ATTENTION-DEFICIT / HYPERACTIVITY DISORDER:

TEACHER KNOWLEDGE AND REFERRAL FOR ASSESSMENT

A Dissertation

by

KATHERINE DEGEORGE MACEY

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

August 2005

Major Subject: School Psychology

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ABSTRACT

Attention-Deficit / Hyperactivity Disorder:

Teacher Knowledge and Referral for Assessment. (August 2005)

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Chair of Advisory Committee: Dr. Douglas J. Palmer

Attention-Deficit / Hyperactivity Disorder (ADHD) continues to be one of the most commonly diagnosed disorders in school-aged children As teachers are important gatekeepers for referring students who are in need of special services or classroom modifications, understanding what teachers know about ADHD and the factors that may lead to referral are important. First, the present study examined whether or not teachers were sensitive to academic achievement when making special education referrals. Second, the present study also examined if teachers could differentiate between ADHD behaviors and non-ADHD behaviors. Third, it examined the role of general teaching self-efficacy and self-efficacy related to teaching students with ADHD in making referrals and fourth, what are the sources of information teacher access for information about ADHD.

To Bill

To My Parents

ACKNOWLEDGEMENTS

The completion of this dissertation certainly was not due to my effort alone but comes from the assistance of all of the people in my life who have supported me over the past five years. It is because of all of you that I am one step closer to the career I have always wanted.

I would like to thank Doug Palmer, for all of the academic challenges and encouragement. Without your motivation, support, feedback, listening, and regularly scheduled meetings, I would not have completed this project. I would also like to acknowledge Linda Key who is a pleasure to work with and to know. I would like to express my gratitude to Cynthia Riccio, not only for her valuable participation on my committee, but for being a role model to all women in psychology. Thank you to Mike Ash for his humorous personal stories and good graduate school advice. On our first day of orientation to the program, Mike told my cohort to keep our heads down and work hard because before we knew it we would be at that light at the end of the tunnel.

I would like to acknowledge all of the teachers who volunteered to be interviewed for my study. Though I am unable to name all seventy-three of them individually, it was their dedication to the teaching profession and generosity of spirit that enabled me learn more about schools and how to best help teachers and children. I also would like to thank Jim Parsons, Julia Kerr, Janice Wiederhold, and Colleen Killingsworth of the Humble Independent School District; Jennifer Cobb, Winona Emerson, Suzanne Mercado, Karen Sanders, Jerona Williams, and Frederick Larry of the Spring Branch Independent School District; Darrell Brown, Debra Barker, and Elisa

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To my parents, first, thank you for teaching me to love learning. Without your support and encouragement, I would not have gone this far in my education. Second, thank you for teaching me that all people are precious and that the support you give to a child goes a long way. To my sister and brother-in-law, thank you for always asking about what I was doing on this project and taking an interest in my career. To all my friends in the program, especially Kristen Gsanger and Susan Homack, thank you for all your emotional support through the dissertation and internship process.

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CHAPTER I

INTRODUCTION

Attention-Deficit / Hyperactivity Disorder (ADHD) is one of the most commonly diagnosed disorders in school-aged children (Barkley & Murphy, 1998). Given the changing definitions of the disorder over time and disagreement over what are the core symptoms of the disorder, making a diagnosis can be confusing (Kamphaus & Frick, 2002). As teachers are important gatekeepers for referring students who are in need of special services or classroom modifications (Gottlieb, Gottlieb, & Trongone, 1991), understanding what teachers know about ADHD and the factors that may lead to referral are important. Limited research exists in the area of teacher knowledge about ADHD, what behaviors would lead a teacher to refer a child for an assessment of ADHD, and teacher self-efficacy when teaching students with ADHD. This paper will review relevant literature regarding referral, self-efficacy, and teacher knowledge about ADHD.

Factors That Influence Referral

When most school-aged children are referred for an evaluation for a suspected disability, the person making the referral may notice something about the child that may interfere with learning and behavior. Most commonly, teachers and parents refer these students for evaluations (Gottlieb et al., 1991). Second, particular characteristics of students make it more likely that they will be referred for an assessment (Lloyd, Kauffman, Landrum, & Roe, 1991; Bay & Bryan, 1992; Soodak & Podell, 1993).

This dissertation follows the style and format of *School Psychology Review*.

Outcomes of assessments can lead to additional general education classroom support for a student, medication to regulate behavior, change of placement, and other special services. In schools, commonly students can access services for ADHD through Section 504 or through special education.

ADHD, Section 504, and IDEA

Students with ADHD can receive services in schools in two ways: Section 504 or Special Education. An individual who is eligible for accommodations under Section 504 of the Rehabilitation Act of 1973, is "any person who (i) has a physical or mental impairment which substantially limits one or more of such person's major life activities" [29 U.S.C. Sec. 706 (7)(B)]. Major life activities include caring for oneself, performing manual tasks, walking, seeing, hearing, speaking, breathing, learning or working (C.F.R. 104.3; Jacob-Timm & Hartshorne, 1998).

Jacob-Timm and Hartshorne (1998) suggested that ADHD can be considered an impairment if it limits a student's ability to learn. For a student with ADHD, accommodations and modifications can be made at school to enable the child to receive a free and appropriate public education. A school district must follow specific procedures to guarantee the free and appropriate public education. These procedures include nondiscriminatory evaluation, periodic re-evaluation, educational services that meet educational needs, educate the student with a disability with non-disabled peers, and parent participation in the process (Prasse, 2002).

Students with ADHD also may access school services through special education mandated by the Individuals with Disabilities Education Act (1997). In order to receive

special education services for a disability, a child must be eligible for a disability category and consequently labeled. According to Jacob-Timm and Hartshorne (1998) three additional labels that children with ADHD often can receive are learning disabled (LD), emotional disturbance (ED), or other health impaired (OHI).

A child may qualify as having a specific learning disability if he or she "does not achieve commensurate with his or her age and ability levels in one or more of the areas listed – oral expression, listening comprehension, written expression, basic reading skill, reading comprehension, mathematics calculation, or mathematics reasoning when provided with learning experiences appropriate for the child's age and ability levels (IDEA, 1997, 34 C.F.R. 300.541)". According to research children with ADHD often do have academic problems and may qualify for services as a student with a learning disability (Barkley & Murphy, 1998).

