between proponents of research-based treatments and alternative methods that have not been proven effective using controlled studies. The scientific method is used by legitimate scientists to evaluate treatments (Ingersoll & Goldstein, 1993). According to Ingersoll and Goldstein, the effectiveness of alternative treatments such as megavitamins, anti-motion-sickness medication, candida yeast, essential fatty acids, oil of evening primrose, and amino acids is not supported by scientific research.

Many alternative treatments are recommended by Armstrong (1995) who argues that the effectiveness of a treatment need not be proven scientifically sound before it is advertised as such. Another strong supporter of alternative treatments is Rapp (1991) who suggests that “about 65 percent of hyperactive children on Ritalin can be helped by appropriate diets and allergy extract therapy without the use of any pills or drugs” (p. 351). This claim has not been substantiated in the mainstream scientific community.

Controversial treatment options for ADHD are advertised on numerous web sites and in countless books. There are members of the medical community who advocate the
use of treatments that have not yet been scientifically proven effective. It is vital for
doctors, teachers, and parents to access accurate information about ADHD from reliable
sources. According to Children and Adults with Attention Deficit Hyperactivity Disorder
(CHADD) (2000), good sources of information include medical schools, government
agencies, and reputable medical journals (p. 14).

Classroom Accommodations

In the education literature, accommodation is most often used “as an umbrella
term for addressing individual needs” (Dowdy, Patton, Smith, & Polloway, 1997, p. 97). Terms such as intervention, strategy, modification, or adaptation are often used interchangeably with accommodation. Children with ADHD must be afforded appropriate accommodations to be successful in school. Federal legislation has mandated that school districts provide such accommodations when necessary.

Experts agree that educational programs for students with ADHD should include structure and routine (CHADD, 2000; Rief, 1993). Students in this population function best when they know what to expect. Children with ADHD also need consistency. They can be relentless in their attempts to get their way and are most likely to respond positively to limits that are enforced in a consistent, calm, and unemotional manner. Students with ADHD are not a homogeneous group, and the accommodations a teacher will be required to make vary from student to student. Accommodations at school are most commonly made in the areas of instruction, environment, and behavior management.

Instructional Accommodations
Instructional accommodations can be made in content, materials, delivery of instruction, and assignments (Dowdy, Patton, Smith, & Polloway, 1997). Content accommodations refer to the changes a teacher makes in the information the child is required to learn (Dowdy, Patton, Smith, & Polloway, 1997). Such accommodations include adjusting the instructional level higher or lower, depending upon the student’s abilities.

Material accommodations involve the use of alternative books and learning tools (Dowdy, Patton, Smith, & Polloway, 1997). Highlighting, outlining, and circling information in bright colors have been highly effective with ADHD students (Rief, 1998). Material accommodations may also involve supplying the student with an additional set of textbooks to keep at home.

Accommodations in instruction deal with the delivery of information. Limiting the number of concepts presented at one time and increasing wait time after asking a question are two such accommodations (Rief, 1998). Peer tutoring and computer-assisted instruction have also been used successfully with ADHD students (DuPaul & Eckert, 1998).

Finally, accommodations for assignments may involve changes a teacher makes in the homework, classwork, tests, or projects. Common modifications include shortening assignments and allowing more time to complete them (Dowdy, Patton, Smith, and Polloway, 1997).

*Environmental Accommodations*
Environmental accommodations often involve changes in the design of the classroom. Rief (1998) suggests that teachers seat students with ADHD close to the center of instruction and away from high traffic areas. They should also be allowed to have an alternate desk or chair in the classroom. Background music has been successfully implemented for students with ADHD.

**Behavior Management**

Students with ADHD can create serious challenges for the classroom teacher. The relatively benign problem behaviors involve “calling out . . . , interrupting classroom activities, getting out of an assigned seat without permission, and not completing assigned tasks” (DuPaul, Eckert, & McGoey, 1997, p. 369). An ADHD student with comorbid ODD (APA, 1994a) may exhibit “hostile, disobedient, and defiant behaviors” (Ervin, DuPaul, Kern, & Friman, 1998, p. 65). Due to the disruptive nature of such behaviors, the teacher must implement a behavior management plan. According to DuPaul, Eckert, & McGoey (1997), interventions for behavioral symptoms “must be designed based on a carefully conducted functional assessment that accounts for individual differences. . .” (p. 369). A functional assessment uncovers the environmental events that lead up to, and follow, problem behaviors. It is *why* the child demonstrates an inappropriate behavior, as opposed to *what* that inappropriate behavior is, that is the focus of a functional assessment (Kamleiter, 2002).

Student-regulated strategies such as cognitive-behavioral therapy make the child responsible for monitoring and modifying behavior (Dowdy, Patton, Smith, & Polloway, 1997). Although this type of intervention encourages development of internal control, it has not proven to be effective with the ADHD population. Barkley
explains, “ADD is not a problem of knowing what to do. It’s a problem of doing what you know” (as cited in Fowler, 1992, p. 14).

Token economies have been successfully used to decrease disruptive ADHD behaviors (Dowdy, Patton, Smith, & Polloway, 1997). A child’s positive behaviors are rewarded with chips or tokens that are redeemed for prizes at a predetermined time. A maximum of three desired behaviors are targeted at one time and are monitored daily (Rief, 1993). Behavior plans may involve negative consequences, however “a reward intervention should precede a punishment intervention” (Gordon & Asher, 1994, p. 108). Commonly used forms of negative consequences are planned ignoring, reprimands, and response cost. Planned ignoring is the deliberate lack of attention to undesirable behavior (Gordon & Asher, 1994). It is effective if the targeted behavior is reinforced by attention. Reprimands, unless given privately, are usually not effective with students diagnosed with ADHD (Gordon & Asher, 1994). For a child who seeks out the attention of teachers and peers, “public reprimands actually may serve to strengthen the very behavior the teacher desires to weaken” (p. 109). Response cost uses a penalty or loss of points when the student exhibits a negative behavior (Gordon & Asher, 1994). Teachers consider this method to be effective and easy to use. It is recommended that it be used “in conjunction with positive consequences for appropriate behavior” (p. 110).

Myths and Misconceptions

Public awareness about ADHD has grown in the past 20 years, contributing to an increase in supporters as well as opponents. Armstrong (1995) was instrumental in creating doubt and confusion in parents who wanted answers about ADHD. He blamed
the APA for officially naming it as a disorder in 1980. The media continue to promote myths about the causes, diagnosis, and treatment of ADHD.

The 12 most common myths and misconceptions about ADHD are listed below. A research-based explanation follows each myth in an effort to debunk it.

**Myth #1:** There is no such thing as ADHD (Sosin, 2001).

**Fact #1:** There is absolutely no doubt in the scientific community that ADHD is real (Sosin, 2001, p. 2). In 1998, the National Institutes of Health assembled a panel of experts for a consensus conference on ADHD. The panel, representing the fields of psychology, psychiatry, neurology, pediatrics, epidemiology, biostatistics, education, and the public, concluded that “although an independent diagnostic test for ADHD does not exist, there is evidence supporting the validity of the disorder” (NIH, 1998, p. 4). In 2001, the American Academy of Pediatrics (AAP) published guidelines for clinicians to use in the diagnosis and treatment of ADHD. The first diagnostic guideline calls for “the use of explicit criteria . . . using the *Diagnostic and Statistical Manual of Mental Health Disorders, Fourth Edition (DSM-IV)*” (p. 1033). The DSM-IV is a publication of the American Psychiatric Association (1994). The first treatment guideline states that “primary care clinicians should establish a treatment program that recognizes ADHD as a chronic condition” (p. 1033).

**Myth #2:** The behaviors attributed to ADHD are indistinguishable from those seen in completely normal children (Green & Chee, 1998, p. 255).

**Fact #2:** The symptoms that characterize ADHD are present in everyone to some degree,
however, “one bases the diagnosis of ADD not on the mere presence of these symptoms, but on their severity and duration, and the extent to which they interfere with everyday life” (Hallowell and Ratey, 1994, p. 6).

**Myth #3:** The ADHD child’s problems reflect poor parenting (Ingersoll & Goldstein, 1993, p. 16).

**Fact #3:** Research now tells us that “the child with ADHD has a biological condition which is influenced by the actions of parents but not caused by poor parenting” (Green & Chee, 1998, p. 255).

**Myth #4:** ADHD doesn’t exist outside of the U.S. (Richard, 2000, p. 175).

**Fact #4:** ADHD has been identified in every country in which it has been studied: New Zealand, 2-6%; Germany, 8.7%; Japan, 7.7%, and China 8.9% (Parker, 2002).

**Myth #5:** All children with ADHD are excessively active. (Ingersoll & Goldstein, 1993, p. 16).

**Fact #5:** The DSM-IV (APA, 1994a) contains three subtypes of ADHD. Children diagnosed with Predominantly Inattentive Type do not exhibit signs of hyperactivity.

**Myth #6:** Children outgrow ADHD at puberty (Richard, 2000, p. 181).

**Fact #6:** Longitudinal studies have confirmed that “as many as 70-80% of children diagnosed with ADHD have ongoing problems during adolescence that include overactivity, poor school performance, and behavioral problems at home” (Richard, 2000, p. 181). The prevalence of ADHD in the adult population has been estimated at 2-7%.

**Myth #7:** A child doesn’t have ADHD if he can pay attention to TV or other activities which interest him (Ingersoll & Goldstein, 1993, p. 16).
Fact #7: Many factors can affect the attention span of a child with ADHD. Studies have shown that these children display fewer behavioral problems in novel settings than in familiar ones (Barkley, 1990). Frequent reinforcement and punishment, as in the case of video games, may also increase attention levels for children with ADHD.

Myth #8: Food allergies, poor diet, excessive sugar, preservatives, and food colorings cause ADHD (Richard, 2000, p. 175).

Fact #8: Research confirms that diet does not cause ADHD (Green & Chee, 1998). A few studies reported some success with additive-free diets; however, results apply to symptom relief in a small group of children (CHADD, 2000).

Myth #9: Children are being over-diagnosed with ADHD (Richard, 2000, p. 179).

Fact #9: The percentage of the population with ADHD has not varied considerably since the early 1900s when it was first identified (Gordon & Asher, 1994, p. 25). Most researchers agree that ADHD affects 3-5% of school-aged children (APA, 1994a), although the American Academy of Pedriatrics (AAP, 2004) recently put the number at 6-9%. The increase in diagnoses may be due to one or more of the following: (a) Changes in diagnostic criteria created new subtypes of ADHD (Lensch, 2000); (b) increased awareness about ADHD without accurate information may lead to inappropriate referrals and diagnoses; (c) today’s fast-paced media has caused our children to become scanners (Armstrong, 1995); (d) medical technology is saving babies that did not previously survive (Barkley, 1990); (e) extended time for standardized tests is no longer flagged and sent to colleges (Nass & Leventhal, 2005), thereby removing much of the stigma previously associated with an ADHD diagnosis; and (f) public awareness has increased the clinical identification of ADHD, not the prevalence of the disorder itself.
**Myth #10:** ADHD is found primarily in boys (Richard, 2000, p. 182).

**Fact #10:** According to the American Academy of Pediatrics (AAP) (2004),

The fact that many more boys than girls are diagnosed with ADHD – at a ratio of approximately 3:1 – has led to the mistaken belief among many parents and teachers that ADHD is a “boys” disorder that rarely occurs in girls. This belief, along with the fact that girls are more likely to have inattentive-type ADHD that tends to be overlooked entirely or does not attract attention until the child is older, means that girls are less likely to be referred for evaluation and to receive the treatment they need.” (p. 13)

Most of the research on ADHD has focused on boys (AAP, 2004), putting girls at a further disadvantage. There is a limited amount of information “about potential differences between the genders in the development of the condition over time or response to medication and other forms of treatment” (p. 13). Further research is needed regarding gender differences and ADHD.

**Myth #11:** “A medical diagnosis of ADHD must come before classroom interventions are implemented (Damico & Augustine, 1995; Silver, 1992)” (as cited in Lensch, 2000, p. 102).

**Fact #11:** It is not necessary to wait for a diagnosis before implementing appropriate modifications (Lensch, 2000).

**Myth #12:** Medication for ADHD is new, largely unproven (Green & Chee, 1998, p. 258), over-prescribed, causes children to abuse drugs later in life, stunts growth, and turns children into zombies (Richard, 2000, pp. 183-184).

**Fact #12:** The benefits of stimulant medication in the treatment of ADHD were first discovered by Bradley in 1937 (Barkley, 1990). Hundreds of studies have documented their safety and effectiveness (Green & Chee, 1998). Longitudinal studies that follow
children with ADHD for 10 years or more have shown that the likelihood of substance abuse is increased when ADHD goes untreated (CHADD, 2000). Appetite suppression is one of the common side effects of stimulants however permanent effects on growth hormones have been rare (Accardo & Blondis, 2000b, p. 516). Finally, the goal of medication is not to turn the child into a zombie, but rather, to allow the child to function at his or her best. When medication has a severe sedative effect, many parents tend to abandon its use altogether instead of having the dosage adjusted and monitoring the child’s progress at home and school.

**Teacher Knowledge about ADHD**

In 1994, Jerome, Gordon, and Hustler stated, “Although there is no published literature on teachers’ knowledge and attitude towards ADHD, they are frequently involved in the assessment and treatment process” (p. 563). Since that time, a limited, yet growing, number of studies have been conducted in regard to teacher knowledge about ADHD (Brook, Watemberg, & Geva, 2000; Gordon & Hustler, 1994; Piccolo-Torsky & Waishwell, 1998; Sciutto, Terjesen, & Frank, 2000). These studies investigated teacher knowledge about ADHD in relationship to characteristics such as teaching position, experience teaching children with ADHD, and confidence teaching children with ADHD. Sources of information were also investigated, but to a more limited extent.

A study conducted by Jerome, Gordon, and Hustler (1994) compared 439 American and 850 Canadian teachers in relation to their knowledge and attitude toward ADHD. The study found that “teachers who had specific training in ADHD did better than those who had less education or little training” (p. 565). In fact, teachers who recently graduated from college scored higher than practicing teachers, indicating that
teacher training in ADHD was improving. A follow-up study in 1999 did not support the original finding that ADHD training had improved for pre-service teachers.

In 1998, the questionnaire used in the Jerome et al. study (1994) was administered to 154 New Jersey elementary teachers (Piccolo-Torsky & Waishwell). Results indicated that teachers with special education certification scored higher on the knowledge test than those with elementary certification. Teachers who had read more than 10 books or articles about ADHD also had higher mean scores than those who had read less. Knowledge scores did not vary significantly, however, with regard to age of the teacher, grade taught, years teaching, or marital status. Teachers in the study “overwhelmingly indicated they could benefit from additional training regarding ADHD” (p. 39). A significant finding in this study was that teachers who reported having the most contact with students with ADHD had the lowest knowledge scores. These teachers had certification in special areas, such as music, art, and physical education.

A study done in Israel (Brook, Watemberg, & Geva, 2000) concluded that teachers had insufficient knowledge about ADHD. The main sources of information for these teachers were “specialized literature, special courses, and symposiums” (p. 250). The authors’ recommendation was as follows:

Special training courses would involve learning the most recognized advanced educational techniques in handling ADHD/LD pupils from experts in the field, including special educators, neurologists, psychologists, and teachers with experience in any changing methodologies. (p. 250)

Sciutto, Terjesen, and Frank (2000) surveyed 149 New York elementary teachers regarding their knowledge and misconceptions about ADHD. The study found no significant correlation between teacher knowledge about ADHD and teacher age,
education level, or the number of special education classes taken. There was a significant correlation between knowledge and teacher confidence teaching children with ADHD. A “small, but statistically significant correlation was found between knowledge and the number of ADHD children taught, and years of teaching experience” (p. 120).

Attitudes

Definitions and Theories

Researchers have been defining the concept of attitude for over a century (Ajzen & Fishbein, 1980). In 1862, Spencer was one of the first psychologists to use the term when he said, “Arriving at correct judgments on disputed questions, much depends on the attitude of mind we preserve while listening to, or taking part in, the controversy (Vol. 1, p. 1)” (Ajzen & Fishbein, 1980, p. 13). Since that time, attitude definitions have been sorted using three components: (a) cognitive, (b) affective, and (c) behavioral or conative (Antonak & Livneh, 1988).

The cognitive component of the attitude construct refers to “the individual’s ideas, thoughts, perceptions, beliefs, or opinions about the attitude referent” (Antonak & Livneh, 1988, p. 7). Allport’s definition of attitude in 1935 emphasizes the cognitive component: “An attitude is a mental or neural state of readiness (p. 810)” (Mueller, 1986, p. 3).

The affective component of attitude deals with “the emotion that charges the idea (cognitive component) of the attitude (Triandis, 1971)” (as cited in Antonak & Livneh, 1988, p. 8). Thurstone’s 1931 definition states, “Attitude is the affect for or against a psychological object (p. 261)” (Mueller, 1986, p. 3).
The third component is sometimes separated into the behavioral and conative components (Antonak & Livneh, 1988). The conative element is “the individual’s intent or readiness to behave in a certain manner with respect to the attitude object” (p. 8). The behavioral component is the actual act or behavior exhibited by a person. In 1901, Baldwin defined attitude as “readiness for attention or action of a definite sort” (Ajzen & Fishbein, 1980, p. 13). In 1931, Bogardus wrote, “An attitude is a tendency to act toward or against some environmental factor which becomes thereby a positive or negative value (p. 52)” (Antonak & Livneh, 1988, p. 9). Krech, Crutchfield, and Ballachey argued that “man’s social actions-whether the actions involve religious behavior, ways of earning a living, political activity, or buying and selling goods-are directed by his attitudes” (as cited in Ajzen & Fishbein, 1980, p. 13).

In 1935, Allport challenged the idea that attitude could be defined within only one of three dimensions (Ajzen & Fishbein, 1980). Definitions with two or all three of the components became common. Figure 1 illustrates Rosenberg and Hovland’s schematic representation of this three-component view of attitude (Zimbardo, Ebbesen, & Maslach, 1977, p. 21). The definition developed by Triandis includes all three components: “An attitude is an idea [cognitive] charged with emotion [affective] which predisposes [conative] a class of actions [behavioral] to a particular class of social situations (p. 2)” (as cited in Antonak & Livneh, 1988, p. 9).

**Significance of Attitudes**

The study of attitudes is significant to social scientists in a number of ways. Mueller (1986) reasons that “human beings evaluate just about everything they come into
contact with . . .” (p. 6). Our attitudes impact the important decisions we make in our lives including whom we marry, where we live, and what profession we pursue. Attitudes are studied in order to better understand the environmental variables that affect their formation. For example, many researchers view beliefs as the cognitive component of attitudes (Antonak & Livneh, 1988). Beliefs are “associated with the amount of information an individual has about a particular object” (p. 10). Given that beliefs affect attitudes, it would follow that negative beliefs result in negative attitudes. A teacher who believes that children with ADHD are lazy would, according to this model, have a negative attitude toward children diagnosed with the disorder. The teacher may go to a workshop and learn that children with ADHD have a neurological disorder that affects

*Figure 1. The three-component view of attitude (from Rosenberg and Hovland, 1960)*
their ability to regulate behavior and attention (Parker, 2002). According to the model, the teacher’s beliefs about children with ADHD would be positively altered, resulting in a more positive attitude toward them.

Of what significance is a teacher’s attitude toward students? This is the question that is most salient for the purpose of the present study. The review of the literature reveals that attitude is one of the many factors influencing behavior (Ajzen & Fishbein, 1980). A teacher’s attitude toward students therefore, impacts how that teacher behaves toward students. Negative behaviors displayed by teachers toward students are “not conducive to optimizing educational opportunities or outcomes” (Cook, Tankersley, Cook, & Landrum, 2000, p. 131). This issue will be discussed in depth in a later section.

**Attitude Measurement**

Attitude measurement instruments were first developed in the late 1920s (Mueller, 1986). Thurstone is said to be “the father of attitude scaling” (p. 34). His method of equal-appearing intervals allowed for the first precise measurement of people’s favorable and unfavorable attitudes toward an issue. Thurstone scales can achieve high reliability ratings, however, they are time- and labor-intensive instruments to construct.

In 1932, Likert devised the summated rating scale (Ajzen & Fishbein, 1980). Likert scales can be as reliable as Thurstone’s method using fewer items (Mueller, 1986). The items imply either favorable or unfavorable beliefs about, or feelings toward, the attitudinal object (Mueller, 1986). Responses are typically categorized in terms of a five-point scale. Likert scales continue to be popular in the field of attitude measurement.

In 1944, Guttman devised a scaling instrument that was unidimensional (Mueller,
Scalogram analysis involves the selection of statements about an attitude object. Because the attitude construct is considered to be multidimensional, the Guttman scale is not commonly used for attitude measurement.

In the 1950s, Osgood developed the semantic differential scale to study the nature of meaning (Mueller, 1986). It was eventually modified for the purpose of attitude measurement. Respondents rate a set of opposite adjective pairs based on their feelings about a particular attitude object. Semantic differential scales are relatively easy to construct and take little time to administer. They have been shown to correlate highly with scores from Likert and Thurstone attitude scales (Mueller, 1986, p. 55) however, respondents can easily determine what is being measured. This type of direct measurement may lead to response biases such as social desirability response sets (Crowne & Marlowe, 1964). As a result, the validity of the instrument may be negatively impacted (Antonak & Livneh, 1988).

Indirect methods disguise the true nature of what is being measured, increasing the likelihood of eliciting “. . . well-hidden values, beliefs, attitudes, feelings, needs, wishes, desires, impulses, and motives . . .” (p. 72). Indirect methods include projective techniques such as the Rorschach inkblot test and disguised procedures such as the error-choice test (Antonak & Livneh, 1988).

The error-choice test was developed by Hammond in 1948 (Hepperlen, Clay, Henly, & Barke, 2002). It is based on the hypothesis that people’s attitudes affect their guessing patterns when answering difficult questions. Respondents are told that they are taking a multiple choice information test. All of the choices are “incorrect alternatives that are approximately equidistant from the correct answer, and that represent varying
degrees of favorableness or unfavorableness toward the attitude object” (p. 135). Factual items that have correct answer choices are included to insure that the true purpose of the test is disguised.

**Teacher Attitudes toward Students**

For several decades researchers have recognized the importance of understanding teacher attitudes toward students (Brophy & Evertson, 1981; Good & Brophy, 1972). Rosenthal and Jacobson concluded that “teacher expectations for student achievement could function as self-fulfilling prophecies” (as cited in Brophy & Evertson, 1981, p. vii). Although the term *self-fulfilling prophecy* was labeled and defined by Merton in 1948, Rosenthal and Jacobson were the first to apply the concept to the field of education (Brophy & Evertson, 1981). Self-fulfilling prophecy is based on the idea that “prior possession of a belief, expectation, or attitude could help make it come true . . .” (p.10).

Numerous studies have investigated the attitudes of teachers toward students (Good & Brophy, 1972; Silberman, 1969; Willis & Brophy, 1974). Silberman’s study became a model from which future attitude studies developed. Teachers chose one student to represent each of four attitudes: (a) attachment: a student that the teacher would like to have again; (b) indifference: a student about whom the teacher has little to report; (c) concern: a needy student to whom the teacher would devote much time if possible; and (d) rejection: a student whom the teacher would not mind losing.

Observation of teacher-student interactions indicated that a teacher’s attitude toward a student significantly affected the way in which the teacher behaved toward that student (Good & Brophy, 1972). Teachers gave the most attention and the least restrictions to students in the concern category. The attachment children received more praise than
other students. The indifference group received little attention from the teacher, however, these students initiated little interaction. Students in the rejection group were criticized more than other students and required more teacher attention in regard to disruptive behavior.

Willis and Brophy’s (1974) study found that teachers perceived students in the rejection group as low in ability due to their severely disruptive behavior. The actual ability level of the rejection group did not differ significantly from that of other children in the study. This is an important finding in terms of the ADHD population. If inappropriate behavior negatively impacts teachers’ perception of academic ability, the student with ADHD is at risk of being misjudged. It should be noted that students diagnosed with ADHD-Predominantly Inattentive Type do not typically display the disruptive behaviors often associated with the Predominantly Impulsive/Hyperactive or Combined types.

The passage of P.L. 94-142 in 1975 made teacher attitudes toward students with disabilities a widely recognized area of concern. The concept of *mainstreaming*, now known as *inclusion*, refers to the integration of students with disabilities into general education classes (Scruggs & Mastropieri, 1996). According to the U.S. Department of Education, “about three-fourths of all students with disabilities are currently fully or partially integrated in general education classrooms” (as cited in Leyser & Tappendorf, 2001, p. 1). These figures indicate that general educators are profoundly affected by the inclusion of students with disabilities in regular education classroom. Scruggs and Mastropieri (1996) noted the following:

In order for mainstreaming/inclusion to be effective, it is generally agreed that the
school personnel who will be most responsible for its success—general classroom teachers—be receptive to the principles and demands of mainstreaming/inclusion (Garvar-Pinhas & Schmelkin, 1989). (p. 59)

Teacher attitudes toward students with and without disabilities have been investigated at length (Harasymiw & Horne, 1976; Larrivee, 1982; Silberman, 1969). In the 1970s, studies focused on teacher attitudes toward mainstreaming and handicapped children (Flynn, Gacka, & Sundean, 1978; Guerin, 1979; Harasymiw & Horne, 1976). More recent studies attempt to assess teacher attitudes toward inclusion and students with specific disabilities (Hepperlen, Clay, Henly, & Barke, 2002; Sciutto, Terjesen, & Frank, 2000).

The attitude a teacher holds toward ADHD can have a powerful impact on a child’s future level of achievement and self-esteem (Barkley, 2000; Rief, 1993). Research confirms that “adults who had been diagnosed with ADHD as children have reported that a teacher’s caring attitude, extra attention, and guidance were ‘turning points’ in helping them overcome their childhood problems” (Barkley, 2000, p. 227).

A review of the literature indicated that the following teacher variables can affect teacher attitudes toward students with and without disabilities: (a) teaching position, (b) experience teaching children with disabilities, (c) personal experience with children with disabilities (family members), (d) confidence teaching students with disabilities (self-efficacy), (e) sources of information, and (f) knowledge about disabilities.

**Teaching Position**

Studies that investigate teacher knowledge and attitudes often include teaching position as a predictor variable. Larrivee and Cook (1979) found that teacher attitudes
toward mainstreaming became more negative as grade level increased. Hannah and Pliner (1983) outlined several studies in which the teaching position variable yielded conflicting results. They cited a study in which “elementary teachers were shown to hold more positive attitudes than secondary teachers (Morris & McCauley, 1977)” (p. 16). Hannah and Pliner also described a study in which “Sigler and Lazar (1976) did not find a relationship between grade level and beliefs about the handicapped” (p. 16).

Leyser and Abrams (1984) investigated a training program designed to change teacher attitudes toward mainstreaming. Results indicated that teacher attitudes became more positive as a result of the training, regardless of grade level. Leyser and Tappendorf (2001) found that although grade level was not significantly related to teacher attitudes about mainstreaming, elementary and junior high school teachers were more inclined than high school teachers to use classroom adaptations for students with diverse needs.

**Experience Teaching Children with a Disability**

The literature is split on whether teachers’ attitudes are related to their experience teaching children with disabilities. In a review by Hannah and Pliner (1983), several studies found that teachers’ attitudes are impacted by the amount of experience they have teaching handicapped children. Contact with handicapped children can lead to an increase in positive or negative attitudes, depending on the nature of the interaction. The review also included research by Panda and Bartel, Conine, and Combs and Harper that found no significant relationship between teachers’ attitudes and their level of experience teaching handicapped children.

In November 1994, Jerome, Gordon, and Hustler wrote “Although there is no published literature on teachers’ knowledge and attitude towards ADHD, they [teachers]
are frequently involved in the assessment and treatment process” (p. 563). Less than a decade later, public awareness has led researchers to extensively investigate teachers’ knowledge and attitudes regarding children diagnosed with ADHD. Sciutto, Terjesen, and Frank (2000) measured 149 elementary school teachers’ knowledge about ADHD using the Knowledge of Attention Deficit Disorders Scale (KADDS). They found that “teachers who reported having taught one or more ADHD children had significantly higher scores . . .” (p. 120). A recent study of 103 elementary school teachers found that teacher attitudes toward ADHD were unrelated to the number of students taught with ADHD (Hepperlen, Clay, Henly, & Barke, 2002).

**Personal Experience with Children with a Disability (Family Member)**

The literature review yielded a limited number of studies on teachers’ attitudes and their personal experience with disabled children. Stephens and Braun (1980) found that “having exceptional children in the family . . . [was] not significantly related to classroom teachers’ attitudes toward integrating handicapped children into regular classrooms” (p. 294). Jamieson (1984) printed misinformation about the results of that study when she wrote, “Stephens and Braun (1980) identified having a special education child in the family as the only variable that generates positive teacher attitudes toward handicapped pupils” (p. 218). This example of inaccurate information from a secondary source illustrates the importance of reviewing primary sources whenever possible.

**Confidence Teaching Children with a Disability (Self-Efficacy)**

An extensive review of the literature clearly indicated that the confidence teachers have in regard to teaching children with a disability is significantly related to their attitude toward disabilities and the concept of mainstreaming (Kauffman & Wong, 1991;
Salend & Johns, 1983; Sciutto, Terjesen, & Frank, 2000). Teacher efficacy has also been
viewed as a crucial component in student achievement (Agne, Greenwood, & Miller,
1994).

Larrivee and Cook (1979) investigated the attitudes of 941 regular classroom
teachers toward mainstreaming. Of the seven variables examined, “the regular classroom
teacher’s perception of degree of success in dealing with special-needs students had the
most significant relationship to teacher attitude” (p. 315). Sciutto, Terjesen, and Frank
(2000) found that “overall knowledge of ADHD was . . . positively related to teachers’
confidence in their ability to effectively teach an ADHD child” (p. 120).

Sources of Information

The literature is mixed in regard to the connection between teachers’ knowledge
regular classroom teachers about their perceptions of mainstreaming. They found that
“teachers feel more prepared as a result of academic rather than inservice preparation” (p.
304) however, there were no data to support this claim.

In another study, 154 elementary school teachers were evaluated regarding their
knowledge of ADHD (Piccolo-Torsky & Waishwell, 1998). Results indicated that
“teachers who had read more than 10 books/articles on the subject scored higher on the
knowledge section on of the questionnaire ($p < .01$)” (p. 39). There was no information in
regard to which books and articles teachers had read.

Leyser and Tappendorf (2001) surveyed 91 regular and special education teachers
on their attitudes toward, and use of adaptations for, mainstreamed students. The number
of mainstreaming courses teachers had taken was significantly related to their use of
adaptations for mainstreamed students, but not to their attitude toward them.

Harasymiw and Horne (1976) studied teacher attitudes toward handicapped students. They concluded that programs designed to increase teachers’ positive attitudes toward handicapped students merely decreased their anxiety about teaching this population. Recent studies suggest that in-service programs have a positive effect on teacher attitudes toward the handicapped and their inclusion into the regular classroom (Montague, Warger, & Harris, 1997).

The degree to which teachers’ sources of information impact their knowledge and attitudes has become the focus of extensive research (Landrum, Cook, Tankersley, & FitzGerald, 2002). Carnine theorized that “translating research into practice depends on the extent to which practitioners believe that research findings are trustworthy, usable, and accessible” (as cited in Landrum, Cook, Tankersley, and Fitzgerald, 2002, p. 42). Landrum, Cook, Tankersley, and Fitzgerald (2002) examined teachers’ ratings of the trustworthiness, usability, and accessibility of college coursework, in-service presentations, professional journals, and experienced teachers. Results indicated that teachers consider colleagues to be more trustworthy, usable, and accessible sources of information than college coursework, in-service workshops, or professional journals.

A study in Israel investigated teachers’ sources of information about ADHD and learning disabilities (Brook, Watemberg, & Geva, 2000). Results indicated that “the main sources of teachers’ information on ADHD/LD are specialized literature, special courses and symposiums” (p. 250). Television, newspapers and magazines, and medical personnel were accessed by 23%, 17%, and 10% of the teachers respectively. The findings did not indicate whether there was a correlation between teachers’ level of
knowledge about ADHD/LD and their primary sources of information.

Glass (2001) surveyed 225 elementary school teachers about the strategies they use with ADHD students. She concluded that “teachers who received information about ADHD from their school administrators were significantly more likely to consistently utilize positive teaching strategies than teachers who had not received any information” (p. 74).

The American Academy of Pediatrics (AAP, 2004) recommends that the Internet be accessed cautiously for information about ADHD. The following guidelines are offered by the AAP:

A good way to quickly ascertain the reliability of an Internet resource is to look at the suffix of its Web site address. Government information Web site addresses end in “.gov.” These include sites such as the National Institutes of Health and National Institute of Mental Health and have a wealth of health-related teaching materials for the general public. Non-profit organizations, such as the AAP and CHADD, have Web sites ending in “.org” – however, not all organizations put out materials as reliable as the materials from these two organizations. Academic Web sites have “.edu” suffixes . . . [offering] evidence-based educational materials geared toward parents. (p. 260)

The AAP suggests that information obtained from sites ending in “.com” be researched further. These sites are commercial in nature and are not always affiliated with an educational entity or a reliable source of information. Many such sites simply offer commonly known facts about ADHD as a ploy to sell nutritional supplements or other alternative treatment options.

Many reputable publications offer copies of their articles online. One such article was published in Today’s Chiropractic and was accessible online at www.todayschiropractic.com. The article was entitled, “Attention Deficit Disorder: A Designer Disease.” It contained a good deal of misinformation such as, “Why does ADD
only exist in the U.S.?“ (O’Shea, 200, p. 42) and “Research does not confirm the existence of an ADD syndrome” (p. 44).

Other reputable media names such as CNN, offer Internet users the opportunity to vote on controversial issues. When asked, “Do you think ADHD is overdiagnosed?” 76% of those who voted responded “Yes” (CNN, March 13, 2002). This type of data gets widespread publicity and is taken as fact rather than as the opinions of laypeople.

Knowledge about a Disability

The literature review revealed what is referred to as “the experience-information issue” (Horne, 1985, p. 156). Horne stated, “Some studies show that contact changes attitudes; others suggest that both components of contact and knowledge are needed” (p. 156). This section will explore the impact of knowledge on teacher attitudes.

Hannah and Pliner (1983) investigated “the relationship between knowledge about handicapped children and attitude toward them” (p. 16). Their review included studies in which teachers completing more special education courses were more willing to teach handicapped children. However, the authors added,

While a teacher may be extremely knowledgeable about a handicapped child’s condition, the teacher may lack the skills necessary to teach or manage the child. Therefore, the teacher may have a negative attitude toward the child, manifesting itself in a reluctance to have the child in the classroom. (p. 19)

This statement clearly suggests that variables other than teacher knowledge are involved with the formation of positive teacher attitudes toward handicapped students.

Jerome, Gordon, and Hustler (1994) compared 439 American and 850 Canadian teachers’ knowledge and attitudes in regard to ADHD. Both groups lacked knowledge
about dietary management, 66% believing the now debunked theory that ADHD can be
caused by sugar or food additives. Both groups also lacked knowledge about the long-
term prognosis saying that “most ADHD children outgrow their disorder and are normal
as adults” (p. 565). Jerome et al. referred to the teachers’ “generally positive attitudes
towards seeing ADHD as a genuine condition . . . . with biological predisposing factors”
(p. 565).

Leyser and Abrams (1984) investigated the effect of in-service training on teacher
attitudes toward mainstreaming. Teachers in the experimental group received training
while those in the control group had no training. Results indicated that “the development
of knowledge about handicapped learners and the attainment of basic skills needed to
help the handicapped student succeed in the regular classroom” (p. 255) had a positive
effect on teacher attitudes.

**Summary**

The review of the literature focused on ADHD and attitudes. The section on
ADHD began with an historical overview including the various names by which it has
been known. The historical overview was followed by a review of the theories associated
with the etiology of ADHD. The components of the diagnostic process were then
outlined beginning with the DSM-IV (APA, 1994b) criteria. The discussion on treatment
options described those considered to be research-based such as stimulants, and those
known as alternative and controversial, such as megavitamins. An overview of the
classroom accommodations used to assist students with ADHD followed. Finally, the 12
most common myths about ADHD were outlined and refuted by experts in the field.

The review of the literature on attitude began with an overview of the definitions
and theories developed over the past century. The significance of attitude research was examined in relationship to teachers. The discussion continued with a summary of the measurement instruments developed by Thurstone, Likert, Guttman, and Osgood. The final section focused on teacher attitudes toward students with and without disabilities.

CHAPTER III

METHODOLOGY

Research Design

This study employed the survey research design to investigate the relationship between teachers’ sources of information and their knowledge and attitudes regarding ADHD. Four additional variables were examined for their predictive value in relationship to teachers’ knowledge and attitudes. The survey design does not, by its very nature, lend itself safely to the development of causal inferences (Bryman & Cramer, 1990). Multivariate analysis of the data, however, revealed any statistically significant
relationships that may exist between variables.