A child may qualify as having a serious emotional disturbance if he or she exhibits "one or more of the following characteristics over a long period of time and to a marked degree that adversely affects educational performance – (a) inability to learn that cannot be explained by intellectual, sensory, or health factors, (b) an inability to build or maintain satisfactory interpersonal relationships with peers and teachers, (c) inappropriate types of behaviors or fears under normal circumstances, (d) a general pervasive mood of unhappiness or depression, or (e) a tendency to develop physical symptoms or fears associated with personal or school problems (34 C.F.R. 300.7)". Given the behaviors of ADHD described in the *DSM – IV*, it is conceivable that a child with moderate to severe ADHD has the potential to demonstrate such difficulties.

One other category under IDEA in which a child can qualify for special education services is other health impairment (OHI). According to the definition, OHI "means having limited strength, vitality, or alertness, due to chronic or acute health problems (34 C.F.R. 300.1)" (Jacob-Timm & Hartshorne, 1998). An OHI label requires a doctor's medical diagnosis. Students with any of these labels can receive a variety of services at school. For example, modifications only, a part-time placement in a special education class to address specific areas of need and part time placement in general education, or a full time placement in a special education classroom are a few common instructional arrangements available in schools.

Factors Influencing Student Referral

Most commonly, general education classroom teachers refer students for a special education evaluation. Lloyd et al. (1991) reviewed referral records (N=382) and indicated that teachers were the primary source of referral used in their sample. Child characteristics, teacher characteristics, and contextual factors can all influence a referral for special education assessment. Research on factors that influence referral of students for special education assessment has demonstrated some consistent findings. First, boys are referred more frequently than girls (Lloyd et al., 1991). Second, Lloyd et al. determined that reasons for referral primarily are related to academic performance. A reading problem was the most frequently provided reason for initiating a referral (Lloyd et al., 1991). The third most frequently cited reason for a referral is attention problems and nearly one fourth of the referral records in the study were for this reason (Lloyd et al., 1991).

One would expect that the primary reason for referral is inappropriate student behavior; however, Lloyd et al. (1991) have demonstrated that general academic reasons dominate referrals. Soodak and Podell (1993), through examining teacher efficacy issues, determined that students with academic and behavior problems combined are most likely to be referred for special education placement, rather than demonstrating academic and behavior problems independently. Specific student behaviors may lead teachers to refer students for evaluations. It is important to note that certain teacher characteristics such as confidence in their teaching abilities and self-efficacy as well as the interaction of the child within the larger system of school and home also may play a role in the decision to refer. Efficacy literature will be reviewed.

Social Learning Theory and Self-Efficacy

Bandura's (1977) social learning theory states that psychological procedures, whatever their form, alter the level and strength of self-efficacy" (p. 191). Bandura (1977) also hypothesized that the expectations of personal efficacy determine what coping behavior a person will use, how much effort a person will exert, and how long the person will maintain this behavior when confronting difficult experiences. Expectations of personal efficacy come from four sources of information: performance accomplishments, vicarious experience, verbal persuasion, and emotional arousal. These sources of information mediate a person's efficacy beliefs (Bandura, 1977).

Developed from Bandura's social learning theory (1977, 1982), according to Gibson and Dembo (1984), and Ashton and Webb (1986), efficacy is defined as one's belief that one successfully can produce a desired outcome. According to these

researchers, teacher efficacy is made up of two dimensions: teaching efficacy and personal efficacy. Teaching efficacy, which will be the focus of this investigation, is the belief that one's teaching can affect certain educational outcomes. Tschannen-Moran and Woolfolk Hoy (2001) asserted that a teacher's efficacy beliefs are related to their behavior in the classroom and the amount of effort they invest in teaching. Pajares (1992) noted, in reviewing the self-efficacy literature, that there is a relationship between what a teacher believes and how they interact and work with students in the classroom. In the literature there has been some research on teacher efficacy and referral and teacher confidence and working with students with ADHD.

Soodak and Podell (1993) examined the relationship between teacher efficacy, type of student difficulty, professional group, and referral and placement decisions. Using a case study and the Teacher Efficacy Scale (Gibson & Dembo, 1984), 192 teachers (96 general education and 96 special education) were asked to determine how much they felt the student's current educational placement was appropriate and how much they agreed with a decision to refer the student (Soodak & Podell, 1993). Results indicated that a teacher's feeling of self-efficacy affected how they judged the appropriateness of the placement of a child who had learning or behavior problems in a general education class (Soodak & Podell, 1993).

Podell and Soodak (1993) examined the role of a teachers' feeling of self-efficacy, personal and teaching efficacy, and how that interacts with determining the appropriateness of a student who is experiencing academic difficulties is placed in general education. Vignettes were presented to teachers with variations in the student's

socioeconomic status and cause of the learning problem. Teachers with high self-efficacy are more likely to believe that a general education placement of a student with mild academic problems of lower socioeconomic status is appropriate than a teacher with low self-efficacy.

In examining teachers' perceptions of barriers to educating children with ADHD and level of confidence, Reid, Vasa, Maag, and Wright (1994) looked at teacher training and teaching experience with students with ADHD. In terms of barriers that prevent effective instruction of students with ADHD, teachers indicated that lack of training, time needed to engage in specific interventions, class size, and the level of severity of a child's problems were the four biggest barriers (Reid, Vasa et al., 1994). Teachers indicated that they felt most confident in their ability to create a warm, accepting environment and to organize a classroom that minimized the opportunity for behavior problems (Reid, Vasa et al., 1994). While this ability is important, teachers need to be confident in their ability to manage the problem behaviors that students with ADHD may exhibit in the classroom.

Bussing, Gary, Leon, Garvan, and Reid (2002) examined the source of teacher information regarding ADHD, the level of teacher confidence in their ability to instruct students with ADHD, and what barriers teachers do perceive in planning instruction for students with ADHD. Results indicated that teacher training in the areas of ADHD was related to years of experience. Nearly all the teachers who participated in the study had taught at least one student with ADHD in the past two years (Bussing et al., 2002).

Reading a book about ADHD and having read at least one article about ADHD were some of the sources of teacher knowledge about the disorder.