Sample

The population for this study included the K-5 classroom teachers from all seven elementary schools in the Success Innovation Zone (pseudonym) in Broward County, Florida. According to survey data from the 2001/2002 school year (Florida Department of Education, 2002), the total number of K-5 teachers in the zone’s seven elementary schools is 297. For a population of 300, the minimum recommended sample size is 169 (Krejcie and Morgan, 1970, p. 608). A predetermined acceptable rate of return in this study was set at 70%, resulting in a total of 210 participants. This is a statistically reliable sample size for the population.

Research Questions

The following research questions were explored:

1. To what degree is teacher knowledge about ADHD associated with the following teacher characteristics and sources of information: (a) teaching position, (b) experience teaching children with ADHD, (c) personal experience with ADHD, (d) confidence teaching children with ADHD, (e) professional publications, (f) media, (g) Internet, (h) in-service workshops, (i) college courses, (j) personal people, (k) professional people, and (l) colleagues?

2. To what degree is teacher attitude toward ADHD associated with the following teacher characteristics and sources of information: (a) teaching position, (b) experience teaching children with ADHD, (c) personal experience with ADHD, (d) confidence teaching children with ADHD, (e) professional publications, (f) media, (g) Internet, (h) in-service workshops, (i) college courses, (j) personal
people, (k) professional people, and (l) colleagues?

3. To what degree is teacher knowledge about ADHD associated with teacher attitude toward ADHD?

**Hypotheses**

The following null hypotheses were tested at the .05 level of significance:

1. The model composed of the variables for teacher characteristics and sources of information investigated in this study is no more accurate than chance in predicting teacher knowledge about ADHD. Teacher characteristics are: teaching position, experience teaching children with ADHD, personal experience with ADHD, and confidence teaching children with ADHD. Sources of information are: professional publications, media, Internet, in-service workshops, college courses, personal people, professional people, and colleagues.

2. The model composed of the variables for teacher characteristics and sources of information investigated in this study is no more accurate than chance in predicting teacher attitude toward ADHD. Teacher characteristics are: teaching position, experience teaching children with ADHD, personal experience with ADHD, and confidence teaching children with ADHD. Sources of information are: professional publications, media, Internet, in-service workshops, college courses, personal people, professional people, and colleagues.

3. There is no significant relationship between teacher knowledge about ADHD and teacher attitude toward ADHD.

**Instrument**
Participants were asked to complete the Attention Deficit Hyperactivity Disorder Knowledge Assessment (ADHDKA), a five-part questionnaire designed by the researcher for the purpose of this study. The ADHDKA consists of 83 items and should take approximately 30 minutes to complete. The questionnaire is made up of the following sections: (a) Part One: Background Information – four items; (b) Part Two: Sources of Information About ADHD, adapted from a study by Landrum, Cook, Tankersley, and FitzGerald (2002) – 24 items; (c) Part Three: General Knowledge About ADHD, adapted from The Test of Knowledge About Attention Deficit Hyperactivity Disorder-Revised (KADD-R) (Hepperlen, 1998) – 24 items; (d) Part Four: Knowledge About Symptoms, Diagnosis, and Treatment of ADHD, adapted from the Knowledge of Attention Deficit Disorders Scale-Revised (KADDS-R) (Sciutto, Terjesen, & Frank, 2001) – 29 items; and (e) Part Five: Open-Ended Statements, adapted from a study by Whitworth, Fossler, and Harbin (1997) – two items.

**Development of Instrument**

*Item Development*

**Part One: Background Information.**

The first section of the ADHDKA was developed by the researcher, and consists of the following four items: (a) present teaching position, (b) experience teaching children diagnosed with ADHD, (c) personal experience with ADHD, and (d) confidence teaching children with ADHD.

Item 1, present teaching position, corresponds to the predictor variable *teaching position*. Respondents were offered six responses from which to choose: (a) K, (b) 1, (c)
2, (d) 3, (e) 4, and (f) 5. Item 2, experience teaching children diagnosed with ADHD, corresponds to the predictor variable of the same name. Response categories were patterned after those used by Hepperlen, Clay, Henly, and Barke (2002), and include (a) less than 5, (b) 5-9, (c) 10-19, (d) 20-29, (e) 30-49, and (f) 50 or more. Item 3, personal experience with ADHD, is a dichotomous variable and refers to whether the respondent has a family member with ADHD. Item 4 yielded data for the predictor variable confidence teaching children with ADHD. Respondents were given a six-option response format, with 1 signifying a low level of confidence and 6 signifying a high level of confidence.

**Part Two: Sources of Information about ADHD.**

Part Two of the ADHDKA was modeled after a study of 127 midwestern teachers (Landrum, Cook, Tankersley, & FitzGerald, 2002). The study examined teachers’ assessments of the accessibility, trustworthiness, and usability of information obtained from colleagues, in-service workshops, college courses, and professional journals. Respondents rated each source using the following statements: (a) I would be likely to get information from this source, (b) I could get trustworthy information from this source, and (c) I would be likely to use information obtained from this source.

Some modifications were made to the original format with the permission of the authors. According to Landrum et al., a weakness of the 2002 study was that test-retest reliability was low to modest due to “the lack of variability in the data set” (p. 44). The four-point Likert-type scale used in the original study was modified to a six-point scale to increase the variance of responses as well as the reliability of the instrument. A scale with
a middle alternative (i.e., five- or seven-point) was not used so that participants were required to “lean one way or the other” (Johnson & Christensen, 2000, p. 134).

The 2002 study examined teachers’ perceptions of four sources of information – teachers, workshops, college courses, and journals. The present study assessed teachers’ perceptions of eight sources of information. The four additional sources used in the present study were media, Internet, personal people, and professional people.

The third modification involved the scoring of this section of the instrument. The previous study assigned three separate scores to teachers’ assessments of a source’s accessibility, trustworthiness, and usability; the present study used a total of the ratings for all three characteristics as a composite score for each source. Responses ranged from 1 (strongly disagree) to 6 (strongly agree). Each source of information yielded a total score of between 3 (3 X 1) and 18 (3 X 6). A high total score indicated that a respondent would be likely to obtain and use information from the source. Additionally, the respondent would be likely to consider the source highly credible.

**Part Three: General Knowledge about ADHD.**

Part Three of the ADHKDA was adapted from the Test of Knowledge about ADHD (KADD-revised), developed by Hepperlen (1998). The KADD is an instrument constructed to indirectly measure attitudes toward ADHD. Indirect attitude instruments are less likely than direct self-report instruments, to yield responses based on social desirability. According to Crowne and Marlowe (1964), “Persons who endorse socially desirable items and reject socially undesirable ones are said to be demonstrating a social-desirability response set” (p. 20). The KADD uses the “error-choice” technique.
developed by Hammond (1948). The instrument, disguised as one to test knowledge, actually assesses attitudes. Hammond’s theory was predicated on the concept that “people’s attitudes influence their cognitive strategies toward guessing on difficult problems” (as cited in Hepperlen, 1998, p. 16).

The KADD-revised consists of 42 items. Twenty items are categorized as error-choice items (KADD-A revised) that indirectly assess attitudes toward ADHD. An internal reliability analysis resulted in a Cronbach’s coefficient alpha of 0.82. Twenty-two items deal with general knowledge about ADHD (KADD-GK) and are designed to distract participants from the true nature of the test. This scale did not possess adequate internal reliability (Cronbach’s alpha of 0.57), however, its purpose is not to assess teacher knowledge.

For the purpose of this study, the KADD-revised was shortened to 24 items. The breakdown consists of 15 error-choice and nine (9) general knowledge items. The nine general knowledge questions were included as distracters and did not affect participants’ raw scores for Part Three. Hepperlen (2002) included error-choice items from three content domains: (a) truth determinable, (b) truth indeterminable factual, and (c) truth indeterminable controversial (p. 135). Antonak and Livneh (1995) define truth determinable items as those which “inquire about obscure content that the respondents will have little opportunity to master” (p. 16). Eleven out of the 15 error-choice items used in the ADHDKA are classified as truth determinable. Truth indeterminable factual items are defined as those “for which the truth cannot be determined from available data” (p. 16). Two of the 15 error-choice items fit into this category. Truth indeterminable
controversial items “represent controversial issues” (Hepperlen, 2002, p. 135). Two error-choice items were included from this domain.

The 15-item error-choice scale has a reliability alpha of .79 (T. M. Hepperlen, personal communication, January 24, 2003). These items did not offer a correct answer as one of the four choices; the correct answer either did not exist, or it lay somewhere in the middle of the choices that were provided. Teacher attitude toward ADHD was determined according to the directionality of the participant’s response. For example, item 6 stated, “__% of children with ADHD come from families that are disorganized and have a parent who exhibits psychopathology.” Choices were: a) 5, b) 15, c) 25, and d) 35. According to Hepperlen (1998), the author of the instrument adapted for this section, this item is controversial in nature and the truth is indeterminable. A participant who circled “a” or “b” for item 6, was rated as “4” or “3” respectively. Due to the negative wording of the item, a low number response was rated as a positive attitude toward ADHD.

Other items were worded in a positive way and were rated in a reverse manner. For example, item 1 stated, “__% of students with ADHD pursue higher education.” Choices were: a) 4, b) 14, c) 30, and d) 41. The correct answer was 22% (Barkley, 2002) and was not offered as a choice. Instead, it lay somewhere in the middle of choice “b” and choice “c.” A participant who circled “c” or “d” for item 1 was considered to have a positive attitude toward ADHD and was rated “3” or “4” respectively. Items that were worded positively, therefore, rated high number responses as a positive attitude toward ADHD. Raw scores ranged from 15 (15 items x 1 point) to 60 (15 items x 4 points).
**Part Four: Knowledge about Symptoms, Diagnosis, and Treatment of ADHD.**

Part Four of the ADHDKA consisted of 29 statements designed to assess important dimensions of knowledge about ADHD. The items, requiring true-false-don’t know responses, were adapted from the Knowledge of Attention Deficit Disorders Scale (KADDS) (Sciutto, Terjesen, & Frank, 2000) that was revised in 2001. A Cronbach’s alpha coefficient of 0.8028 indicated that the KADDS-R has good internal consistency. Significant pre-post changes in scores after two separate educational interventions attest to the validity of the original KADDS instrument (p. 118).

The KADDS-R offers true (T), false (F), and don’t know (DK) as possible responses. The don’t know (DK) response was added to differentiate between respondents’ lack of knowledge (DK) and their misperceptions (T or F) about ADHD. Although this study did not focus on teachers’ misperceptions about the disorder, the DK response remained as an answer choice to minimize measurement error (M. J. Sciutto, personal communication, January 18, 2003). The don’t know (DK) responses were calculated as incorrect at the data analysis phase.

**Part Five: Open-Ended Statements.**

Part Five of the ADHDKA included two open-ended statements that were adapted from a study conducted by Whitworth, Fossler, and Harbin (1997). Participants were asked to complete these statements for qualitative purposes. The first statement dealt with what teachers perceive to be most difficult about teaching students with ADHD. Teachers completed the second statement by writing what they believe would make them more successful teaching students with ADHD.
Item Review

The ADHKDA was given to faculty members in the Exceptional Student Education (ESE) Department of the College of Education at Florida Atlantic University for review before data was collected in the pilot study. Recommendations about wording, length, and fluency were evaluated by the researcher for possible modification of the survey.

Pilot Study

The ADHKDA was field tested with 44 elementary school classroom teachers in Broward County. The participants in the pilot study included a representative group of teachers whose demographic characteristics were similar to those in the sample group.

Data Collection Procedure

The procedure used to collect data for the pilot study was similar to the procedure used for the actual study. Principals were asked to permit their K-5 classroom teachers to complete a survey about ADHD. As an incentive to participate, principals were offered a presentation on ADHD for their faculty members to attend when the study was completed. Questionnaires were distributed to all K-5 classroom teachers at the beginning of a faculty meeting. At that time, teachers at some schools were informed that they had two weeks in which to complete the survey; teachers at other schools were permitted to complete the questionnaire during the faculty meeting.

The questionnaire included an introductory paragraph explaining that the purpose of the study was to determine teachers’ knowledge and attitude regarding ADHD and that participation was strictly voluntary. Each questionnaire was assigned a number that was
used solely for the purpose of organizing cases during the data analysis stage. Participants were not identified in terms of school membership; teachers in the study were treated as one group for the purpose of data interpretation.

Participants who needed a two-week timeline placed completed questionnaires in a drop-off box that was housed in the office of either the guidance counselor or ESE Specialist, whichever office was more convenient and accessible. One week after teachers received the questionnaire, an e-mail was sent to each principal. The e-mail asked principals to remind classroom teachers that the completed forms would be picked up a week from that day. Additionally, the e-mail reassured teachers that all information would be used for research purposes only and would remain strictly confidential. Teachers were then reminded of the location of the drop-off box in their school. The e-mail concluded with a word of appreciation for their participation in the study.

Questionnaires were picked up one week later. Principals were sent an additional e-mail asking them to encourage their teachers to complete the survey. After one week, principals were contacted to determine if any more surveys were returned. Additional questionnaires were picked up at that time, and the data analysis phase began.

**Data Analysis**

Data analysis for this study included both quantitative and qualitative procedures. Multiple regression analysis (MR) was used to determine the relationship between each of the criterion variables (teacher knowledge about ADHD and teacher attitude toward ADHD) and the predictor variables of teaching position, experience teaching children
with ADHD, personal experience with ADHD, confidence teaching children with ADHD, professional publications, media, Internet, in-service workshops, college courses, personal people, professional people, and colleagues.

The third null hypothesis investigated the relationship between the two criterion variables in the study. The Pearson correlation coefficient was computed to determine the degree of correlation, if any, between teacher knowledge about ADHD and teacher attitude toward ADHD.

Qualitative procedures were used to analyze the data resulting from responses to the two open-ended statements in Part Five of the ADHDKA. Content analysis revealed specific characteristics of teacher attitude toward ADHD. Resulting data were then summarized and displayed in frequency tables.

Variables

There were 12 predictor variables being investigated in this study. The selection process was guided by an in-depth review of previous studies, as well as by this researcher’s questions about related issues that have not yet been addressed in the literature. Research has made clear connections between teacher attitude and subsequent behavior patterns toward students (Good & Brophy, 1972; Silberman, 1969; Willis & Brophy, 1974).
More recent studies have investigated the relationship between various demographic variables and teacher knowledge and attitude regarding ADHD (Brook, Watemberg, & Geva, 2000; Glass, 2001; Jerome, Gordon, & Hustler, 1994; Piccolo-Torsky & Waishwell, 1998). There is nothing in the literature, however, that investigates how teacher knowledge and attitude regarding ADHD are impacted by the Internet. This study examined four teacher variables (1-4) and eight sources of information (5-12) as possible predictors of knowledge and attitude regarding ADHD. Table 1 presents the variable names and labels that were used in the study.

**Coding of the Variables**

**Part One: Background Information**

1. Teaching Position, Experience Teaching Students with ADHD, and Confidence
   
   Teaching Children with ADHD were assigned ordinal values.

2. Personal Experience with ADHD (Family Member) is a dichotomous variable and will be assigned values of 1 and 0.

**Part Two: Sources of Information**

Sources of information were divided into the following eight predictor variables: professional publications, media, Internet, in-service workshops/conferences, college courses, personal people, professional people, and colleagues. A 6-point Likert-type

TABLE 1

**Variable Labels and Names**

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<tr>
<th>Label</th>
<th>Variable Name</th>
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<td>1.</td>
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<td>2.</td>
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Teaching position

Experience teaching children with ADHD
3. PEX  Personal experience with ADHD (family member)
4. CON  Confidence teaching children with ADHD (self-efficacy)
5. PPB  Professional publications (journals, books)
6. MED  Media (TV, radio, newspapers, magazines)
7. INT  Internet
8. INS  In-service workshops/conferences
9. COC  College courses
10. PER  Personal people (family, friends)
11. PRO  Professional people (medical doctors, therapists)
12. COL  Colleagues
13. KNO*  Knowledge about ADHD
14. ATT*  Attitude toward ADHD

Note.  * indicates criterion variable.

format was used to assess teachers’ perceived level of accessibility, trustworthiness, and usability for each category of sources of information. Response choices ranged from 1 (strongly disagree) to 6 (strongly agree) and were assigned an ordinal value.

Part Three: General Knowledge about ADHD (this part assessed teacher attitude toward ADHD, one of the criterion variables)

Part Four: Knowledge about Symptoms, Diagnosis, and Treatment of ADHD (this part assessed teacher knowledge about ADHD, the second criterion variable)
**Part Five: Open-Ended Statements**

Open-ended statements were included in the questionnaire in the hopes of gaining a richer understanding of teachers’ attitudes toward ADHD. Quantitative data analysis often reduces participants’ responses to flat, one-dimensional categories. These two items gave teachers an opportunity to elaborate on the topic. Responses were thoroughly reviewed and coded. As themes emerge, responses were re-evaluated and appropriately categorized within each theme.

**Summary**

This study investigated the relationship between teachers’ sources of information and other selected variables, and their knowledge and attitudes regarding ADHD. The population from which the sample was derived consisted of K-5 classroom teachers from seven elementary schools in Broward County, Florida. Teachers were asked to complete the Attention Deficit Hyperactivity Disorder Knowledge Assessment (ADHDKA) and told that the purpose of the study was to assess teachers’ knowledge and attitudes regarding ADHD. Full disclosure about the assessment of teacher attitudes in Part Three of the questionnaire was made after all data were collected so as to maintain the integrity of the indirect method of attitude measurement. A combination of quantitative and qualitative research methods were employed to interpret the data collected for this study.

**CHAPTER IV**

**DATA ANALYSIS**

The primary purpose of this study was to develop a predictive model for teacher knowledge and attitudes regarding ADHD. Four variables for teacher characteristics and
eight variables for sources of information were examined for their predictive value in relationship to teacher knowledge about ADHD and teacher attitude toward the disorder. The four variables for teacher characteristics were: teaching position, experience teaching children with ADHD, personal experience with ADHD, and confidence teaching children with ADHD. The eight categories of sources of information were: professional publications, media, Internet, in-service workshops, college courses, personal people, professional people, and colleagues. The sample population for the study consisted of 225 classroom teachers of grades K – 5. In addition to identifying a predictive model for teacher knowledge and attitude regarding ADHD, the researcher sought to determine the degree to which each criterion variable was associated with the 12 predictor variables examined in the study.

**Pilot Study**

A pilot study was conducted in an effort to uncover any weaknesses in the design of the survey instrument and to serve as a rehearsal for the researcher. The questionnaire was distributed to 44 elementary teachers at a school similar in location and demographics to the schools that later participated in the study. The administrator allowed teachers to complete the questionnaire during an afternoon faculty meeting. There were some K – 5 teachers who were absent or had parent conferences on the day of the meeting. Team leaders were therefore asked to distribute the questionnaire to any K-5 teachers on their team who were not at the faculty meeting. Two weeks later, a reminder requesting the completion and return of the survey was sent by e-mail to teachers.