More contact with students with ADHD and having read more about the disorder were indicators of higher levels of confidence (feelings of self-efficacy) in their ability to meet the needs of students with ADHD. As found by Reid, Vasa et al. (1994) Bussing and colleagues (2002) also established that four common barriers encountered by teachers are the large number of students in the general education classroom, time needed to implement interventions specific to ADHD, severity of a student's problems, and lack of training. Ninety-four percent of the teachers who participated in the study wanted more training in the area, particularly how to manage stress associated with teaching this group of students (Bussing et al., 2002).

Teacher Knowledge about ADHD

There are numerous research studies about ADHD; however, research that addresses teacher knowledge about ADHD and teachers' perspectives on the disorder is limited (Glass, 2000). It is important for teachers to know core symptoms of ADHD, since teachers are one of the primary groups of individuals who refer students for assessment (Sciutto, Terjesen, & Bender Frank, 2000). According to Schwean, Parkinson, Francis, and Lee (1993) teachers may operate under assumptions about ADHD that are misconceptions and "continue to drive psychoeducational practice"(p. 37). Pfiffner and Barkley (1990) indicated that, in general, teachers might not possess correct or adequate information about ADHD regarding etiology, course, treatment, and outcomes of the disorder. Approximately 8% of teachers believed that "if a child can

play Nintendo for hours, he probably isn't ADHD" (Jerome, Gordon, & Hustler, 1994). Teachers who have misinformation or adhere to myths may not view the disorder as significant enough to make a referral to determine if the child is eligible for services.

Teacher knowledge about effective treatment and interventions for ADHD is important because in some cases teachers may serve as resources for parents who are seeking help for their child. Treatment for ADHD as it is related to diet, nutrition, and sugar continues to exist in the field while research has demonstrated that sugar intake and nutritional programs have limited effect on changing behavior. DiBattista and Shepherd (1993), Jerome et al. (1994), and Sciutto et al. (2000) have demonstrated that teachers continue to hold misconceptions about the effect of sugar intake on behavior. Barbaresi and Olsen (1998) indicated that another myth that continues to exist is that ADHD symptoms are a result of or can be changed by nutritional intake. Kasten, Coury, and Heron (1992) posited that the quality and level of information held by educators might be overestimated.

Factors that influence how teachers work with students with ADHD also are of importance. Glass (2000) surveyed public and private school teachers in southeastern Virginia to determine what factors influence a teacher's choice of educational strategies. The surveys specifically addressed teacher use of positive teaching strategies, which include reduction of the amount of course work, preferential seating, use of praise, and allowing for opportunity for movement and whether or not the teacher had received information about ADHD from the school administration (Glass, 2000).

According to the 225 usable and returned surveys, teachers who received information about ADHD from their administration were more likely to use positive teaching techniques than teachers who did not receive any information (Glass, 2000). Seventeen percent of the public school teachers reported receiving no information about ADHD from their schools and thirty-two percent of private school teachers reported receiving no information about ADHD from their schools (Glass, 2000). Information about the behaviors related to ADHD can affect how confident teachers feel in their abilities to make accurate referrals and then to teach students with the disorder.

Overall, the research in this area of the literature was mixed and at times contradictory. While some studies indicated that teachers did have knowledge about the core symptoms of ADHD (Sciutto et al. 2000), others asserted that teachers may not be receiving this information prior to entering the field (Barbaresi & Olsen, 1998). Of those teachers that have entered the school systems, limited inservice training opportunities are available (Jerome et al., 1994). The use of different types of participants, different methodologies, different measures, and different areas related to the disorder (symptoms, treatment, outcomes, and sources of information) makes a complete synthesis of the literature challenging.

Research Questions

A review of this literature regarding referral, teacher self-efficacy, and teacher knowledge has led to the following research questions.

1. For students with ADHD characteristics, to what extent does academic achievement influence the decision to refer?

2. To what extent do teachers correctly identify behaviors that are symptoms and are not symptoms of ADHD?

3. Does teacher knowledge of ADHD and general teaching self-efficacy predict self-efficacy related to teaching students with ADHD?

4. Do teachers perceptions of general teaching self-efficacy, self-efficacy related to teaching students with ADHD, and knowledge of ADHD symptoms differentiate teachers who refer students with ADHD symptoms and those teachers who do not refer?

5. What were the sources of information about ADHD as named by the teachers?

These questions are important for multiple reasons. First, students who are identified earlier rather than later during their educational career as having ADHD will have an increased opportunity to receive effective and appropriate instruction. Parents also may be provided with additional supports and resources. Second, schools are obligated to provide services through general education classroom modifications, Section 504, or special education depending on a student's academic and behavioral needs. Third, results of the questions may affect what types of training opportunities are offered to pre-service and in-service teachers through universities and school districts. Fourth, in an effort to meet the needs of a diverse population of students, effective training of school staff is essential so that students with significant difficulties can be recognized.

CHAPTER II

LITERATURE REVIEW

In recent years there has been a large growth in the diagnosis of Attention Deficit Hyperactivity Disorder (ADHD) in school-aged children. Given the numerous symptoms of the disorder, the diagnosis of ADHD can be complex. Assessment for ADHD includes quite often parent and teacher ratings of a child's behavior, classroom observations, and other measures. For children who receive this diagnosis, school services may be necessary. The responsibility of school personnel for providing an appropriate education, particularly on the part of teachers, becomes important. Limited research exists in the area of teacher knowledge about ADHD and what behaviors would lead a teacher to refer a child for an assessment of ADHD. This review examines how ADHD is defined, how it is diagnosed, and what factors influence teacher perceptions that would lead to a referral for behavior problems. If teachers are the gatekeepers for identifying individuals who are in need of special services or classroom modifications, understanding what teachers know about ADHD and the factors that may lead to referral is important.

Current Status of ADHD in Public Schools

Prevalence Rate

According to the *Diagnostic and Statistical Manual Fourth Edition – Text Revision* (American Psychiatric Association, 2000) the prevalence rate of ADHD is estimated to range from 3-7 % in school-age children. The *Diagnostic and Statistical Manual Fourth Edition* (American Psychiatric Association [APA], 1994) cites the prevalence rate at 3-5% of school-age children. According to Szatmari (1992), the

prevalence rate of ADHD is estimated at 2 – 6.3%. Bloomingdale, Swanson, Barkley, and Satterfield (1991) suggested that 5% of school age children have ADHD. Brown et al. (2001) indicate that 4% is the average prevalence rate for ADHD in primary care settings. Commonly, 3% is cited as the prevalence rate (Barkley, 1990). It is important to remember that often prevalence rates are determined by consensus. ADHD is not a strictly defined disorder and a diagnosis can be reached in many ways (Barkley, 1990).