A final count of 32 completed surveys, or a return rate of 73%, exceeded the
preset acceptable response rate of 70%. Additionally, teachers reported that the survey was user-friendly and that survey items were clearly worded and easily understood.

**Survey Findings**

**Descriptive Statistics**

The sample for this study consisted of 225 regular K-5 classroom teachers. Participants were employed by the School Board of Broward County, Florida during the 2004-2005 school year and taught in one of the seven elementary schools located in the Success (pseudonym) Innovation Zone within the district. A breakdown of the survey return is presented in Table 2.

Data were collected between December 2004 and March 2005. It was the original intent of the researcher to maintain consistent distribution procedures across the seven schools. Early in the study however, it became apparent that variations in administrative styles as well as other logistical issues would necessitate a degree of flexibility in regard to how the surveys were to be distributed. As a result, teachers at some schools were given the opportunity to fill out the survey at the time it was distributed, while teachers at other schools had a one- or two-week time frame. The latter setup required that teachers drop the completed survey in a lock box located in a secure office on campus. It was then necessary for the researcher to return to the school to retrieve the lock box at the end of Table 2

Breakdown of Survey Return

<table>
<thead>
<tr>
<th>Label</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

80
<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Surveys Distributed</td>
<td>314</td>
</tr>
<tr>
<td>Number of Surveys Returned Before Reminder</td>
<td>222</td>
</tr>
<tr>
<td>Number of Surveys Returned After Reminder</td>
<td>4</td>
</tr>
<tr>
<td>Total Number of Surveys Returned</td>
<td>226</td>
</tr>
<tr>
<td>Number of Unusable Surveys</td>
<td>1</td>
</tr>
<tr>
<td>Total Number of Usable Surveys</td>
<td>225</td>
</tr>
<tr>
<td>Percent of Distributed Surveys Used</td>
<td>72%</td>
</tr>
</tbody>
</table>

The allotted time.

The present study was designed to examine a single sample group, namely the K – 5 teachers from the seven elementary schools in the Success Innovation Zone. For this reason, any conclusions made in regard to the possible effects of procedural variations for such matters as survey distribution, would be speculative at best. This issue will be addressed in more detail in the recommendations section of Chapter Five.

**Part One: Background Information**

A demographic profile of the participants is displayed in Tables 3-6. The tables include data for frequency, percent, valid percent, and cumulative percent for each response choice. The *frequency* value reflects how many participants gave a particular response. The *percent* value is obtained using the total sample of 225; this value includes missing data for the item. The *valid percent* omits the missing data for the item and will be used to describe results for this study unless otherwise noted.
**Present Teaching Position.**

Item 1, present teaching position, corresponded to the predictor variable *teaching position*, or *tpo*. The breakdown of teaching positions is shown in Table 3. Only one participant out of the sample of 225 left this item blank. Teachers in grade 2 comprised the largest percentage of respondents (n = 43, or 19.2%). Teachers in grades 3 and 5 made up the smallest individual percentages of respondents (n = 34, or 15.2%).

**Experience Teaching Children with ADHD.**

Item 2, experience teaching children diagnosed with ADHD, corresponded to the predictor variable of the same name, or *etc*. Participants checked one of six categories that indicated the number of ADHD students taught during their teaching career. Table 4 outlines the data obtained for Item 2.

Out of the 217 teachers who responded to this item, 41.9%, or 91 teachers, indicated that they had taught less than five children with ADHD. This finding has many possible implications in terms of the wording of item 2 for future studies as well as teacher education about ADHD. A more detailed discussion of these concerns will be addressed in Chapter 5.

**Personal Experience with ADHD (Family Member).**

Item 3, personal experience with ADHD corresponded to the dichotomous
### Table 4

**Experience Teaching Children with ADHD (# of students)**

<table>
<thead>
<tr>
<th>Teaching position</th>
<th>Freq.</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kindergarten</td>
<td>38</td>
<td>16.9</td>
<td>17.0</td>
<td>17.0</td>
</tr>
<tr>
<td>Grade 1</td>
<td>38</td>
<td>16.9</td>
<td>17.0</td>
<td>33.9</td>
</tr>
<tr>
<td>Grade 2</td>
<td>43</td>
<td>19.1</td>
<td>19.2</td>
<td>53.1</td>
</tr>
<tr>
<td>Grade 3</td>
<td>34</td>
<td>15.1</td>
<td>15.2</td>
<td>68.3</td>
</tr>
<tr>
<td>Grade 4</td>
<td>37</td>
<td>16.4</td>
<td>16.5</td>
<td>84.8</td>
</tr>
<tr>
<td>Grade 5</td>
<td>34</td>
<td>15.1</td>
<td>15.2</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>224</td>
<td>99.6</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>225</td>
<td>100.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* Freq. = Frequency

### Table 5

**Personal Experience with ADHD (Family Members)**

<table>
<thead>
<tr>
<th>Number of Students With ADHD</th>
<th>Freq.</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 5</td>
<td>91</td>
<td>40.4</td>
<td>41.9</td>
<td>41.9</td>
</tr>
<tr>
<td>5-9</td>
<td>56</td>
<td>24.9</td>
<td>25.8</td>
<td>67.7</td>
</tr>
<tr>
<td>10-19</td>
<td>40</td>
<td>17.8</td>
<td>18.4</td>
<td>86.2</td>
</tr>
<tr>
<td>20-29</td>
<td>15</td>
<td>6.7</td>
<td>6.9</td>
<td>93.1</td>
</tr>
<tr>
<td>30-49</td>
<td>10</td>
<td>4.4</td>
<td>4.6</td>
<td>97.7</td>
</tr>
<tr>
<td>50 or more</td>
<td>5</td>
<td>2.2</td>
<td>2.3</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>217</td>
<td>96.4</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>225</td>
<td>100.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* Freq. = Frequency
Family Members With ADHD

<table>
<thead>
<tr>
<th></th>
<th>Freq.</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td>No</td>
<td>170</td>
<td>75.6</td>
<td>77.3</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>50</td>
<td>22.2</td>
<td>22.7</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>220</td>
<td>97.8</td>
<td>100.0</td>
</tr>
<tr>
<td>Missing</td>
<td>Missing</td>
<td>5</td>
<td>2.2</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>225</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

*Note. Freq. = Frequency*

predictor variable of the same name, or *pex*. Participants checked “yes” if they have a family member who was diagnosed with ADHD and “no” if they have no relatives who were diagnosed. Frequencies are displayed in Table 5. There were 220 valid responses for item 3 out of which 170, or 77.3%, responded “no”. Conclusions about this issue will be addressed further in Chapter Five.

*Confidence Teaching Children with ADHD (Self-Efficacy).*

Item 4 on the ADHDKA corresponded to the predictor variable of the same name, or *con*. Participants were directed to circle the number that best represented how confident they were in their ability to teach children with ADHD. The Likert-type rating scale offered six choices ranging from 1 (very low level of confidence) to 6 (very high level of confidence). The frequency of each response is displayed in Table 6. A total of 110 teachers, or 51.9% of the 212 teachers who responded to this item, rated their confidence level in the low range. Missing data for item 4 accounted for 5.8%, or 13 participants, of the total sample of 225. There are questions raised when an item yields a
Table 6

Grouped Frequency Scores for Confidence Teaching Children with ADHD

<table>
<thead>
<tr>
<th>Level of Confidence</th>
<th>Freq.</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very low (1)</td>
<td>16</td>
<td>7.1</td>
<td>7.5</td>
<td>7.5</td>
</tr>
<tr>
<td>Low (2)</td>
<td>30</td>
<td>13.3</td>
<td>14.2</td>
<td>21.7</td>
</tr>
<tr>
<td>Somewhat low (3)</td>
<td>64</td>
<td>28.4</td>
<td>30.2</td>
<td>51.9</td>
</tr>
<tr>
<td>Somewhat high (4)</td>
<td>57</td>
<td>25.3</td>
<td>26.9</td>
<td>78.8</td>
</tr>
<tr>
<td>High (5)</td>
<td>35</td>
<td>15.6</td>
<td>16.5</td>
<td>95.3</td>
</tr>
<tr>
<td>Very high (6)</td>
<td>10</td>
<td>4.4</td>
<td>4.7</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>212</td>
<td>94.2</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td>Missing</td>
<td>13</td>
<td>5.8</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>225</td>
<td>100.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note. Freq. = Frequency*

large number of missing data. Those questions will be addressed in Chapter Five.

**Part Two: Sources of Information about ADHD**

Teachers’ ratings of the eight sources of information investigated in this study made up the data for Part Two of the ADHDKA. The mean recoded score for each source can be found in Table 7. Teachers rated in-service workshops as the most accessible, trustworthy, and usable of the eight sources of information investigated in the study. Media was rated as the least accessible, trustworthy, and usable.

**Part Three: General Knowledge about ADHD (actually assessed attitude)**

Attitude scores were left as interval scale data in order to add statistical power to test results. The sums were then recoded into six categories that facilitated the gathering of descriptive data. Categories ranged from one (1), or high negative, to six (6), or high positive. Out of the 223 participants who completed this section of the questionnaire,
Table 7

Mean Recoded\textsuperscript{a} Scores for Sources of Information

<table>
<thead>
<tr>
<th>Descending Order</th>
<th>Sources of Information</th>
<th>Mean Score (Min-1; Max-4)</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>In-service</td>
<td>3.60</td>
<td>.675</td>
</tr>
<tr>
<td>2</td>
<td>Professional People</td>
<td>3.43</td>
<td>.844</td>
</tr>
<tr>
<td>3</td>
<td>College Courses</td>
<td>3.32</td>
<td>.900</td>
</tr>
<tr>
<td>4</td>
<td>Colleagues</td>
<td>3.30</td>
<td>.823</td>
</tr>
<tr>
<td>5</td>
<td>Professional Publications</td>
<td>3.17</td>
<td>.830</td>
</tr>
<tr>
<td>6</td>
<td>Internet</td>
<td>3.13</td>
<td>.924</td>
</tr>
<tr>
<td>7</td>
<td>Personal People</td>
<td>2.60</td>
<td>1.065</td>
</tr>
<tr>
<td>8</td>
<td>Media</td>
<td>2.59</td>
<td>.956</td>
</tr>
</tbody>
</table>

\textit{Note}. Valid N (listwise) = 221; Min = Minimum; Max = Maximum
\textsuperscript{a}Recoded category 1 = 3-6 original score; category 2 = 7-10 original score; category 3 = 11-14 original score; category 4 = 15-18 original score

31.4\%, or 70 teachers, scored in the negative attitude range. Scores in the positive attitude range accounted for 68.6\%, or a total of 153 teachers. According to the frequency data for the sample that was surveyed, there were more than twice as many teachers with positive attitudes toward ADHD as there were those with negative attitudes toward the disorder.
The grouped frequencies for teacher attitude toward ADHD are displayed in Table 8.

**Part Four: Knowledge About Symptoms, Diagnosis, and Treatment of ADHD**

This section of the ADHDKA was comprised of 29 statements about ADHD.

Participants were asked to circle “T” for true, “F” for false, or “DK” for don’t know for

---

**Table 8**

<table>
<thead>
<tr>
<th>Category Description</th>
<th>Freq.</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High negative (1)</td>
<td>4</td>
<td>1.8</td>
<td>1.8</td>
<td>1.8</td>
</tr>
<tr>
<td>Mid negative (2)</td>
<td>20</td>
<td>8.9</td>
<td>9.0</td>
<td>10.8</td>
</tr>
<tr>
<td>Low negative (3)</td>
<td>46</td>
<td>20.4</td>
<td>20.6</td>
<td>31.4</td>
</tr>
<tr>
<td>Low positive (4)</td>
<td>91</td>
<td>40.4</td>
<td>40.8</td>
<td>72.2</td>
</tr>
<tr>
<td>Mid positive (5)</td>
<td>53</td>
<td>23.6</td>
<td>23.8</td>
<td>96.0</td>
</tr>
<tr>
<td>High positive (6)</td>
<td>9</td>
<td>4.0</td>
<td>4.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>223</td>
<td>99.1</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td>2</td>
<td>.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>225</td>
<td>100.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note.** Freq. = Frequency
each statement. Correct responses were then coded “1” and incorrect responses were coded “0”. Items that were answered “DK” were scored like incorrect responses and were also coded “0”. The “DK” choice was retained to minimize measurement error (M.J. Sciutto, personal communication, January 18, 2003).

The raw scores for the criterion variable, teacher knowledge about ADHD, or kno, represented the number of items answered correctly in this section. Raw scores were used to insure the maximum statistical power for the testing of the hypotheses and are Table 9

<table>
<thead>
<tr>
<th>Category Description</th>
<th>Freq.</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very low (1)</td>
<td>1</td>
<td>.4</td>
<td>.5</td>
<td>.5</td>
</tr>
<tr>
<td>Low (2)</td>
<td>3</td>
<td>1.3</td>
<td>1.4</td>
<td>1.9</td>
</tr>
<tr>
<td>Somewhat low (3)</td>
<td>40</td>
<td>17.8</td>
<td>18.0</td>
<td>19.9</td>
</tr>
<tr>
<td>Somewhat high (4)</td>
<td>103</td>
<td>45.8</td>
<td>46.4</td>
<td>66.3</td>
</tr>
<tr>
<td>High (5)</td>
<td>73</td>
<td>32.4</td>
<td>32.8</td>
<td>99.1</td>
</tr>
<tr>
<td>Very high (6)</td>
<td>2</td>
<td>.9</td>
<td>.9</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>222</td>
<td>98.6</td>
<td>100.0</td>
<td></td>
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<tr>
<td>Missing</td>
<td>3</td>
<td>1.3</td>
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<td></td>
</tr>
<tr>
<td>Total</td>
<td>225</td>
<td>99.9</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Freq. = Frequency
displayed in Appendix H. Scores were then recoded into six categories ranging from one (1) for ‘very low level of knowledge’ to six (6) for ‘very high level of knowledge.’ The frequency scores for the recoded variable teacher knowledge about ADHD (kno) are shown in Table 9. Teachers categorized as having a low level of knowledge about ADHD accounted for only 20.5%, or 46 of the 224 participants who completed Part Four of the questionnaire. An overwhelming majority of teachers, or 79.5%, could be categorized in the high range for knowledge about ADHD.

Part Five: Open-Ended Statements

This part of the questionnaire was derived from a study of 100 teachers in rural West Tennessee (Whitworth, Fossler, & Harbin, 1997). Participants were asked to complete two open-ended statements about ADHD. There were 194 teachers, or 86.2% of the sample, who completed at least one of the two items in this section of the questionnaire. Both items were answered by 184 teachers, or 81.8% of the sample. Many responses included concerns from multiple themes and were tallied as such. Teacher comments were separated into first, second, and third remarks and then totaled by theme. These two statements generated a total of 469 responses. Some of the more detailed answers are outlined below, however a complete list of responses to items 1 and 2 can be found in Appendix H.

Statement One.

The first statement began, “The most difficult thing about teaching children with ADHD is . . .” A total of 192 teachers, or 85.3% of the sample, generated 260 responses
for this item. The responses were reviewed and categorized into the 11 themes displayed in Table 10. Responses were grouped into the following 11 categories in regard to what teachers find most difficult about teaching ADHD students: (a) keeping them focused, (b) behavior management, (c) keeping them on task/completing work, (d) teacher time, (e) teacher self-improvement, (f) lack of parent support; (g) accommodation of diverse needs; (h) lack of organizational skills; (i) lack of social skills; (j) no problems; and (k) miscellaneous. The first six themes accounted for 88.5%, or 230, of the 260 responses to item 1 and are outlined below.

**Keeping Them Focused/Paying Attention**

There were 74 responses in this category, 64 of which comprised teachers’ first response. The concern was often referred to as “keeping them focused” or “getting their attention.” Other answers were included under the heading of unfocused, but were worded differently. For example, one teacher described ADHD students as a problem

<table>
<thead>
<tr>
<th>Theme</th>
<th>First Resp.</th>
<th>Second Resp.</th>
<th>Third Resp.</th>
<th>Total Responses</th>
<th>% of Total Responses</th>
<th>Cum. %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keeping them focused</td>
<td>64</td>
<td>10</td>
<td>-</td>
<td>74</td>
<td>28.5</td>
<td>28.5</td>
</tr>
<tr>
<td>Behavior management</td>
<td>38</td>
<td>20</td>
<td>2</td>
<td>60</td>
<td>23.1</td>
<td>51.6</td>
</tr>
<tr>
<td>Off task/work completion</td>
<td>22</td>
<td>12</td>
<td>2</td>
<td>36</td>
<td>13.8</td>
<td>65.4</td>
</tr>
<tr>
<td>Teacher time/attention</td>
<td>27</td>
<td>7</td>
<td>-</td>
<td>34</td>
<td>13.1</td>
<td>78.5</td>
</tr>
<tr>
<td>Teacher/self-improvement</td>
<td>13</td>
<td>-</td>
<td>1</td>
<td>14</td>
<td>5.4</td>
<td>83.9</td>
</tr>
<tr>
<td>Parent support/home</td>
<td>7</td>
<td>5</td>
<td>1</td>
<td>12</td>
<td>4.6</td>
<td>88.5</td>
</tr>
<tr>
<td>Organizational skills</td>
<td>5</td>
<td>5</td>
<td>-</td>
<td>10</td>
<td>3.9</td>
<td>92.4</td>
</tr>
<tr>
<td>Accommodating needs</td>
<td>6</td>
<td>2</td>
<td>-</td>
<td>8</td>
<td>3.1</td>
<td>95.5</td>
</tr>
<tr>
<td>Social skills</td>
<td>3</td>
<td>2</td>
<td>-</td>
<td>5</td>
<td>1.9</td>
<td>97.4</td>
</tr>
<tr>
<td>No problems</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>.7</td>
<td>98.1</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>5</td>
<td>-</td>
<td>-</td>
<td>5</td>
<td>1.9</td>
<td>100.0</td>
</tr>
</tbody>
</table>
during “activities that have to do with listening and following directions.” Another teacher found it difficult “to consistently get them to attend so as not to break academic focus.”

**Behavior Management**

The second emerging theme was behavior management. There were 60 responses that fell under the umbrella of behavior-related issues, 38 of which were first responses. Teachers expressed their concern that the ADHD student “distracts others” or “disrupts the class.” Other responses were more detailed. For example, one teacher wrote, “. . . classroom disruption! Other students’ learning is at risk when a teacher is constantly redirecting problem student or problem student is bothering other students by talking, moving around, getting out of their seats, etc.”

There were seven participants whose behavior management concerns dealt with the class as a whole. One teacher found it difficult “. . . managing their behaviors while maintaining the rest of the class.” Another teacher wrote, “Sometimes their behaviors turn the whole class into a circus. Other children not with ADHD start mimicking their behaviors.” This concern about the effect of ADHD students’ behavior on the behavior of other students was expressed by two additional participants. One teacher described the problem as “. . . having children (non-ADHD) that purposely set them off and aggravate them . . .” Another teacher wrote, “. . . children see accommodations as preferential
treatment and sometimes rebel (if he can do it, why can’t I?)”

Keeping Them On Task/Work Completion

The third theme, keeping them on task/work completion, was originally part of the first theme, paying attention. After careful analysis of the two concepts, it became clear that inattentiveness is not necessarily synonymous with difficulty completing work. A total of 36 responses fit into this theme, 22 of which were first responses. There were 10 teachers who specifically stated the concern as “not getting completed work turned in.” Two participants made reference to “staying on top of them,” another way of referring to keeping ADHD students on task. One teacher expressed it as “trying to help the child learn to self-direct for independent (seat) work.”

Teacher Time/Attention/Energy

The fourth emerging theme for item 1 was teacher time/attention/energy. There were 39 responses that conformed to this category, 27 of which made at least general reference to teacher time or attention. One teacher wrote, “they are high maintenance and require a great deal of individual attention.” Another teacher wrote, “They take up so much energy.” Four responses specifically referred to a concern that there is “not enough time to spend one-on-one.” Several teachers in this category expressed the difficulty as “attending to their needs while having a full class of other children.”

Teacher/Self-Improvement

Teacher self-improvement emerged as the fifth theme for the first open-ended statement. There were 14 teachers who described “not having the proper training,” or “not having enough knowledge on the subject” as the most difficult part of teaching
ADHD students. One teacher expressed difficulty “being patient while you’re trying to find something that works.” Although this response accounted for only 5.4% of the 260 responses for item 1, it emerged as the most frequently given answer to item 2. This will be discussed in more detail when open-ended statement 2 is reviewed.

Lack of Parent/Home Support

The sixth theme to emerge for item 1 involved parent or home support, and accounted for 12 responses. Teachers expressed concerns about the lack of consistency, or follow through, from school to home, lack of parent support, parent denial regarding the ADHD diagnosis, and parents not being receptive to medication.

Organizational Skills

The seventh theme for statement 1 involved teachers’ difficulty dealing with the ADHD student’s lack of organizational skills. A total of 10 responses came under this heading. One teacher wrote, “getting them to focus and organize their thoughts and personal belongings.” This response was categorized into two themes: keeping them focused, the first response, and organization skills, the second response. Interestingly, another teacher’s response was categorized into the same two themes expressed in the same order. This teacher found it difficult “keeping them focused on the assignment. You need to allow the student the space to be disorganized and sloppy in order to get work done.” A third teacher’s response fit into these two themes, but in reverse. According to this teacher, the most difficult thing about teaching children with ADHD is “organization skills and their ability to stay focused on any given task for a prolonged amount of time.”

Statement Two.
The second statement read, “I believe that I would be more successful teaching children with ADHD if . . . .” The responses to the second statement were even more closely aligned with the 1997 study than those for the first statement. A total of 186, or 82.7% of participants answered this item. The responses were reviewed and organized into eight themes that are presented in descending order of frequency in Table 11.

Responses were grouped into the following eight categories in regard to what teachers believe would make them more successful with ADHD students: (a) more training; (b) smaller classes; (c) aide/volunteer; (d) parent support; (e) support; (f) early diagnosis; (g) medication; and (h) miscellaneous. The first four themes accounted for 86.1%, or 180, of the 209 responses to item 2 and are outlined below.

**More Training**

The first and overwhelmingly largest theme to emerge for item 2 was more training. There were 116 responses in this theme, 112 of which were first responses. The request for more training represented over 55% of the total answers that were written for Table 11.

<table>
<thead>
<tr>
<th>Theme</th>
<th>First Resp.</th>
<th>Second Resp.</th>
<th>Third Resp.</th>
<th>Total Resp.</th>
<th>% of Total Responses</th>
<th>Cum. %</th>
</tr>
</thead>
<tbody>
<tr>
<td>More training</td>
<td>112</td>
<td>4</td>
<td>-</td>
<td>116</td>
<td>55.5</td>
<td>55.5</td>
</tr>
<tr>
<td>Smaller class size</td>
<td>20</td>
<td>5</td>
<td>-</td>
<td>25</td>
<td>11.9</td>
<td>67.4</td>
</tr>
<tr>
<td>Aide/Volunteer</td>
<td>16</td>
<td>3</td>
<td>1</td>
<td>20</td>
<td>9.6</td>
<td>77.0</td>
</tr>
<tr>
<td>Parent support</td>
<td>13</td>
<td>5</td>
<td>1</td>
<td>19</td>
<td>9.1</td>
<td>86.1</td>
</tr>
<tr>
<td>Support</td>
<td>9</td>
<td>4</td>
<td>-</td>
<td>13</td>
<td>6.2</td>
<td>92.3</td>
</tr>
<tr>
<td>Early diagnosis</td>
<td>6</td>
<td>-</td>
<td>-</td>
<td>6</td>
<td>2.9</td>
<td>95.2</td>
</tr>
<tr>
<td>Medication</td>
<td>4</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>1.9</td>
<td>97.1</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>6</td>
<td>-</td>
<td>-</td>
<td>6</td>
<td>2.9</td>
<td>100.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>186</strong></td>
<td><strong>21</strong></td>
<td><strong>2</strong></td>
<td><strong>209</strong></td>
<td><strong>100.0</strong></td>
<td></td>
</tr>
</tbody>
</table>
Note. Resp. = Response; Cum. = Cumulative

this statement. One teacher expressed a desire to “attend workshops that had ADHD children or parents and past teachers of ADHD students.” Another participant wanted workshops and training that “were readily available at the start of the school year.” Many of the responses in this theme referred to teachers’ need for more strategies to use with ADHD students. One teacher asked for “specific strategies that were classroom tested. Too much theory and not enough real-world in most professional journals.” A new teacher whose answer to item 1 was “no problems as of yet” wrote “I don’t know what to look for” as a response to item 2.

**Smaller Class Size**

The second theme to emerge was *smaller classes*. There were 25 responses in this category, 20 of which were first responses. One teacher expressed the need for “a smaller class size population with less distractions.” Several teachers in this category talked about “one-on-one instruction.” One teacher wrote “. . . class sizes were very small or if there were more time for ADHD students to have one-on-one help.” Although this data was gathered during the 2004-2005 school year when class size reduction was in effect, teachers wished that “class sizes were even smaller,” one wishing specifically that “the number of children in the class would be kept at 15-18.” Another teacher had class size as a second answer, stating “. . . if I had more training and class size was actually smaller – not just on paper.”

**Aide/Volunteer**
The third emerging theme for item 2 was the need for an aide or volunteer. There were 20 responses in this category, with 16 being first responses, 3 as second responses, and 1 as a third comment. Many teachers made reference to the need for “some additional help (volunteer, paraprofessional, etc.).” One teacher wanted “a full time aide.” Four of the participants in this category had smaller class size as an additional response.

**Parent Support**

The need for parent support emerged as the fourth theme, with 13 first responses, 5 second responses, and one third response. One teacher completed statement 2 with the following:

. . . if parents were more informed of symptoms of ADHD and if ADHD was not looked at as a negative “label.” Parents have difficulty admitting their children may have ADHD because it is looked at so negatively by the public.

One participant specifically wanted parents to be “more involved and consistent with the treatment whether it be diet, drugs, etc.”

**The Qualitative Side of Teacher Knowledge and Attitude**

The responses to the two statements in Part Five offered a rich collection of frustrated voices calling out for assistance. These remarks contained much more than words; many teachers were able to convey with multiple underlines, exclamation points, asterisks, circled words, and other symbols, their fervent beliefs about what would increase their success rate with ADHD children in the public school setting. This section will attempt to capture the essence of those impassioned remarks.

In response to the statement, “The most difficult thing about teaching children
with ADHD is . . .” teachers found ways to communicate their emotion with the written word. A method used for conveying emphasis was underlining. One teacher responded, “how to consistently get them to attend so as not to break academic focus.” The emphasis on *consistently* was quite telling. The inconsistent behavior often associated with ADHD can be both frustrating and difficult for teachers to manage. Another teacher’s sense of exasperation screamed out, “staying on top of them.” Yet another teacher wrote, “keeping them focused and on task with the rest of the children.”

Several responses to item 1 concluded with exclamation marks. One teacher wrote, “that the child is not “tuned in” to lessons. I in turn am disrupted by them. I try to use methods to help – but, in general, I guess more training is necessary for me!” This teacher had a strong need to learn more about how to manage ADHD in the classroom. Another teacher responded with “getting students to complete work!”

Single and double-underlining was common with responses to item 2. For the statement, “I believe that I would be more successful teaching children with ADHD if . . .” one teacher wrote, “I had someone come into my classroom and *model* strategies to use with the ADHD child. They would need to be there long enough [for me] to see the results.” Another teacher responded, “I was given *training*.” Still another participant wrote, “I learned more about how to help the child.”

One response to statement 2 combined two techniques of adding emphasis. An asterisk was placed before the emotion-laden section, and the words were circled. It read, “I was given more useful and specific directions and strategies – *not a behavior chart.*”
There were responses that injected levity into this otherwise serious subject. A teacher completed statement 2 with, “there was a known solution about what to do for these kids – he he 😄”

Research Questions

The research questions explored in this study were addressed by running three separate Pearson correlations. A correlation coefficient was determined to be significant at the .05 level (2-tailed).

Research Question One

To what degree is teacher knowledge about ADHD associated with the following teacher characteristics and sources of information: (a) teaching position, (b) experience teaching children with ADHD, (c) personal experience with ADHD, (d) confidence teaching children with ADHD, (e) professional publications, (f) media, (g) Internet, (h) in-service workshops, (i) college courses, (j) personal people, (k) professional people, and (l) colleagues?

Finding #1

Teacher knowledge about ADHD was negatively correlated with teaching position. As the grade level increased, the level of teacher knowledge about ADHD decreased. The correlations of teacher knowledge about ADHD with the 12 predictor variables examined in this study are shown in Appendix G.

Finding #2

Teachers with no personal experience with ADHD had lower mean scores for knowledge than teachers with personal experience.
Finding #3

Teachers who reported high confidence about teaching children with ADHD had significantly higher mean scores for knowledge than teachers who reported low confidence.

Finding #4

Teacher knowledge about ADHD did not significantly correlate with any of the eight sources of information investigated in this study.

Research Question Two

To what degree is teacher attitude toward ADHD associated with the following teacher characteristics and sources of information: (a) teaching position, (b) experience teaching children with ADHD, (c) personal experience with ADHD, (d) confidence teaching children with ADHD, (e) professional publications, (f) media, (g) Internet, (h) in-service workshops, (i) college courses, (j) personal people, (k) professional people, and (l) colleagues?

Finding #5

Teacher attitude toward ADHD (att) did not significantly correlate with any of the predictor variables examined in this study. There was, in fact, little evidence to suggest even a slight association between the attitude that teachers have toward ADHD and the teacher characteristics and sources of information that were the focus of this research. The correlation matrix for teacher attitude toward ADHD is presented in Appendix F.

Research Question Three

To what degree is teacher knowledge about ADHD associated with teacher
attitude toward ADHD?

**Finding #6**

There was no significant correlation between teacher knowledge about ADHD and teacher attitude toward the disorder \((r = .006, p = .932)\).

**Hypothesis Testing**

The three null hypotheses investigated for this study were tested at the .05 level of significance. SPSS computer software was used to perform the statistical analyses necessary in this study. For the purpose of assessing practical significance, a critical effect size of .25 (25%) was used.

**Null Hypothesis One**

The model composed of the variables for teacher characteristics and sources of information investigated in this study is no more accurate than chance in predicting teacher knowledge about ADHD. Teacher characteristics are: teaching position, experience teaching children with ADHD, personal experience with ADHD, and confidence teaching children with ADHD. Sources of information are: professional publications, media, Internet, in-service workshops, college courses, personal people, professional people, and colleagues.

**Finding #7**

The null hypothesis was rejected because there was a significant relationship between the 12 predictor variables (teaching position, experience teaching children with ADHD, publications, media, Internet, in-service, college courses, personal people, professional people, and colleagues) and knowledge about ADHD, \(F(12, 188) = 2.521,\)
$p = .004$). The model summary is presented in Table 12.

A multiple regression predicting knowledge about ADHD from the 12 predictor variables yielded an $R$-square of .139. This result indicates that 13.9% of the variance in teachers’ knowledge about ADHD can be accounted for by the variation of the derived variable, or combined predictor variables. Although statistically significant, the correlation is less than the predetermined critical effect size of 25% and may be of limited practical significance. The coefficient of alienation, therefore, is .861, indicating that 86.1% of the variation in teacher knowledge scores is left unexplained. The estimate of the population multiple correlation, or adjusted $R^2$ of .084, indicates that 8.4% of the variance in teacher knowledge would be explained by the variation of the derived variable using a different sample from the same population. Table 13 displays the analysis of variance for the criterion variable $kno$, with an $F$-value of 2.521. The $p$-value of .004 indicates that there is a significant relationship between teacher knowledge about ADHD and the predictor variables included in the model. The coefficients of the Table 12

Model Summary for Knowledge about ADHD

<table>
<thead>
<tr>
<th>Model</th>
<th>$R$</th>
<th>$R^2$</th>
<th>Adjusted $R^2$</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.372$^a$</td>
<td>.139</td>
<td>.084</td>
<td>3.780</td>
</tr>
</tbody>
</table>

$^a$ Predictors: (Constant), colleagues, confidence, personal experience, media, college courses, teaching position, experience teaching children w/ADHD, professional publications, personal people, internet, professional people, in-service

Table 13
Null Hypothesis Two

The model composed of the variables for teacher characteristics and sources of information estimated in this study is no more accurate than chance in predicting teacher attitude toward ADHD. Teacher characteristics are: teaching position, experience teaching children with ADHD, personal experience with ADHD, and confidence teaching

Table 14

Analysis of Variance* for Knowledge about ADHD

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>432.188</td>
<td>12</td>
<td>36.016</td>
<td>2.521</td>
<td>.004*</td>
</tr>
<tr>
<td>Residual</td>
<td>2685.961</td>
<td>188</td>
<td>14.287</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>3118.149</td>
<td>200</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Predictors: (Constant), colleagues, confidence, personal experience, media, college courses, teaching position, experience teaching children w/ADHD, professional publications, personal people, internet, professional people, in-service

Dependent Variable: knowledge
Coefficients\(^a\) of the Predictive Model for Knowledge about ADHD

\(^a\) Dependent Variable: knowledge

<table>
<thead>
<tr>
<th>Model</th>
<th>Predictor Variable</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>(Constant)</td>
<td>16.993</td>
<td>2.121</td>
<td>8.012</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>Teaching position</td>
<td>-.336</td>
<td>.167</td>
<td>-.146</td>
<td>-.2012</td>
</tr>
<tr>
<td></td>
<td>Experience teaching ch</td>
<td>.056</td>
<td>.234</td>
<td>.018</td>
<td>.238</td>
</tr>
<tr>
<td></td>
<td>Personal experience</td>
<td>1.044</td>
<td>.566</td>
<td>.111</td>
<td>1.591</td>
</tr>
<tr>
<td></td>
<td>Confidence</td>
<td>.740</td>
<td>.243</td>
<td>.230</td>
<td>3.048</td>
</tr>
<tr>
<td></td>
<td>Professional publications</td>
<td>.216</td>
<td>.362</td>
<td>.046</td>
<td>.598</td>
</tr>
<tr>
<td></td>
<td>Media</td>
<td>-.073</td>
<td>.314</td>
<td>-.018</td>
<td>-.233</td>
</tr>
<tr>
<td></td>
<td>Internet</td>
<td>-.233</td>
<td>.330</td>
<td>-.056</td>
<td>-.705</td>
</tr>
<tr>
<td></td>
<td>In-service</td>
<td>-.443</td>
<td>.504</td>
<td>-.077</td>
<td>-.878</td>
</tr>
<tr>
<td></td>
<td>College courses</td>
<td>-.322</td>
<td>.387</td>
<td>-.073</td>
<td>-.830</td>
</tr>
<tr>
<td></td>
<td>Personal people</td>
<td>-.351</td>
<td>.285</td>
<td>-.095</td>
<td>-1.231</td>
</tr>
<tr>
<td></td>
<td>Professional people</td>
<td>.700</td>
<td>.403</td>
<td>.146</td>
<td>1.735</td>
</tr>
<tr>
<td></td>
<td>Colleagues</td>
<td>-.057</td>
<td>.394</td>
<td>-.012</td>
<td>-.145</td>
</tr>
</tbody>
</table>

children with ADHD. Sources of information are: professional publications, media, Internet, in-service workshops, college courses, personal people, professional people, and colleagues.

**Finding #8**

The null hypothesis was not rejected because there was not a significant relationship between the 12 predictor variables (teaching position, experience teaching children with ADHD, personal experience with ADHD, confidence teaching children with ADHD, professional publications, media, Internet, in-service, college courses, professional people, and colleagues.)
Model Summary for Attitude toward ADHD

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>$R^2$</th>
<th>Adjusted $R^2$</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.147</td>
<td>.022</td>
<td>-.041</td>
<td>7.615</td>
</tr>
</tbody>
</table>

Table 16

Analysis of Variance $^b$ for Attitude toward ADHD

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df $^c$</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Regression</td>
<td>238,848</td>
<td>12</td>
<td>19.904</td>
<td>.343</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>10842.432</td>
<td>187</td>
<td>57.981</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Total</td>
<td>11081.280</td>
<td>199</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

$^a$ Predictors: (Constant), colleagues, confidence, teaching position, personal experience, college courses, media, experience teaching children with ADHD, personal people, professional publications, internet, professional publications, in-service

$^b$ Dependent Variable: attitude

personal people, professional people, and colleagues) and attitude toward ADHD, $F$ (12, 187) = .343, $p = .980$. The model summary is presented in Table 15. Table 16 displays the ANOVA for $att$, with an $F$-value of .343. The $p$-value of .980 indicates that there is a relationship between teacher attitude toward ADHD and the predictor variables not examined in this study. The coefficients of the predictive model for the criterion variable $att$ are shown in Table 17.
Table 17

Coefficients of the Predictive Model for Attitude toward ADHD

<table>
<thead>
<tr>
<th>Model</th>
<th>Predictor Variable</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>(Constant)</td>
<td>35.764</td>
<td>4.300</td>
<td>8.317</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>Teaching position</td>
<td>.007</td>
<td>.340</td>
<td>.002</td>
<td>.021</td>
</tr>
<tr>
<td></td>
<td>Experience teaching ch</td>
<td>.264</td>
<td>.472</td>
<td>.044</td>
<td>.560</td>
</tr>
<tr>
<td></td>
<td>Personal experience</td>
<td>-.546</td>
<td>1.336</td>
<td>-.031</td>
<td>-.408</td>
</tr>
<tr>
<td></td>
<td>Confidence</td>
<td>-.001</td>
<td>.494</td>
<td>.000</td>
<td>-.003</td>
</tr>
<tr>
<td></td>
<td>Professional publications</td>
<td>1.014</td>
<td>.732</td>
<td>.113</td>
<td>1.385</td>
</tr>
<tr>
<td></td>
<td>Media</td>
<td>-.394</td>
<td>.636</td>
<td>-.050</td>
<td>-.620</td>
</tr>
<tr>
<td></td>
<td>Internet</td>
<td>-.157</td>
<td>.665</td>
<td>-.020</td>
<td>-.236</td>
</tr>
<tr>
<td></td>
<td>In-service</td>
<td>.118</td>
<td>1.015</td>
<td>.011</td>
<td>.117</td>
</tr>
<tr>
<td></td>
<td>College courses</td>
<td>-.280</td>
<td>.779</td>
<td>-.034</td>
<td>-.360</td>
</tr>
<tr>
<td></td>
<td>Personal people</td>
<td>.029</td>
<td>.577</td>
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<td>.049</td>
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<tr>
<td></td>
<td>Professional people</td>
<td>-.016</td>
<td>.809</td>
<td>-.002</td>
<td>-.019</td>
</tr>
<tr>
<td></td>
<td>Colleagues</td>
<td>.796</td>
<td>.793</td>
<td>.086</td>
<td>1.005</td>
</tr>
</tbody>
</table>

*Dependent Variable: att

Null Hypothesis Three

There is no significant relationship between teacher knowledge about ADHD and teacher attitude toward ADHD.