In examining educational placement of students with ADHD, a few studies were found in the literature. Sandoval and Lambert (1984 - 1985) found that 48% of students with an ADHD diagnosis were receiving special education services. In another sample of 108 students, 29 were identified as having ADHD and 28 of them were receiving special education services (Bohline, 1985). Bloomingdale et al. (1991) suggested that 50% of students with ADHD are in need of special education services. In a more recent study of 14,000 students in a Midwestern public school district, 136 students (0.96%) had an ADHD diagnosis and 77 (over 50%) were receiving special education services (Reid, Maag, Vasa, & Wright, 1994).

Definitional Perspectives

From a diagnostic perspective, the definition of ADHD has changed over the years. According to Reid, Maag, and Vasa (1993), “ADHD is plagued by numerous definitional and diagnostic problems” (p. 198). This statement clearly depicts how the definitions have changed over time. With each revision of the *Diagnostic and Statistical Manual of Mental Disorders* published by the American Psychiatric Association, the name of the ADHD and the differentiation of subtypes have changed. This disorder was

initially characterized as minimal brain dysfunction (MBD) in 1952. Individuals who exhibited inattention, hyperactivity, impulsivity or learning disorders were perceived as having a general disorder that was called MBD. With the publication of the *Diagnostic and Statistical Manual – Second Edition*, the disorder became know as hyperkinetic reaction to childhood (American Psychiatric Association, 1968). The disorder also was separated from learning disorders or learning disabilities. With the publication of *the Diagnostic and Statistical Manual – Third Edition* (American Psychiatric Association, 1980), the disorder definition and name were revised and it was known as Attention Deficit Disorder with and without hyperactivity.

With the next revision of the *DSM* to the *DSM-III-R* (American Psychiatric Association, 1987), the name was again changed to Attention Deficit Hyperactivity Disorder emphasizing the hyperactive features. With the *DSM-IV* (1994) and *DSM-IV-TR* (2000), ADHD manifests itself in three different ways. The combined type demonstrates symptoms of hyperactivity/impulsivity and inattention. The predominantly inattentive type demonstrates primarily symptoms of inattention, while the predominantly hyperactive/impulsive type demonstrates symptoms of hyperactivity and impulsivity. A list of behaviors and symptoms of individuals commonly displayed by individuals with ADHD are included in Table 1.

Table 1
Criteria for Attention-Deficit/Hyperactivity Disorder (2000)
*Diagnostic and Statistical Manual of Mental Disorders – Fourth Edition - Text Revision**

A. Either (1) or (2)
(1) Frequent demonstration of six or more of the following symptoms of inattention
Inattention
- (a) Fails to give close attention to details or makes careless mistakes in schoolwork, work, or other activities.
- (b) Has difficulty sustaining attention in tasks or play activities
- (c) Does not seem to listen when spoken to directly
- (d) Does not follow through on instructions and fails to finish schoolwork, chores, or duties in the workplace
- (e) Has difficulty organizing tasks and activities
- (f) Avoids, dislikes, or is reluctant to engage in tasks that require sustained mental effort (such as schoolwork or homework)
- (g) Loses things necessary for tasks and activities (e.g. toys, school assignments, pencils, books, or tools)
- (h) Is easily distracted by extraneous stimuli
- (i) Is forgetful is daily activities

(2) Frequent demonstration of six or more of the following symptoms of hyperactivity-impulsivity
Hyperactivity
- (a) Fidgets with hands or feet or squirms in seat
- (b) Leaves seat in classroom or in other situations in which remaining seated is expected
- (c) Runs about or climbs excessively in situations in which it is inappropriate
- (d) Has difficulty playing or engaging in leisure activities quietly
- (e) Is “on the go” or often acts as if “driven by a motor”
- (f) Talks excessively

Impulsivity
- (a) Blurts out answers before questions have been completed
- (b) Has difficulty awaiting turn
- (c) Interrupts or intrudes on others

B. Some hyperactive-impulsive or inattentive symptoms that caused impairment were present before age 7 years.
C. Some impairment from symptoms is present in 2 or more settings.
D. There must be clear evidence of clinically significant impairment in social, academic, or occupational functioning.

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Nature and Theories of ADHD

There are numerous theories regarding the nature of ADHD. Descriptions of and theories about the disorder also are supported by research. One model is the Quay-Gray model in which Quay (1988) incorporates Gray's (1982) research on anxiety to explain poor inhibition (Barkley, 1997a). The Quay-Gray model suggests that impulsive behavior is a result of the brain's behavioral inhibition system operating at level less than what would be expected to control behavior (Barkley, 1996).

Douglas (1983; 1988) hypothesized that the primary deficit of ADHD is in the area of self-regulation. If a child has deficits in self-regulation, then this deficit will affect attention, impulse control, arousal, and response to reinforcement. According to this hypothesis the symptoms of ADHD will vary according to the type of activity a child must complete such that higher order cognitive processes will be more affected. Douglas recognized this pattern based on a review of the extant literature (Barkley, 1997a).

Barkley (1996; 1997a) developed a theory of ADHD that has dominated recent research. Barkley's model focuses on behavioral inhibition, the ability to inhibit a response, to stop a response in progress, and to control interference. This executive function regulates four other executive functions according to this model as they depend on inhibition for efficient execution (Barkley, 1997a). The other executive functions responsible for attention regulation are working memory, self-regulation of affect, arousal, and motivation, internalized speech, and reconstitution (Barkley, 1996; 1997a).

Working memory is the ability to hold information in short-term memory, manipulate it or change it in some manner, and then use it again later. Self-regulation of emotion, arousal, or motivation involves behaviors that are not directly observable though in early stages of development they may be observable (Barkley, 1997a). Internalized speech involves reflection, description, self-questioning, and is used for problem solving (Barkley, 1997a). Reconstitution involves the analysis and synthesis of behavior and goal directed behavior (Barkley, 1996; 1997a). According to this theory, individuals with deficits in behavioral inhibition and in these executive functions will have problems with motor control and motor fluency.

In addition to research-based theories of ADHD, children who are diagnosed with ADHD are identified in a different way according to the school system. In order to receive special education services for a disability, a child must fit into a category or receive a label. Three labels that children with ADHD often receive are learning disabled (LD), emotional disturbance (ED), or other health impaired (OHI) (Jacob-Timm & Hartshorne, 1998).

A child may qualify as having a specific learning disability if he or she "does not achieve commensurate with his or her age and ability levels in one or more of the areas listed – oral expression, listening comprehension, written expression, basic reading skill, reading comprehension, mathematics calculation, or mathematics reasoning when provided with learning experiences appropriate for the child's age and ability levels" (IDEA, 1997, 34 C.F.R. 300.541) (Jacob-Timm & Hartshorne, 1998). Research has

demonstrated a high comorbidity rate with learning disabilities and ADHD, which will be discussed further in a later section.

A child may qualify as having a serious emotional disturbance if he or she exhibits "one or more of the following characteristics over a long period of time and to a marked degree that adversely affects educational performance – (a) inability to learn that cannot be explained by intellectual, sensory, or health factors, (b) an inability to build or maintain satisfactory interpersonal relationships with peers and teachers, (c) inappropriate types of behaviors or fears under normal circumstances, (d) a general pervasive mood of unhappiness or depression, or (e) a tendency to develop physical symptoms or fears associated with personal or school problems" (34 C.F.R. 300.7) (Jacob-Timm & Hartshorne, 1998). Given the behaviors described by the *DSM – IV TR*, it is conceivable that a child with moderate to severe ADHD has the potential to demonstrate such difficulties.

One other category under IDEA in which a child can qualify for special education services is other health impairment (OHI). According to the definition, OHI "means having limited strength, vitality, or alertness, due to chronic or acute health problems (34 C.F.R. 300.1)" (Jacob-Timm & Hartshorne, 1998). Children with ADHD who do not qualify under IDEA are eligible for modifications under Section 504 of the Rehabilitation Act of 1973. According to Section 504, a child with ADHD may receive modifications if the condition substantially limits a major life activity, such as learning (Jacob-Timm & Hartshorne, 1998).

Diagnostic and Assessment Procedures

The diagnosis of ADHD can be complex. As ADHD is a clinical diagnosis, there is no specific test for it (American Academy of Child and Adolescent Psychiatry [AACAP], 1997). Two types of professionals who commonly diagnose ADHD are psychologists and physicians. Though other professionals also may contribute to the process (e.g. psychiatrists, speech language pathologists, Licensed Specialists in School Psychology (LSSP), National Certificate in School Psychology (NCSP), educational diagnosticians, etc.), the focus here will be on pediatricians and psychologists.

Since this is a disorder that may involve medical intervention and it is diagnosed in childhood, pediatricians may make the diagnosis. The American Academy of Pediatrics ([AAP], 2000) has developed guidelines for making an ADHD diagnosis in children ages 6-12. These guidelines include using *DSM-IV-TR* criteria and verifying that ADHD symptoms are present in two or more of a child's settings. Symptoms include inattention, hyperactivity, impulsivity, academic underachievement, or behavior problems. Information about the core symptoms of ADHD should be obtained from parents or caregivers and teacher or other school personnel about the age of onset, duration of symptoms, and degree of impairment in daily living (AAP, 2000). It is important to note that there is the issue of convergence across persons who rate the child’s behavior. The symptoms must adversely affect the child's educational achievement or social functioning for at least six months (AAP, 2000).

The AACAP (1997) also has developed practice parameters for the assessment of ADHD and considers the parent interview to be the central focus of the evaluation

process that will includes obtaining a developmental and medical history. It is also important to gather information from the school about learning, behavior, grades, school attendance, and results from a psychoeducational evaluation (AACAP, 1997). Rating scales are another way to gather information about behavior from parents, teachers, or other individuals who work with the child. An assessment also should include observations of the child's behavior in structured and unstructured environments (AACAP, 1997). It is also important that a child being evaluated had a complete medical exam within twelve months of the assessment.

Assessment practices of psychologists differ from that of pediatricians or psychiatrists. In a psychological evaluation, a variety of measures can be given to complete an ADHD evaluation. Formal measures are often part of an assessment battery. Results from cognitive tests and achievement tests should be considered. This information will provide an educational and academic perspective on how the child is performing at school and how much he or she is learning compared to peers.

In addition to examining a child's cognitive abilities, social, emotional, and behavioral information should be gathered about the child. First, the examiner should assess for the core features of ADHD (Kamphaus & Frick, 2002). To accomplish this task rating scales, structured interviews, and behavior observations can be utilized. Rating scales can provide information about the child's adaptive social skills as well as information about activity level, aggression, attention, and emotional state. Angello et al. (2003) reviewed six behavior rating scales that are commonly used in evaluating core symptoms of the disorder. The authors identified strengths, limitations, and

recommended uses for each of the following measures: ADHD-IV, BASC-M, CRS-R, SC-4, ADDES, and ACTeRS. The authors also noted the limited information about use of the instruments with students of culturally and linguistically diverse backgrounds.

Second, it is important to remember that no one measure will cover all the symptoms and behaviors of ADHD as such, multiple measures should be used (Kamphaus & Frick, 2002). Third, psychologists also must obtain information from multiple sources (Kamphaus & Frick, 2002). Fourth, information gathered should allow for same-age norm comparisons (Kamphaus & Frick, 2002).

Behavioral observations are a valuable source of information when completing an evaluation for ADHD. Platzman, Stoy, Brown, Coles, Smith, and Falek (1992) reviewed thirty-nine studies in which observational methods were used to make an ADHD diagnosis. Studies were included in their review if contrast and control group instruments were implemented, diagnostic criteria or the process of choosing subjects was explained, and results were presented statistically. Behavioral categories of interest were summarized in this review into four categories, which were broken into subcategories. These four categories were activity, vocalization, attention, and interpersonal.

While the majority (67%) of direct observational studies were conducted in laboratory settings, classroom observational methods were more effective in differentiating children with ADHD from controls (Platzman et al., 1992). The researchers also noted that the behaviors that most consistently differentiated ADHD

children from non-ADHD children were off-task behaviors, excessive activity, and negative vocalizations (Platzman et al., 1992).

Laboratory measures or continuous performance tests also provide information about a child's ability to sustain attention to novel stimuli as well as the child's ability to inhibit behaviors. Two continuous performance tests used are the *Gordon Diagnostic System* and the *Conners' Continuous Performance Test* (Riccio, Reynolds, & Lowe, 2001).