Finding #9

The null hypothesis was not rejected because there was not a significant relationship between teacher knowledge about ADHD and teacher attitude toward the disorder ($r = .006$, $p = .932$).
Open-Ended Statement One

The most difficult thing about teaching children with ADHD is . . .

Finding #10

Teachers find the most difficult thing about teaching children with ADHD to be keeping them focused.

Open-Ended Statement Two

I believe that I would be more successful teaching children with ADHD if . . .

Finding #11

Teachers believe that they would be more successful teaching children with ADHD if they had more training.

Summary

This chapter outlined the findings of the study both descriptively and inferentially. The sample included 225 classroom teachers of grades K-5. The participants completed the Attention Deficit Hyperactivity Disorder Knowledge Assessment (ADHDKA) from which the data for this study were obtained.

Analysis of research question one resulted in three significant correlations with knowledge about ADHD: teaching position (tpo), personal experience with ADHD (pex), and confidence teaching children with ADHD (con). Teaching position correlated negatively with knowledge, indicating that teachers in higher grades had less knowledge about ADHD than those in lower grades.

Pearson correlations for attitude about ADHD did not reveal any significant relationships. Research question three was analyzed using a Pearson correlation. There
was no significant relationship between teacher knowledge about ADHD and teacher attitude toward the disorder.

Part Five of the ADHDKA yielded qualitative data in the form of responses to two open-ended statements. The first statement read, “The most difficult thing about teaching children with ADHD is . . .” The following four themes accounted for 78.5%, or 204, of the 260 responses: (a) keeping them focused (28.5%), (b) behavior management (23.1%), (c) keeping them on task (13.8%), and (d) teacher time/attention (13.1%).

The second statement read, “I believe that I would be more successful teaching children with ADHD if . . .” The following four themes accounted for 86.1%, or 180, of the 209 responses that were generated: (a) (I had) more training (55.5%), (b) (there were) smaller classes (11.9%), (c) (I had an) aide/volunteer (9.6%), and (d) (there was more) parent support (9.1%).

Three null hypotheses were tested in this study. Null hypothesis one was rejected because there was found to be a significant relationship between the 12 predictor variables and knowledge about ADHD. Although statistically significant, this finding may not be of any practical significance ($R^2 = .139$).

Null hypothesis two was not rejected because there was not a significant relationship between the 12 predictor variables and attitude toward ADHD.

Null hypothesis three was not rejected because there was not a significant relationship between knowledge about ADHD and attitude toward ADHD. The Pearson $r$ of .006 ($p = .932$) clearly indicated that there was virtually no relationship between knowledge and attitude based on their assessment in this study.
CHAPTER V

DISCUSSION OF FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of this study was to develop a predictive model for teacher knowledge and attitudes regarding ADHD. Four teacher characteristics and eight sources of information were examined for their predictive value in relationship to teacher knowledge about ADHD and teacher attitude toward the disorder. Teacher characteristics included teaching position, experience teaching children with ADHD, personal experience with ADHD, and confidence teaching children with ADHD. The eight sources of information were professional publications, media, Internet, in-service workshops, college courses, personal people, professional people, and colleagues. Knowledge was defined as facts, information, and skills acquired by a person through experience or education. Attitude was defined as an idea charged with emotion which predisposes a class of actions to a particular class of social situations.

This chapter will include the following: (a) a discussion of the findings, (b) conclusions, and (c) recommendations. A final thought can be found at the end of the chapter.

Discussion of Findings

Teacher Knowledge and Teaching Position

Teachers of primary grades (kindergarten through second) had a higher level of knowledge about ADHD than those of intermediate grades (third through fifth). This finding does not support previous research (Brook, Watemberg, & Geva, 2000; Piccolo-Torsky & Waishwell, 1998) and raises some important questions. Teachers switch grade
levels every few years either by personal request or by administrative recommendation. Would a primary teacher demonstrate less knowledge about ADHD next year if that teacher switches to an intermediate position? Conversely, would an intermediate teacher automatically seek out additional information about ADHD when that teacher transfers to a primary position? These are questions worthy of attention and ones that could certainly be addressed in a longitudinal study.

**Teacher Knowledge and Personal Experience with ADHD**

Teachers who reported having personal experience with ADHD have more knowledge about the disorder than teachers who reported having no family members with ADHD. An extensive review of the literature did not uncover any studies using personal experience with ADHD as a predictor for teacher knowledge. This is an issue that certainly needs further scrutiny.

For the purpose of this study, *personal experience* was described as a family member. Most teachers reported that they did not have personal experience with ADHD. There are several explanations for this finding. First, the brief description of *personal experience* may have caused some confusion for participants. A teacher who interpreted “family member” as someone in the nuclear family, i.e., a family member living in the same house, would have reported having no personal experience if the teacher had a member of the extended family, i.e., a family member not living in the same house, who was diagnosed with ADHD.

Second, teachers may not have had knowledge of a relative’s ADHD diagnosis. In theory, these teachers would have had personal experience with ADHD without having
any awareness of such experience.

Finally, teachers may have relatives who exhibit ADHD symptoms but were not
diagnosed. This is a distinct possibility with adult relatives more often than with family
members who are children. Adults very often become aware of their ADHD after it has
been recognized in their children. When an adult with ADHD symptoms does not have
children, or has children who do not exhibit ADHD symptoms, that adult is not likely to
self-diagnose and then seek out professional help. In either case, had such teachers
responded “yes” to item 3, this finding may not have surfaced.

**Teacher Knowledge and Confidence about Teaching Children with ADHD**

Teachers who reported having a high level of confidence about teaching children
with ADHD have higher levels of knowledge about the disorder than teachers who
reported low confidence. This study confirmed the findings of Sciutto, Terjesen, and
Frank (2000) who also concluded that teachers’ knowledge about ADHD was positively
related to their confidence teaching children with ADHD. Teacher efficacy has been
viewed as a crucial component in student achievement (Agne, Greenwood, & Miller,
1994). For this reason, increasing teachers’ level of confidence with ADHD students is in
the best interest of children. It is not clear from the data whether there is actually a causal
relationship between knowledge and confidence, however, the research does support this
theory (Sciutto, Terjesen, and Frank, 2000).

**Teacher Knowledge and Sources of Information**
The level of knowledge teachers have about ADHD is not associated with the sources of information they rate as most accessible, trustworthy, and usable. An extensive review of the literature did not uncover any studies on the possible connection between teacher knowledge about ADHD and the eight sources of information that were investigated in this study.

The source of information teachers reported as being the most accessible, trustworthy, and usable is in-service workshops. This may or may not be the source that teachers actually access most frequently for information about ADHD. Participant responses can only reflect what is filled out on the survey and cannot differentiate between responses that are driven by truth and those by social desirability (responses that teachers believe are considered most acceptable by society). Regardless of whether teachers actually attend in-service workshops on ADHD or simply rate in-service as a highly accessible, trustworthy, and usable source of information about ADHD, their level of knowledge about the disorder does not appear to be connected.

Further research will need to pinpoint the specific books, magazines, websites, and television programs being accessed by teachers for information about ADHD. Only then can we begin to determine precisely which sources are promoting accurate information and which are perpetuating the myths and misconceptions so commonly promulgated about the disorder.

*Predictive Models for Teacher Knowledge and Teacher Attitude*
A predictive model can be developed to determine teacher knowledge about ADHD. As the findings illustrated, a significant relationship exists between teacher knowledge and the 12 predictor variables investigated in this study. The model may not be of practical significance indicating that additional variables need to be investigated as to their predictive value for teacher knowledge about ADHD.

This study mirrored the results of numerous studies that have investigated the connection between teacher knowledge and variables such as teaching experience, gender, age, and educational level (Jerome, Gordon, & Hustler, 1994; Leyser & Tappendorf, 2001; Piccolo-Torsky, & Waishwell, 1998; Sciutto, Terjesen, & Frank, 2000; Uzi, Watemberg, & Geva, 2000). These and other predictor variables need to be investigated further as to their predictive value in regard to teacher knowledge about ADHD. Alternative measures for sources of information are also needed to accurately determine where teachers are obtaining their information about ADHD.

A predictive model for attitude toward ADHD was not developed using the 12 predictor variables investigated in this study. Previous studies have focused on the relationship between teacher attitudes toward handicapped students and teacher characteristics that were investigated in this study (Larrivee & Cook, 1979; Leyser & Tappendorf, 2001; Morris & McCauley, 1977). Larrivee and Cook’s (1979) finding that teacher attitudes toward mainstreaming became more negative as grade level increased was not confirmed by the data generated in this study. Teachers of grade 5 had the highest, or most positive, mean attitude score (41.47), and teachers of grade 4 had the
The research has been split as to the connection between teacher attitude and experience teaching children with ADHD. Sciutto, Terjesen, and Frank (2000) found that teacher attitude became more positive as reported contact with ADHD students increased. However, Hepperlen, Clay, Henly, and Barke (2002) found that teacher attitude was not in any way affected by the number of ADHD students teachers had taught. The latter finding is consistent with those from the present study.

Little research has been conducted in the area of teacher attitude and personal experience with ADHD. Stephens and Braun (1980) found that teachers who reported having exceptional children in their families did not differ significantly from teachers with no exceptional family members in regard to their attitude toward exceptional children. The findings in the present study are consistent with those reported by Stephens and Braun.

Although the present study found that confidence significantly correlated with teacher knowledge about ADHD, confidence did not significantly correlate with teacher attitude toward the disorder. This finding is not consistent with those from many previous studies (Kauffman & Wong, 1991; Larrivee & Cook, 1979; Salend & Johns, 1983; Sciutto, Terjesen, & Frank, 2000). Larrivee and Cook (1979) investigated seven variables and their relationship to teacher attitudes toward mainstreaming. According to their findings, teacher confidence had the most significant correlation with teacher attitudes. The present study may not have yielded similar results due to the limited data the ADHDKA provided for teacher confidence. There was only one Likert-type rating scale
item that determined a teacher’s level of confidence about teaching ADHD. Future studies investigating the confidence–attitude connection may consider including additional confidence-related items on the ADHDKA. This would strengthen the validity of the resulting score for confidence and may serendipitously yield a significant correlation between confidence and attitude.

The research continues to report significant connections between in-service programs designed to increase positive attitudes toward handicapped students and the actual increase of such attitudes among teachers (Brook, Watemberg, & Geva, 2000; Leyser & Tappendorf, 2001; Montague, Warger, & Harris, 1997).

Teacher responses driven by social desirability, i.e., teacher desire to answer in a socially acceptable way, were not a factor in the assessment of teacher attitude in the present study. This was accomplished in Part Three of the ADHDKA, where attitude assessment was disguised as knowledge assessment. Indirect methods are often used to determine attitude in order to eliminate the social desirability issue. It is possible that the difficulty of the questions in this part of the instrument intimidated teachers more than it served to extract true attitudes. In an attempt to avoid one type of weakness, this indirect method may have created a more damaging one. Teachers may not have read the items carefully after they became aware of their difficulty level. This may have skewed the resulting scores in a random way, as opposed to allowing an attitude pattern to emerge.

It is clear from this finding that additional variables need to be investigated as to their predictive value for teacher attitude toward ADHD. Although such investigation is highly recommended, it is important to note that the predictor variables in this study
should be researched with alternate instruments. A model that does not prove to be significantly predictive of teacher attitude in one study may very well yield predictive value in another using different vehicles for data acquisition.

**Teacher Knowledge and Attitude Regarding ADHD**

Teacher knowledge about ADHD and teacher attitude toward the disorder are not significantly associated. However, most of the teachers holding negative attitudes have a high level of knowledge about ADHD. This is a most unexpected, and perhaps the most salient, finding in the study.

Prior studies investigating this relationship have been mixed (Hannah & Pliner, 1983). Findings from the present study are consistent with those studies in which a significant correlation between the two variables was not found.

A crosstabulation of knowledge with attitude was run and is shown in Table 18. Careful analysis of the crosstabulations yielded results worthy of further research. There were 70 teachers (31.5%) who scored in the negative range for attitude; only 10 of those teachers (4.5%) scored in the low range for knowledge. The remaining 60 teachers (27%) with negative attitudes toward ADHD scored in the high range for knowledge. This finding negates previous ones that attributed negative attitudes to lack of information (Hannah & Pliner, 1983; Leyser & Abrams, 1984).

A possible explanation for teachers with high knowledge and negative attitude is a statement made by Hannah and Pliner (1983). The quote was included in Chapter Two but is important enough to warrant repeating:

While a teacher may be extremely knowledgeable about a handicapped child’s condition, the teacher may lack the skills necessary to teach or manage the child.
Therefore, the teacher may have a negative attitude toward the child, manifesting itself in a reluctance to have the child in the classroom. (p. 19)

This powerful comment has profound implications for education. A teacher who becomes knowledgeable about any disability, subject area in the curriculum, or even classroom management style may be able to demonstrate such knowledge on paper without being capable of implementing that knowledge in the classroom. This reinforces the need for in-

Table 18

Crosstabulation of Knowledge (kno) with Attitude (att)

<table>
<thead>
<tr>
<th>Knowledge</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
</tr>
<tr>
<td>Attitude</td>
<td></td>
</tr>
<tr>
<td>Negative</td>
<td>10</td>
</tr>
<tr>
<td>Positive</td>
<td>34</td>
</tr>
<tr>
<td>Total</td>
<td>44</td>
</tr>
</tbody>
</table>

service follow-ups that assess whether teachers are successfully making the transition from theory to practice.

Another possible justification for the low knowledge – positive attitude connection is the adage, “Ignorance is bliss.” This explanation would be more plausible had there been a low knowledge – low experience teaching children with ADHD connection. New teachers, for example, may not have yet encountered the formidable
behaviors associated with ADHD and may have a positive attitude toward the disorder. However, teachers with low knowledge about ADHD may very well have experience teaching this population of children, making this explanation unlikely.

Regardless of whether they are correlated, teacher knowledge and attitude regarding ADHD can have serious implications in the classroom and must be interpreted at a far deeper level than a Pearson $r$ can reveal. According to Barkley (2000),

> the single most important ingredient in your child’s success at school is your child’s teacher . . . particularly the teacher’s experience with ADHD and willingness to provide the extra effort and understanding your child will require to have a happy, successful school year. (p. 227)

For this reason alone, it is vital that we not only increase our teachers’ knowledge base about ADHD, but also assist them with the “real life” utilization of the tools they acquire from staff development. Only then can we increase the likelihood that knowledge and attitude will be positively correlated in our classrooms.

**Difficulties Teaching Children with ADHD**

Teachers find the most difficult thing about teaching children with ADHD to be keeping them focused. The open-ended statement teachers completed was derived from a study of 100 teachers in rural West Tennessee (Whitworth, Fossler, & Harbin, 1997). Results from that study were remarkably similar to those from the present study. In response to what they consider to be most difficult about teaching children with ADHD, 34% of teachers in the 1997 study wrote, “keeping them focused.” In the present study, 28.5% of teachers gave the same response. In both cases, this was the most frequently-occurring answer.
It is clearer with each finding that teachers are asking for help when it comes to teaching children with ADHD. This is not to say that in-service is the panacea for teacher concerns about keeping students focused. However, there are strategies and modifications that teachers can learn and implement in the classroom to help ADHD students with focusing challenges. In-service workshops can provide such strategies.

Administrators must also make it possible for teachers to observe other teachers’ best practices concerning students with ADHD. Sometimes all a teacher needs is to see a technique being successfully used by a fellow teacher. This can give the observing teacher the confidence to implement the strategy in his or her own classroom.

_Increasing Teacher Success with Children with ADHD_

An overwhelming majority of teachers in the study believe they would be more successful with children diagnosed with ADHD if they had more training. Teacher responses to the second open-ended statement were even more closely aligned with the 1997 study (Whitworth, Fossler, & Harbin) than were responses to the first statement. A total of 33% of teachers in the 1997 study believed they would be more successful teaching children with ADHD if they had more training. In the present study, 55.5% of teachers listed additional training as their answer. Smaller class size was the second most frequently listed response in both studies, with 29% of teachers in the 1997 study and 11.9% in the present study giving this answer. The third most frequent response in both studies was “classroom aide,” with 19% of teachers in the 2002 study giving this as a response, and 9.6% in the present study giving the same answer.

_Conclusions_
It is clear from the results of this study and those that preceded it, that teachers are walking into classrooms without ample information about ADHD. Because of their lack of knowledge regarding strategies to accommodate behavioral and academic challenges for the child with ADHD, teachers lack the confidence to be successful with this population of children.

Many teachers expressed that the most difficult thing about teaching children with ADHD is managing their disruptive behaviors while attending to the needs of the rest of the students. These teachers’ main concern was that the children with ADHD “disrupt other students’ learning.” Several teachers who responded in such a manner also requested “an aide or smaller class size.” This response offers two ways that children with ADHD could be afforded more one-on-one attention that they need. These recommendations surely require the support of administration because they are directly connected to budgetary constraints. Administrators who see ADHD as a priority would recognize the need for additional assistance in the classroom and would make every effort to supply it.

The disruptive behaviors often associated with ADHD sometimes necessitate the removal of the child from the classroom. Administrative support is vital in these situations where “behaviors interfere with ability to teach or other students’ ability to learn” (Rief, 1993, p. 8). A principal without adequate knowledge and understanding of the child with ADHD may not stand behind such removal, and the education of many children would be at risk. It is crucial for administrators to be well-informed about the identification and treatment of ADHD. Teachers in the study expressed concern about the
“lack of support and guidance from school administration.”

Administrators need to be supportive of ADHD in-service workshops in which teachers may ask to participate. This support is necessary when it comes to supplying substitutes and earmarking funds for ADHD-related training. Perhaps more importantly, educational leaders at the district level must provide the ADHD workshops that teachers are so desperately requesting. Principals can be 100% supportive, but if the in-service training is not available, the school-level endorsement is fruitless.

There is a large multicultural component to the ADHD population in our American classrooms. Inattention to the diverse learning problems of many African-American, Hispanic, Asian, and Native American children with ADHD “may result in major educational problems for administrators and teachers during the 21st century when minority populations become majority populations” (Wright, Morton, & Beale, 1997, p. 28).

It is incumbent upon the administrators at the district level to supply adequate, appropriate staff development opportunities in the area of ADHD. Teachers are literally crying out for help and are not being heard. The long-term result is a silent one; frustrated, and very often highly qualified, teachers quietly exit the profession without anyone outside of the teachers’ lounge knowing why.

The needs of students with ADHD are complex and vary from child to child. There is no one solution to all of the problems a teacher faces with an average of one or two diagnosed students sitting in the classroom. These children are as frustrated as the teachers. No child wants to fail and it is the responsibility of the powers that be to insure
that they are successful.

Until the education community makes ADHD a priority beginning at the university level, teachers and children will continue to meet with less-than-acceptable degrees of success. Figure 2 illustrates that teacher knowledge about ADHD may be at the heart of raising student achievement for children diagnosed with the disorder. Knowledge and administrative support are power. That power will produce teacher confidence that will be transferred to the children with ADHD. Increased confidence will produce

Figure 2. A flowchart worthy of future research

increased achievement, a major priority in any school system.

Recommendations
Recommendations for Those in Positions of Educational Leadership

The following suggestions are, in large part, an outgrowth of the responses to the open-ended statements in Part Five of the ADHDKA. They have been voiced by those in “the trenches” and substantiated in the literature:

**Pre-service Education Requirements.**

In this day and age of inclusion, teachers need to walk into classrooms prepared to deal with any type of physical, mental, and emotional exceptionality. Although the average regular educator may seldom encounter a hearing- or visually-impaired student, the same cannot be said for children diagnosed with ADHD. The average teacher can expect to have one or two students each school year who have been diagnosed with ADHD, (Barkley, 2000). This translates to 6-9% of school-aged children, making ADHD one of the most prevalent chronic childhood disorders, second only to asthma (AAP, 2004).

Due to the large number of students with ADHD, it is imperative that the Department of Education require that a separate course about ADHD be included in teacher pre-service education requirements. New teachers are entering classrooms unequipped to successfully handle the students who are diagnosed with ADHD. This could very easily lead to part of the serious problem of teacher attrition felt by school systems across the country. A frustrated new teacher leads to a teacher leaving the teaching profession.

**In-service Education for Teachers.**
Teachers would benefit greatly by having in-service about ADHD offered at the beginning of the school year to better equip them to identify symptoms and appropriately refer children to Child Study. It is vital that teachers be aware of the often-overlooked inattentive subtype of ADHD. Such awareness may be achieved with staff development early in the year.

An alternative in-service workshop may feature a panel of children diagnosed with ADHD, teachers with extensive experience and success teaching children with ADHD, and health care professionals well versed in the diagnosis and treatment of children with the disorder. *Children and Adults with Attention Deficit Hyperactivity Disorder* (CH.A.D.D.) has been offering a teen panel discussion at their annual conferences since 1994 (CHADD, 2003). CHADD refers to this session as “Advice from the Real Experts on ADHD.”

Teachers would benefit from an in-service actively involving them in role-playing of specific ADHD behaviors and effective teacher interventions. As participants, they could gain insight into the challenges experienced by children with ADHD. As spectators, teachers may see commonly encountered situations from a different angle, thereby, affording them the opportunity to develop new strategies for managing those situations.

Clear information about the referral process is an important component of ADHD in-service. Many teachers do not take this crucial first step because there is much confusion about how to go about getting a child identified. Guidance counselors and school psychologists are recommending that parents go to their child’s pediatrician to
obtain checklists that used to be more readily available at the school level.

Teachers would benefit from learning about appropriate ways of discussing ADHD concerns with parents. When parents are defensive about ADHD, they are not receptive to any recommendations made at the school level. This should be a separate workshop.

**In-service Education for School Personnel.**

It is vital for administrators to be provided with in-service opportunities so that they can offer advice and suggestions to faculty regarding ADHD. In-depth in-service must also be available for guidance counselors, school psychologists, and behavior specialists in regard to recent developments in ADHD research. Auxiliary school personnel such as cafeteria staff, custodians, office staff, bus drivers, and anyone else who may interact with children need to be informed about ADHD as well. These categories of school staff members are sorely overlooked and may unknowingly impact a child’s education during the course of a school day.

Finally, school systems would be wise to establish a district-level position to be filled by an expert on ADHD for the specific purpose of educating teachers, administrators, and parents about the facts and myths surrounding the disorder. School districts need to include parents as in-service participants because parents greatly affect the outcome of programs and initiatives developed within the education community. A recent study suggested the implementation of a consultation model that establishes “a team of individuals with expertise in ADHD from a collection or consortium of districts” (Bradley-Klug, Shapiro, & DuPaul, 1997, p. 186).
Recommendations for Future Research

The following recommendations are made for future research:

1. Additional research should investigate why teachers with high levels of knowledge about ADHD have negative attitudes toward the disorder. The same instrument should be employed to maintain consistency.

2. Employ a mixed between – within design (Bryman & Cramer, 1990) where teacher knowledge and attitude are assessed before and after attendance at an ADHD in-service workshop.

3. Future studies need to investigate the prevalence of ADHD in regard to the gender of referring teachers and student gender, race, ethnic background, and family income.

4. Further research needs to be conducted in alternate settings to determine why primary (K – 2) teachers have more knowledge about ADHD than do intermediate (3 – 5) teachers.

5. Future research needs to investigate the prevalence of teachers diagnosed with ADHD or simply exhibiting ADHD characteristics. This population is sorely neglected in the field of research. Clearly, a teacher struggling with disorganization and other symptoms of ADHD faces unique challenges when attempting to teach such things as organizational skills and time management to students.

6. Future studies will need to outline more specifically what constitutes personal experience with ADHD. The description “family member” needs to be broadened
to specify whether the teacher should consider extended family members or only nuclear family members who have been diagnosed with ADHD when making a determination about personal experience with the disorder.

7. Future studies should investigate to what degree the predictor variables (teaching position, experience teaching children with ADHD, personal experience with ADHD, confidence teaching children with ADHD, professional publications, media, Internet, in-service, college courses, personal people, professional people, and colleagues) are associated with each other. Much of the information gleaned from the survey instrument was beyond the scope of this study.

8. Administer the ADHDKA to teachers at the elementary, middle, and high school levels for comparison of knowledge and attitudes regarding ADHD.

9. Analyze the responses to the nine general knowledge questions in Part Three of the ADHDKA. These questions were distracters in the present study and were not included in the total scores. They address different areas of knowledge about ADHD than the questions in Part Four of the instrument.

10. Analyze the responses for each item or category of items on the ADHDKA instead of totaling each part. Knowledge about ADHD could then be evaluated by category: symptoms, diagnosis, treatment options, classroom accommodations, legal rights, etc. Attitude toward ADHD could be analyzed in sections: perceived behavior control (on the student’s part), perceived academic potential, parent and administrative support, etc.

11. Develop a modified parent version of the ADHDKA and administer to parents.
Parents’ knowledge and attitudes regarding ADHD are of equal importance to those of teachers.

12. A similar study should be conducted employing qualitative techniques for data analysis. Teacher interviews would yield rich, substantive responses about attitudes toward ADHD. They would also provide greater insight regarding the specific sources accessed by teachers for information about ADHD.

13. Conduct an in-depth analysis of teacher self-efficacy (confidence) as it relates to teaching children with ADHD.

A Closing Thought

The impassioned pleas expressed in teachers’ own words give credence to the tremendous need for training and administrative support in regard to ADHD. Students with ADHD will continue to enter our classrooms, and it is incumbent upon the education community to appropriately serve their needs. This can only be accomplished by adequately educating our teachers about the disorder. Without up-to-date information from reputable sources, teachers will continue to hold on to the myths and misconceptions that swirled around ADHD in the past. These myths can have far-reaching, negative effects on teacher relationships with students and parents, teacher confidence in the benefits of medication, and ultimately, on student achievement.

It is crucial that teachers be able to access in-service workshops that address the many concerns they have about teaching children with ADHD. The availability of free,
district-level workshops about ADHD is the first step toward increasing teacher knowledge about the disorder. It is then the responsibility of each school-based administrator to recommend and encourage teacher participation in these workshops. School psychologists, guidance counselors, and ESE specialists are given valuable information about ADHD at workshops and conferences that only they attend. This information must be shared with the teachers who interact on a daily basis with diagnosed students.

This is a heterogeneous population of children, and no one intervention, accommodation, or modification in the classroom will be right for every child diagnosed with ADHD. Teachers must be sensitive to this fact and realize that trial and error is very often the most scientific way of finding the right fit. But they must have knowledge of the various options available to them before they can even begin to experiment with them. Once this knowledge is acquired, teachers can feel confident and equipped to begin their search for appropriate accommodations. It is only then that the child with ADHD can begin to be appropriately served.
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Permission to Use Instruments

1. Sources of Information
2. Test of Knowledge about Attention Deficit Hyperactivity Disorder (KADD)
3. Knowledge of Attention Deficit Disorders Scale-Revised (KADDS-R)
4. Open-Ended Statements
Permission to Conduct Research

1. Institutional Review Board (IRB), Florida Atlantic University
2. The School Board of Broward County, Florida
Attention Deficit Hyperactivity Disorder Knowledge Assessment (ADHDKA)

# __

Attention Deficit Hyperactivity Disorder (ADHD) Knowledge Assessment

Thank you for taking time to be part of this research. By completing the survey you are freely consenting to participate in this study about teachers’ knowledge and attitudes regarding ADHD. Results from this study could significantly impact future staff development about this disorder. It should take approximately 30 minutes to complete the survey and you are free to stop at any time. When you are ready to hand in the survey, please place it in the envelope provided. Then place the sealed envelope in the lock box marked ADHD Knowledge Assessment located in the ESE Specialist’s office. All responses will be anonymous and kept confidential. If you have questions, please contact the principal investigator, Dr. Pat Maslin-Ostrowski at (954) 236-1036 or pmaslin@fau.edu, or the investigator, Carole Blume-D’Ausilio at (561) 901-0558 or cdausilio13@aol.com.

**Part One: Background Information**

(Please check the appropriate response for Items 1-3)

1. Present teaching position
   ___ K  ___ 1  ___ 2  ___ 3  ___ 4  ___ 5

2. Experience teaching children diagnosed with ADHD (# of students)
   ___ Less than 5  ___ 5-9  ___ 10-19  ___ 20-29  ___ 30-49  ___ 50 or more

3. Personal experience with ADHD (family member)
   ___ Yes  ___ No
4. Circle the number that best represents your level of confidence teaching children diagnosed with ADHD. (1=Low 6=High) 1 2 3 4 5 6

**Part Two: Sources of Information about ADHD**
*Adapted from Landrum, Cook, Tankersley, & FitzGerald, 2002 with permission*

**Directions:** Use the scale below to rate each source of information about ADHD. 1=Strongly disagree 2=Disagree 3=Somewhat disagree 4=Somewhat agree 5=Agree 6=Strongly agree. Circle 1, 2, 3, 4, 5, or 6 for each statement.

**Professional Publications** (journals, books)
1. I would be likely to get information from this source. 1 2 3 4 5 6
2. I could get trustworthy information from this source. 1 2 3 4 5 6
3. I would be likely to use information obtained from this source. 1 2 3 4 5 6

**Media** (TV, radio, newspapers, magazines)
4. I would be likely to get information from this source. 1 2 3 4 5 6
5. I could get trustworthy information from this source. 1 2 3 4 5 6
6. I would be likely to use information obtained from this source. 1 2 3 4 5 6

**Internet**
7. I would be likely to get information from this source. 1 2 3 4 5 6
8. I could get trustworthy information from this source. 1 2 3 4 5 6
9. I would be likely to use information obtained from this source. 1 2 3 4 5 6

**In-Service Workshops/Conferences**
10. I would be likely to get information from this source. 1 2 3 4 5 6
11. I could get trustworthy information from this source. 1 2 3 4 5 6
12. I would be likely to use information obtained from this source. 1 2 3 4 5 6

**College Courses**
13. I would be likely to get information from this source. 1 2 3 4 5 6
14. I could get trustworthy information from this source. 1 2 3 4 5 6
15. I would be likely to use information obtained from this source. 1 2 3 4 5 6

**Personal People** (family, friends)
16. I would be likely to get information from this source. 1 2 3 4 5 6
17. I could get trustworthy information from this source. 1 2 3 4 5 6
18. I would be likely to use information obtained from this source. 1 2 3 4 5 6

**Professional People** (medical doctors, therapists)
19. I would be likely to get information from this source. 1 2 3 4 5 6
20. I could get trustworthy information from this source. 1 2 3 4 5 6
21. I would be likely to use information obtained from this source. 1 2 3 4 5 6

**Colleagues**
22. I would be likely to get information from this source. 1 2 3 4 5 6
23. I could get trustworthy information from this source. 1 2 3 4 5 6
24. I would be likely to use information obtained from this source. 1 2 3 4 5 6
Part Three: General Knowledge about ADHD
Adapted from Hepperlen, 1998 with permission

Directions: Circle the letter next to the answer you think is correct. You are not expected to have read all the research, but by using your experience and general knowledge you will be able to pick the correct answer to many of the questions. Please answer every question as best you can.

1. ___ % of students with ADHD pursue higher education. a. 4 b. 14 c. 30 d. 41
2. Of children under the age of 16 who are diagnosed with ADHD, boys are ___ more likely than girls to be prescribed a drug such as Ritalin. a. no b. 2 times c. 4 times d. 8 times
3. In a recent study, ___ % of sexually abused children met the criteria for ADHD. a. 24 b. 37 c. 55 d. 67
4. ADHD is most frequently accompanied by which of the following disorders? a. antisocial personality disorder b. bipolar (manic/depressive) disorder c. Tourette’s Syndrome d. conduct disorder
5. Of adults on probation for drug-related crimes, ___ exhibited at least some ADHD-related behavior. a. 1/5 b. 1/4 c. 1/2 d. 2/3
6. ___ % of children with ADHD come from families that are disorganized and have a parent who exhibits psychopathology. a. 5 b. 15 c. 25 d. 35
7. ADHD continues into adolescence in ___ % to ___ % of children. a. 58-72 b. 32-49 c. 16-27 d. 5-12
8. A recent follow-up study found that adults who were never diagnosed with ADHD achieved ___ more years of education (including higher education) than adults who were diagnosed with ADHD in childhood. a. 6.5 b. 3.5 c. 1.5 d. no
9. ___ % of ADHD children abuse illegal drugs as adults. a. 4 b. 10 c. 22 d. 38
10. ___ % of ADHD children are eventually placed in formal special educational programs for learning disabled or behaviorally disordered children. a. 10 b. 25 c. 40 d. 55
11. The unemployment rate for adults who were diagnosed with ADHD in childhood is ___. a. 15% b. 7% c. 3% d. less than 1%
12. ___ % of ADHD children have a learning disability in reading, spelling, or math. a. 9 b. 16 c. 24 d. 35
13. According to the most reliable estimates, between ___% and ___% of all school-aged children suffer from ADHD. a. 18 and 21 b. 9 and 12 c. 3 and 5 d. 1 and 2
14. What is the most effective non-medication treatment for ADHD children? a. sensory-integration therapy b. dietary management (elimination of sugar and/or food additives) c. long-term psychotherapy d. training parents in more effective child management skills
15. Adolescents with ADHD have a ___ greater risk for drug and alcohol abuse than non-ADHD adolescents.  
   a. 9 times  
   b. 5 times  
   c. 2 times  
   d. no

16. Adults diagnosed with ADHD as children are ___ more likely to have an ongoing mental disorder than 
   adults not diagnosed with ADHD as children.  
   a. no  
   b. 3 times  
   c. 5 times  
   d. 9 times

17. Environmental causes (poverty, chaotic family style, overcrowding, food additives, or pollution) are 
   responsible for ___ percent of ADHD development in children.  
   a. 48  
   b. 36  
   c. 4  
   d. 0

18. Children with ADHD tend to have the most significant deficits in ________.
   a. memory and information recall tasks  
   b. receptive language usage  
   c. standard neuropsychological test batteries  
   d. complex problem-solving strategies and organizational skills

19. It is estimated that ___ of children with ADHD will die from either suicide or accidental injury before 
   age 30.  
   a. Less than 1%  
   b. 3%  
   c. 7%  
   d. 11%

20. Children with ADHD are ___ more likely than non-ADHD children to suffer from sleep problems. 
   a. no  
   b. 2 times  
   c. 4 times  
   d. 6 times

21. Between ___ % and ___ % of children suffering from ADHD will be held back at least one grade before 
   reaching high school.  
   a. 3 and 10  
   b. 14 and 28  
   c. 42 and 57  
   d. 60 and 73

22. In 1995, ___ % of adults diagnosed with ADHD as children were living at or below the poverty level. 
   a. 6  
   b. 10  
   c. 18  
   d. 24

23. The average scores of ADHD children on standardized achievement tests are ___ the normal range. 
   a. above  
   b. within  
   c. below  
   d. significantly below

24. Approximately ___ of all children with ADHD will drop out before graduating from high school. 
   a. 3/5  
   b. 1/2  
   c. 1/4  
   d. 1/5

Part Four: Knowledge about Symptoms, Diagnosis, and Treatment of ADHD
Adapted from Sciutto, Terjesen, & Frank, 2000 with permission

Directions: Please circle T (True), F (False), or DK (Don’t Know) for each of the following statements 
about ADHD. Please respond to all of the statements.

1. T F DK ADHD children are often distracted by extraneous stimuli.

2. T F DK ADHD children are typically more compliant with their fathers than with their mothers.

3. T F DK To be diagnosed with ADHD, symptoms must have been present before age 7.

4. T F DK ADHD is more common in the 1st degree biological relatives (i.e., mother, father) of 
   children with ADHD than in the general population.