School psychologists, in particular, when working within the limits of the legal definitions of a disability and within the definition of ADHD as defined by the *DSM-IV-TR* should follow guidelines established by *Best Practices in School Psychology IV* (Thomas & Grimes, 2002) when evaluating a child for a possible emotional disturbance (ED) or for ADHD. McConaughey and Ritter (2002) recommend that school psychologists review referral and screening information, consult with teachers and other school staff, plan assessment procedures, interpret assessment and prepare reports, and link assessment results to intervention planning when determining if a student is eligible for special education under the ED definition.

Hoff, Doepke, and Landau (2002) also have outlined best practices procedures for diagnosing a student with ADHD in the school using a problem solving approach. In terms of the formal assessment, information from direct observation including a functional assessment of the behaviors of concern, intellectual and academic measures, behavior rating scales, and interviews with parents and teachers should be used to develop interventions. Also, school psychologists can be involved in the evaluation of

the effects of medication. Overall, when assessing ADHD school psychologists, should include multiple informants, multiple measures, multiple settings, which serve multiple purposes and are developmentally sensitive (Hoff et al., 2002).

Issues of Comorbidity

ADHD is commonly comorbid with other disorders as it may be present in up to two thirds of clinically referred children (AACAP, 1997). For children with Oppositional Defiant Disorder the comorbidity rate may be up to 50%, for Conduct Disorder between 30-50%, and for anxiety disorders between 20-25% (Biederman, Newcorn, & Sprich, 1991; Halperin, Gittleman, Katz, & Struve, 1986). It is estimated that ADHD and learning disorder comorbidity rate ranges between 10-25%, which is dependent upon how a learning disorder is defined (Richters et al., 1995). Other disorders that commonly co-occur with ADHD include Tourette's syndrome and speech and language delays (AACAP, 1997).

Another study indicates that the comorbidity between ADHD and Conduct Disorder or Oppositional Defiant Disorder ranges from 42.7% to 93.0% (Jensen, Martin, & Cantwell, 1997). Comorbidity with other disorders, particularly internalizing disorders ranges between 13.0%-50.8% depending on how disorders are organized within the study (Jensen et al., 1997). These authors reviewed studies of ADHD comorbidity using eight validational criteria based on the work of Cantwell (1995): clinical phenomenology, demographic factors, psychosocial factors, biological factors, family genetic factors, family environmental factors, natural history, and intervention response. The available research reviewed indicated that the most commonly encountered

comorbidity in the literature is ADHD with conduct disorder or aggression while limited research was available that studied other comorbid conditions (Jensen et al., 1997).

Though research indicates comorbidity is common with a diagnosis of ADHD, problems with attention can also be symptoms of other disorders. Physical problems that result in inattention include hearing or vision problems, head injury, seizures, lack of sleep, malnutrition, side effects of medication, or chronic illness (AACAP, 1997). Other psychological problems may also be indicated. Anxiety disorders, fears, depression, physical abuse, or neglect also may interfere with a child's ability to pay attention.

Treatment Implications

A diagnosis of ADHD has implications for treatment. Information gathered from recent research has indicated that ADHD is a developmental disorder with a neurological or neurogenetic basis that interacts with environmental factors and that these features will affect how each individual presents with the disorder (Barkley, 1998b). The manifestation of the disorder also is affected by maturational level of the child and environmental conditions (Batsche & Knoff, 1994). Given the nature of the disorder, no single treatment will "cure" a child of ADHD, but rather treatment will serve to manage the symptoms and behaviors. It also is important to consider whether or not a child has a comorbid condition when planning a treatment intervention.

Common treatments for ADHD currently include medication, behavior management, and parent training programs (Barkley, 1998a; 1998b). Given the diversity of symptoms of the disorder, treatment will include medication, behavior modification, and parent training (Carlson, Pelham, Milich, & Dixon., 1992). A multi-modal approach

to intervention, which includes medication, parent training, behavioral and social skills training, and academic modifications are recommended (Whalen, 1991).

The choice to administer medication to an individual with ADHD is based on a diagnosis of the disorder and symptoms that are frequent enough to cause functional impairment in two settings (e. g. school, home; AACAP, 1997). When taking medication, the schedule for administration should be followed consistently (AACAP, 1997). The effectiveness of the medication also should be monitored regularly to determine if it is improving symptoms and if there are side effects (AACAP, 1997).

The medications most commonly administered to manage ADHD are stimulants such as methylphenidate (Ritalin ®) and d-amphetamine (Dexedrine ®) (Barkley, 1998b). Stimulants are effective and based on numerous research studies and clinical experience, more is known about stimulant use in children than any other drug and most hyperactive children do respond to stimulants (AACAP, 1997). Numerous studies have demonstrated the efficacy of stimulant medication in decreasing symptoms of ADHD (American Academy of Pediatrics [AAP], 2001). Other classes of medications also have been tried which include antidepressants and anti-hypertensives (Barkley, 1998b), though reports on their effectiveness at managing symptoms have been less well understood.

The AAP (2001) has established clinical practice guidelines for treating ADHD in children between the ages of six and twelve. Primary care physicians should establish a program that treats ADHD as a chronic condition. The physician in conjunction with the parents, child, and school personnel should set-up goals for behavioral outcomes.

Stimulant medication and/or behavior therapy should be recommended if appropriate for the child. If treatment methods are not assisting the child in making appropriate gains, the diagnosis, treatment plan, compliance with treatment, and presence of other disorders should be evaluated. Follow-up also should be provided in a systematic manner (AAP, 2001).

In recent years there has been a concern that children with ADHD are being prescribed stimulant medication too frequently even though evidence has suggested that stimulant medication actually is underprescribed (Riddle, Labellarte, & Walkup, 1998). Even though research has demonstrated the effectiveness of stimulant medication, children with ADHD appear to be undertreated with this method rather than overtreated (Forness & Kavale, 2001). One study found that 10% of 6099 children had been given an ADHD diagnosis and that 7.1% were receiving medication to treat it (Rowland et al., 2002).

In one study, the authors examined stimulant medication use in nineteen school districts in four states in kindergarten through grade six (Frankenberger, Lozar, & Dallas, 1990). Medications most commonly prescribed were Ritalin, Dexedrine, and Cylert. The overall incidence of stimulant use was less than two percent of the 24, 435 children included in the study (Frankenberger et al., 1990). The majority of children receiving stimulant medication for ADHD were in second, third, and fourth grades and eighty-two percent of the children were male. Over half of the children included in the study had an evaluation, though fifty-seven percent of the children were enrolled in general education settings (Frankenberger et al., 1990). It is not known whether or not

the children were receiving instruction or modifications targeted to the ADHD. The authors noted that teachers, multidisciplinary teams, and school psychologists made more than half of the referrals for possible ADHD. Even though school personnel are commonly part of this evaluation process, diagnosis and prescription of medication is completed by a medical doctor (Frankenberger et al., 1990).

Behavioral treatment methods can be successful and effective in the short-term treatment of ADHD (Barkley, 1998b) and can be effective in managing symptoms of ADHD in school. Behavior modification programs implemented in school by teachers include token economies, reinforcement menus, praising appropriate behavior, use of response cost, and time-out and commonly are implemented. Use of a daily home-school note can improve communication between school and home as well as address issues of organization and compliance with teacher and parent direction (AACAP, 1997).

A wide range of behavior and academic modifications can be made to meet the needs of a child with ADHD which can include broad categories such as decreasing assignment length to match a child's attention span, alter teaching style and curriculum, make rules external, frequent use of rewards, make consequences immediate, and set time limits for completion of work (Barkley, 1997b). Classroom tasks should be organized effectively and classroom behavior management strategies should be used frequently and consistently (Batsche & Knoff, 1994). Noise and distractions should be minimized, optimal seating arrangements should be utilized depending on the classroom activity, greater task structure, and use of stimulating materials may increase attention (Batsche & Knoff, 1994).

Parent training can be an important component when developing interventions for ADHD. Batsche and Knoff (1994) suggest that parents are able to maintain a constant presence in their child's life and that they are their child's first teachers. Given the difficulty that the child may have at home, parents may welcome assistance for dealing with difficult behaviors. Parent training programs should attempt to assist parents in understanding the cause of their child's behavior problems, to assist in managing family stress, to handle inappropriate behaviors while teaching appropriate behaviors, and to improve the quality of the parent child relationship (Batsche & Knoff, 1994).

Barkley (1997b) has developed a parent training program for children with ADHD based on research with children with oppositional and defiant behavior. Through this program parents learn about ADHD, learn how to effectively attend to their child's behavior, how to establish a token economy at home, as well as how to implement time out in the home (Barkley, 1997b). While behavior modification, parent training, and medication have been reported to be the best methods of treating the disorder, the MTA Cooperative Group (1999) found that medication management was superior to behavior management and community care. While combined treatment (behavior management, parent training, school consultation, camp for the child, and medication) did not produce significant benefits over medication alone in treating core symptoms of ADHD, it did provide improvements in non-ADHD symptoms and positive functioning outcomes (MTA Cooperative Group, 1999).

Other non-research based treatments have received attention, though limited empirical evidence in terms of validity have been found in the popular media. These treatment methods include change in diet and nutritional habits, Feingold diet, megavitamin supplements, and limiting sugar intake. According to DiBattista and Shepherd (1993), popular beliefs about the results of sugar intake on a child's behavior are not consistent with current scientific evidence. While numerous studies about ADHD assessment and treatment have established guidelines for professional activities, the first step to an assessment and subsequent necessary treatment is a referral to a professional. Research studies on referral will be reviewed.

Factors That Influence Referral

When a child is referred for an evaluation for a suspected disability, many factors are involved. First, the person making the referral may notice something about the child that may interfere with learning and behavior. Most commonly, teachers, parents, and physicians refer students for evaluations. Second, research has demonstrated that particular behavioral characteristics of students make it more likely that they will be referred for an assessment. Third, the purposes of referral may be manifold. Outcomes of assessments can lead to additional general education classroom support for a student, medication to regulate behavior, change of placement, and other special services.

Who Refers

Lloyd et al. (1991) indicated that general education classroom teachers were the primary source of referral for special education. Many state education agencies support pre-referral intervention. In these states, teachers would work with a committee that

provides assistance to the student as a way of preventing referral for assessment. In a review of the research, Nelson, Taylor, Dodd, and Reavis (1991) found that pre-referral intervention increased teachers' abilities to teach students who were having difficulty in the classroom. Though pre-referral intervention may reduce the number of students formally referred for an assessment, some students will need evaluations. Reasons why teachers refer will be discussed in a subsequent section of this review.

Parents also have a right to initiate a referral. Little research has addressed reasons why parents refer their children for assessments (Gottlieb et al., 1991). In considering parent referral issues, Gottlieb et al. (1991) compared patterns of referral initiated by parents and by teachers, particularly across ethnic boundaries. Teachers referred fewer Caucasian students than African-American or Hispanic students. White and Hispanic parents exclusively referred children for academic reasons (78.2% and 75.8% respectively) while African American parents referred exclusively for academic reasons only 60% of the time (Gottlieb et al., 1991). Referrals for primarily behavior problems were only initiated in 10% of the cases (Gottlieb et al., 1991).

Specific to ADHD, teachers were most commonly identified as the primary source for referrals for evaluation for the disorder (Frankenberger, Farmer, Parker, & Cermak, 2001; Snider, Busch, & Arrowood, 2003). One striking finding noted by the authors was the degree to which teachers are involved in the referral of students who are suspected to have ADHD, as two thirds of the sample in this study indicated that teachers were the first to suggest that a child be evaluated for the disorder. This finding

is confirmed by previous research by Frankenberger et al. (1990) and Runnheim, Frankenberger, & Hazelkorn (1996).

Factors Influencing Student Referral

Child characteristics, teacher characteristics, and contextual factors can all influence a referral for special education assessment. Research on factors that influence referral of students for special education assessment has demonstrated some consistent findings. First, boys are referred more frequently than girls (Lloyd et al., 1991). Girls were more frequently referred for internalizing behavior difficulties (e.g. anxiety, depression) while boys were referred for more externalizing problems such as hyperactivity (Lloyd et al., 1991; Andrews, Wisniewski, & Mulick, 1997).

Lloyd et al. (1991) reviewed referral records (N=382) to determine what are common reasons for referral. The researchers determined that reasons for referral primarily are related to academic performance. A reading problem was the most frequently provided reason for initiating a referral (Lloyd et al., 1991). The second area documented in the referral records was written language problems, which also may initiate a referral (Lloyd et al., 1991). The third most common reason for a referral was attention problems as nearly one fourth of the referral records in the study indicated this reason (Lloyd et al., 1991).