5. T F DK One symptom of ADHD children is that they have been physically cruel to others.
6. **T**  **F**  **DK**  ADHD children often fidget or squirm in their seats.

7. **T**  **F**  **DK**  Parent and teacher training in managing an ADHD child are generally effective when combined with medication treatment.

8. **T**  **F**  **DK**  It is common for ADHD children to have an inflated sense of self-esteem or grandiosity.

9. **T**  **F**  **DK**  It is possible for an adult to be diagnosed with ADHD.

10. **T**  **F**  **DK**  ADHD children often have a history of stealing or destroying other people’s things.

11. **T**  **F**  **DK**  Side effects of stimulants used to treat ADHD may include mild insomnia and appetite reduction.

12. **T**  **F**  **DK**  There are two clusters of ADHD symptoms: (a) inattention; and (b) hyperactivity/impulsivity.

13. **T**  **F**  **DK**  Most ADHD children “outgrow” their symptoms by puberty.

14. **T**  **F**  **DK**  To be diagnosed with ADHD, a child must exhibit relevant symptoms in two or more settings (e.g., home, school).

15. **T**  **F**  **DK**  Reducing dietary intake of sugar or food additives is generally effective in reducing the symptoms of ADHD.

16. **T**  **F**  **DK**  An ADHD diagnosis by itself makes a child eligible for placement in special education.

17. **T**  **F**  **DK**  Stimulants are the most common type of drug used to treat ADHD.

18. **T**  **F**  **DK**  ADHD children often have trouble organizing tasks.

19. **T**  **F**  **DK**  ADHD children generally have more problems in novel situations than in familiar ones.

20. **T**  **F**  **DK**  Specific physical features can be identified by doctors in making a definitive diagnosis of ADHD.

21. **T**  **F**  **DK**  In school-aged children, the prevalence of ADHD in males and females is equivalent.

22. **T**  **F**  **DK**  In very young children (< 4 yrs. old), the problem behaviors of ADHD children (e.g., hyperactivity, inattention) are clearly different from age-appropriate non-ADHD children.

23. **T**  **F**  **DK**  ADHD children are more distinguishable from normal children in a classroom setting than in a free play situation.

24. **T**  **F**  **DK**  The majority of ADHD children show some degree of poor school performance in the elementary years.
25. **T F DK** Symptoms of ADHD are often seen in non-ADHD children who come from chaotic home environments.

26. **T F DK** ADHD treatments focusing primarily on punishment are most effective in reducing symptoms.

27. **T F DK** Prolonged use of stimulants leads to increased addiction (drugs/alcohol) in adulthood.

28. **T F DK** If a child responds to a stimulant (e.g., Ritalin), then he/she probably has ADHD.

29. **T F DK** ADHD children generally display an inflexible adherence to specific routines or rituals.

**Part Five: Open-Ended Statements**

Adapted from Whitworth, Fossler, & Harbin, 1997 with permission

**Directions**: Please complete the following two statements. You may write a few words or a paragraph.

1. The most difficult thing about teaching children with ADHD is . . .

2. I believe that I would be more successful teaching children with ADHD if . . .

Thank you very much for participating in this study. If you would like a summary of the results of this research, please send your name and school name to:

Carole Blume-D’Ausilio
E-mail: cdausilio13@aol.com
APPENDIX D

Variable Codes and Values

1. Recoded Variable Categories
2. Range of Category Values

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(prof pub)  
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(unlikely, Swht unlikely, Swht likely, Likely)
6)  *med*  
(media)  
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1=UL, 2=SU, 3=SL, 4=LK  
(unlikely, Swht unlikely, Swht likely, Likely)
7)  *int*  
(Internet)  
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8)  *ins*  
(in-service)  
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(unlikely, Swht unlikely, Swht likely, Likely)
9)  *coc*  
(college)  
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12)  *col*  
(colleagues)  
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13)  *kno*  
(knowledge)  
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14)  *att*  
(attitude)  
1-6     6  
1=HN, 2=MN, 3=LN, 4=LP, 5=MP, 6=HP  
(Hgh neg, Md neg, Lw neg, Lw pos, Md pos, Hgh pos)

**Range of Category Values**

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## APPENDIX E

Frequency Tables for Sources of Information (ADHDKA – Part Two)

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APPENDIX F

Attitude toward ADHD (ADHDKA – Part Three)

1. Raw data distribution
2. Correlation matrix

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## Correlations of Attitude Toward ADHD with Predictor Variables

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*Note. Var. = Variable; att = attitude toward ADHD; tpo = teaching position; etc = experience teaching children with ADHD; pex = personal experience with ADHD; con = confidence teaching children with ADHD; ppb & prof'l public = professional publications; med = media; int = Internet; ins = in-service; coc = college courses; per = personal people; pro & prof'l = professional people; col = colleagues.

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).
APPENDIX G

Knowledge about ADHD (ADHDKA – Part Four)

1. Raw score distribution
2. Correlation matrix
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### Correlations of Knowledge About ADHD with Predictor Variables

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**Note.** Var. = Variables; kno = knowledge about ADHD; tpo = teaching position; etc = experience teaching children with ADHD; pex = personal experience with ADHD; con = confidence teaching children with ADHD; ppb & prof’l public = professional publications; med = media; int = Internet; ins = in-service; coc = college courses; per = personal people; pro & prof’l = professional people; col = colleagues

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).
APPENDIX H

Open-Ended Statements (ADHDKA – Part Five)

1. Responses to Open-Ended Statements
2. Frequency Tables for Open-Ended Statements
Statement 1: The most difficult thing about teaching children with ADHD is . . .

**Keeping them focused/ paying attention (74)**

- They have a difficult time focusing/paying attention (48)
- Activities that have to do with listening and following directions
- Keeping them on task. I use a timer – for 20 minutes they work and I give them 10 minute breaks in between.
- Keeping them focused on the assignment. You need to allow the student the space to be disorganized and sloppy in order to get work done.
- They have a short attention span and have difficulty with distractions and self-control
- How to consistently get them to attend so as not to break academic focus
- Keeping them on task, keeping them focused and attentive; impulsive behavior
- Keeping the child focused on a specific task. In order to be successful the teacher and child along with guardian at home must be consistent with teaching style.
- Getting them to focus and organize their thoughts and personal belongings
- That the child is not “tuned in” to lessons. I in turn am disrupted by them. I try to use methods to help – but, in general, I guess more training is necessary for me!
- Getting them to stay focused on a task so they do not disturb others
- Getting completed work turned in (9)
- They have extreme off-task behavior and disorganization
- Not knowing how to keep the child focused and not disturb others
· Keeping them on task long enough to teach them

· Getting students to complete work!

· Trying to help the child learn to self-direct for independent (seat) work

· Giving them enough time to help them monitor themselves and keep on task

  without taking away from my other students

  · Staying on top of them

Behavior Management (60)

· Finding effective behavior management techniques to deal with each child on an individual basis

· Controlling them in a classroom setting. Keeping them in check so as not to disturb the rest of the class

· Distracts others (15)

· The social problems associated with it. It is difficult to get other children to ignore certain behaviors, such as fidgeting, talking excessively, making noises, etc.

· They distract others from learning and concentrating. They are usually capable but need specific strategies to help them learn to their fullest.

· Redirecting negative behavior

· Controlling their unpredictable behavior or conferencing with the parents who disagree with their child being labeled as ADHD

· Their inability at times to follow classroom rules

· Keeping them from bothering others (2)
· The calling out

· Getting them to sit still/their hyperactivity (3)

· The inability to be still – can hinder the learning process – leads to off-task behavior – hard to work with, especially when you are one teacher to 20 – 24 students.

· Their disruptiveness to the rest of the class (19)

· Managing their behaviors while maintaining the rest of the class (6)

· Sometimes their behaviors turn the whole class into a circus. Other children not ADHD start mimicking their behaviors.

· The variety of ways ADHD is demonstrated by the children. Different children display different behaviors.

· Managing their “off” days when they are unable to function. Also, if on medication, when they are changing it.

· Classroom disruption! Other students’ learning is at risk when a teacher is constantly redirecting problem student or problem student is bothering other students by talking, moving around, getting out of their seats, etc.

· The change of attitude displayed by students

· Determining what will trigger them and what will encourage positive behavior

**Staying On Task/Work Completion (36)**

· Keeping them focused and on task with the rest of the children

· Keeping them focused and on task (9)

· Keeping them on task and focused (2)
· Keeping them on task and managing their behavior (8)
· Managing their behavior and keeping them on task (4)
· Not getting completed work turned in (9)
· Staying on top of them (2)
· Trying to help the child learn to self-direct for independent (seat) work

**Teacher Time/Attention/Energy (34)**

· Teacher time/attention (22)
· To have the time to give on-going instruction in a 1:1 setting with a full classroom with other diversified issues
· If the child has a serious problem, the most difficult thing is the time it takes away from the other children. Also, the rest of the kids, at times, try to use the same behaviors as the ADHD child to see if they can get by with it.
· These students require so much attention – classroom must be physically structured to make student feel comfortable, tasks must be compartmentalized so child doesn’t feel overwhelmed, care must be taken not to be punitive inappropriately. Parents are often in denial, so their level of support isn’t always there.
· Not enough time to spend one-on-one (4)
· Being able to give the child additional time needed to meet success in the classroom
· They are high maintenance and require a great deal of individual attention
· The extra time needed to assist them with keeping their possessions at a different
location than their desks. I found that giving them ONLY what they need for each lesson is very successful. I turn their empty desks around so they only have the TOP of the desk to use.

· They take up so much energy
· So much time that it takes away from other children

**Teacher/Self-Improvement (14)**

· Not having enough knowledge on the subject (3)
· I don’t know much about it
· Getting appropriate help for the child including parents, medical attention
· The feeling of not accomplishing anything
· Maintaining a level of patience
· Being patient while you’re trying to find something that works
· Not having the proper training (6)

**Parents/Home (12)**

· Making sure there is consistency at home (taking meds, homework routine, etc.) (4)
· Worrying about whether they took their medication that morning
· Lack of parent support
· Parent support – follow through and classroom pupil/teacher ratio
· Parents were more receptive to diagnosis
· Knowing the medicine will help certain children and those kids do not take it
· Their parents’ failure to accept it
· Parents’ denial

· Dealing with the parents. They are sometimes too easily reactive or they are defensive.

**Lack of Organizational Skills (10)**

· Their lack of organizational skills (9)

· When I see them wanting to be more organized, and they have so much trouble with it

**Accommodating Needs (8)**

· Accommodating the student

· Meeting their diverse needs (3)

· Having them believe in themselves – not using ADHD as a crutch!

· ADHD directly affects their learning and they lose self-esteem. Also – pressure of FCAT [standardized test] on ADHD kids

· What works for one may be ineffective in dealing with another (2)

**Lack of Social Skills (5)**

· Their poor social skills (4)

· Teaching them how to make friends

**No Problems (2)**

· Little experience – no problems as of yet.

· I think I am able to work okay with these students

**Miscellaneous (5)**

· They cannot retain (information?)
· Length of time to diagnose

· Lack of support and guidance from school administration

· It is a medical problem, which teachers cannot diagnose

· This is my first year. I have not had any in my class that I know of.
Statement 2: I believe that I would be more successful teaching children with ADHD if . . .

More training/Workshops/Strategies (116)

- More training (73)
- Workshops and teacher training were readily available at the start of the school year
- We had more training to understand the disability
- I was able to attend workshops that had ADHD children or parents and past teachers of ADHD students
- I would have information on proper techniques and up-to-date advances
- I had better skills for different situations
- Specific, applicable knowledge was routine in the school setting and implementing suggestions was more in line with real life situations
- I had training in ADHD children and the knowledge that this is the child’s problem
- I researched it more/went to or listened to an authority on ADHD
- I had training to 1) understand the disorder and 2) to be equipped with tools to accommodate
- I learned more about how to help the child
- I had a workshop, etc. about ADHD! I’m not that familiar with it.
- There were more available workshops on this issue
· I knew more about it and was taught techniques on how to approach it from a student/teacher standpoint and a parent/teacher perspective as well

· I had specific strategies that were classroom tested and practical. Too much theory and not enough real-world in most professional journals.

· I attended some workshops on managing behaviors of students with ADHD and how to teach them more effectively

· I had better strategies that were not so time-consuming on my part

· There was a known solution about what to do for these kids – he he :)

· I knew more, not just generalizations

· If there were more specific directions on how to handle everyday situations

· Strategies for teaching these children were taught in a workshop and teachers shared ideas

· I knew more about the disease

· I knew more about the illness

· I had more training on how to assist children with learning and self-implementation of coping strategies (example – standing by chair rather than sitting)

· I had specific strategies to use without calling a lot of attention to those students

· I had more training geared at instruction

· I was given more useful and specific directions and strategies –

  * not a behavior chart

· More truthful information
· Updated information re: symptoms, behavior modification
· I knew more strategies to help them help themselves
· I knew more about non-medical solutions to help him/her in the classroom
· I had someone come into my classroom and model strategies to use with the ADHD child. They would need to be there long enough to see the results.
· I had the proper intervention tools. If I knew what exactly I should do with them. If I knew what “tricks” worked.
· I had more training and class size was actually smaller – not just on paper
· I was given training
· I knew what to look for
· I knew more about how they learn
· I knew more behavior management strategies (2)
· I was certified
· I understood the disorder
· I knew how to engage these children more frequently throughout the day
· Parents, teachers, administrators all had an understanding and dealt with ADHD the same way
· I would understand ADHD better, especially techniques to better assist them. It seems to me that every case I’ve encountered is different. What worked for one may not necessarily work for others.

**Smaller Class Size (25)**

· Smaller class size (19)
· Less students in the classroom
· We have small groups or less ADHD students in the same classroom
· There were less kids in a class and they could receive more one-on-one attention
· I had less students in a class, more one-on-one, more administrative support
· The number of children in the class would be kept at 15 – 18
· Class size is limited for small group instruction

**Aide/Volunteer (20)**

· There was help in the classroom to manage difficult behaviors when instruction is taking place
· I had an aide/volunteer/grandparent (19)

**Parent/Home Support (19)**

· Parents’ support (13)
· Support of parents and pediatrician
· Parents would help implement organizational strategies at home
· Home and school worked together to assist child
· Parents were more informed of symptoms of ADHD and if ADHD was not looked at as a negative “label.” Parents have difficulty admitting their children may have ADHD because it is looked at so negatively by the public.
· Parents were partners
· The parents were more involved and consistent with the treatment whether it be diet, drugs, etc.

**Support/Resources (13)**
· I had solid support from administrators (5)

· I had support from peers

· The school system offered support

· I had an increased variety of options (TV, computer, etc.) to keep students interested in work

· I had more support materials

· I had the resources (4)

**Early Diagnosis (6)**

· Diagnosed earlier (3)

· Early intervention, parent acceptance, doctor follow-ups, severe cases need a professional **all day** para to shadow student (management para)

· Faster identification – it is often quite easy to see that a child is having problems. A teacher may see this the first day of school. By the time the process of meetings, paperwork, etc. is finally complete, it is spring!

· They were diagnosed by a doctor and treated accordingly

**Medication (4)**

· Medications were a priority with parents

· They took the appropriate medicine at the appropriate dosage

· They were on medication (2)

**Miscellaneous (6)**

· I was always consistent with routines (2)

· I was more structured and organized
More belief in the medical diagnosis

I could speak with their doctors, psychologist, etc.

Not sure

Additional Comments (4)

I have been very successful teaching ADHD kids. I would love to know the answers to these questions! (referring to Parts Three and Four of the ADHDKA)

Many of your questions were ambiguous. I was not sure if you were referring to ADHD children and those without or those who have but were never medically diagnosed.

I have had such a variety of ADHD children – some were gifted ADHD; some ESE ADHD (learning disabled). Some were just ADD and not hyperactive and I have a child that is diagnosed. Each one varied so much and I used different techniques. (A lot depended on what was followed up at home)

Will we have feedback from this? As you can see, I have “no clue” of the %’s and many of your other questions! Good luck!
Open-Ended Statement 1

The most difficult thing about teaching children with ADHD is . . .

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| Valid                     |           |         |               |                    |
| Focus/Pay attention       | 10        | 4.4     | 13.7          | 13.7               |
| Behavior mgmt             | 20        | 8.9     | 27.4          | 41.1               |
| Off task/work completion  | 15        | 6.7     | 20.5          | 61.6               |
| Teacher time/attention    | 13        | 5.8     | 17.8          | 79.5               |
| Parent support            | 3         | 1.3     | 4.1           | 83.6               |
| Organization skills       | 5         | 2.2     | 6.8           | 90.4               |
| Social skills             | 3         | 1.3     | 4.1           | 94.5               |
| Misc.                     | 4         | 1.8     | 5.5           | 100.0              |
| Total                     | 73        | 32.4    | 100.0         |                    |

| Missing                   |           |         |               |                    |
| System                    | 34        | 15.1    |               |                    |
| Total                     | 225       | 100.0   |               |                    |

(Responses 1)

(Responses 2)
Open-Ended Statement 1

The most difficult thing about teaching children with ADHD is . . .

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Open-Ended Statement 2

I believe that I would be more successful teaching children with ADHD if . . .

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(Response 1)

(Response 2)
(Response 3)

### APPENDIX I

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Behavior Rating Scales

1. *ADD-H Comprehensive Teacher Rating Scale (ACTeRS)*

2. *ADHD Rating Scale*

3. *Attention Deficit Disorders Evaluation Scale (ADDES)*

4. *Attention-Deficit/Hyperactivity Disorder Test*

5. *Conners’ Teacher Rating Scales*
   Conners’ Parent Rating Scales

   Achenbach, T., & Edelbrock, C.
   Child Behavior Checklist-Parent Form (1991)
   Achenbach, Thomas M.

(Dowdy, Patton, Smith and Polloway, 1997, pp. 243-245)
VITA

Carole Blume-D’Ausilio

Education:  
Doctor of Education  
Educational Leadership  
Florida Atlantic University  
Boca Raton, Florida

Master of Education  
Educational Leadership  
Florida Atlantic University  
Boca Raton, Florida

Bachelor of Arts  
Psychology  
Mercy College  
Dobbs Ferry, New York

Professional Experience:  
Teacher, Grades 1-5  
Pinewood Elementary  
North Lauderdale, Florida  
School Board of Broward County, Florida

Teacher, Grade 1  
Watkins Elementary  
Hollywood, Florida  
School Board of Broward County, Florida

Teacher, Varying Exceptionalities  
Oriole Elementary  
Lauderdale Lakes, Florida  
School Board of Broward County, Florida
Professional Organizations: Association for Supervision and Curriculum Development (ASCD)
Kappa Delta Pi
Children and Adults with Attention Deficit Hyperactivity Disorder (CHADD)