One would expect that the primary reason for referral is inappropriate student behavior but Lloyd et al. (1991) have demonstrated that general academic reasons dominate referrals. Voltz, Brazil, and Scott (2003) also found that the majority of teachers indicated that academic concerns were a primary reason for referral. Soodak

and Podell (1993), through examining teacher efficacy issues, determined that students with academic and behavior problems combined are most likely to be referred for special education placement, rather than demonstrating these difficulties independently.

Other factors related to academic underachievement and behavior problems in school and in the classroom also may influence referral. Skiba, McLesky, Waldron, and Grizzle (1993) completed classroom observations of student behavior, classroom observation of teacher classroom management skills, and teacher referral rates over the previous three and one half school years in order to examine factors that influenced special education referral. Teachers nominated the students to be observed. Students were nominated for being difficult to teach for academic or behavioral reasons and served as the target student group. Another group of students was nominated for making academic progress in the class and served as the peer comparison group.

Target students were found to differ significantly from the comparison students in terms of time spent engaged in academic activities and time spent engaged in inappropriate classroom behavior (Skiba et al., 1993). These differences between students were observed in reading and large group instructional settings. These findings may indicate that teachers serve as “accurate ‘tests’ of educational failure” (Skiba et al., 1993, p. 105), meaning that prior to any formal evaluation or observation of students, teachers accurately were able to select the students who had an increased chance of academic and behavioral difficulties. Previous research studies also made this determination which includes work by Gresham, Reschly, and Carey (1987), Shinn, Tindal, and Spira (1987), Gresham, MacMillan, and Bocian (1997).

More recently, Lane (2003) wanted to determine to what extent and how early in a child's educational career can teachers successfully identify children who are typically developing and children who are at-risk for developing antisocial behaviors. First grade teachers were asked to nominate up to 6 students in their class with low reading performance and externalizing behaviors (referred to as *at-risk*). Three other students in each class were randomly selected to serve as typically developing comparisons. Students were evaluated by their teachers in the areas of academic achievement, social skills, and problem behaviors. On scores obtained on the dependent measures, students who were identified as at-risk had lower academic competence scores, lower social skills scores in the areas of cooperation, assertion, and self-controls, and had higher scores on externalizing behaviors, internalizing behaviors, hyperactive behaviors, and critical events (low-frequency, high intensity behaviors such as "sets fires") (Lane, 2003). Results indicated that teachers are able to differentiate between students who are developing antisocial behaviors and those that are typically developing.

In an effort to differentiate children at risk for referral from other low achieving students and to differentiate low achieving students from mainstreamed students with disabilities, Bay and Bryan (1992) examined classroom interactions of students and teacher during a reading lesson. Groups of students from urban and suburban schools also were compared. Behaviors measured and coded via videotape were attending behavior, involvement of students in the lesson, and type feedback received from the teacher.

Low achievers were called on more by teachers, they participated more verbally, and they received more corrective feedback than did the students at risk for a special education referral. It may be that teachers had lower expectations for the at risk students and created a self-fulfilling prophecy. It could also be that the teachers recognized that the at risk student's participation was so different from the other students that typical classroom activities would not be enough to help the student achieve. No differences were found between low achieving students and mainstreamed special education students. Bay and Bryan (1992) also noted that while teachers named attention as a critical behavior for school success, it did not differentiate groups in the urban or suburban settings.

Gottlieb and Weinberg (1999) determined that there are differences between referred and non-referred students in teachers' perceptions of students' school behavioral characteristics and in social characteristics. In supporting other research findings, academic achievement was one variable that influenced referral decisions. Students who were perceived as not making academic progress during the school year, engaged in one conspicuous act of misbehavior, or appeared to have "given up" on learning were likely to be referred (Gottlieb & Weinberg, 1999). Social characteristics that influenced referral included mobility of the family and tardiness when arriving to school. In this study one-eighth of teachers made two-thirds of the referrals (Gottlieb & Weinberg, 1999). This finding might indicate that other factors outside of student academic performance and behavior may affect decisions to refer (e.g. contextual or systemic issues, teacher characteristics, etc.).

The referral process itself typically involves three steps: (a) referral, (b) assessment, and (c) placement (Bocian, Beebe, MacMillan, & Gresham, 1999). In each step of the process, factors also are considered and used to make decisions. These factors and the amount of influence they have may vary. They are (a) the role of professional judgment, (b) the question addressed, (c) use of local versus national norms, and (d) consideration of social, cultural, and contextual factors (Bocian et al., 1999). Viewing the referral process with consideration of each of these factors provided new information about referrals in terms of identifying students with learning disabilities.

Bocian et al. (1999) determined that at the step when the referral is made the teacher is guided by the concept of relativity. At this step of the process the teacher contemplates whether or not he or she will be able to help the child to learn so that the student can achieve at the same level as peers. If the teacher determines that he or she is unable to help the student, it is likely the student will be referred for assessment (Bocian et al., 1999). The assessment is then completed with the intent of determining if a problem exists within the child.

The concept of acceptability guides the decision-making at the step of assessment in terms of placement and services to be implemented (Bocian et al., 1999). Once the results of the assessment are known, the question “Is the child’s level of achievement acceptable?” is asked. If the child is not achieving up to the level of his or her cognitive ability (as this study considers learning disabilities), then such scores are deemed unacceptable as the child should be making more academic progress. The authors note that while at this step of the process should factors external to the child, reliance on

standardized assessment does not take these into account. Once student assessment results are available the placement decisions are made in the next step of the process.

The concept structuring the decisions made about student placement is referred to as profitability (Bocian et al., 1999). While the decision to make a referral was an individual decision, at this step of the process decisions are made as a team. The team at this stage sets out to determine if the child will or will not benefit from the special education services offered at the school. The team will examine information from the general education teacher, the school psychologist, the parents, and other member of the team about available services. Other factors that re also considered include available openings in special classes, caseload of special education teachers, issues related to second language development, and parental preference of services (Bocian et al., 1999).

Econometric Model of Referral

Currently the referral process is similar to the medical model of diagnosis, in that children are referred because of an individual, within child problem (Leone, 1989). Gerber and Semmel (1984) suggest that referral is a response to the problem of resource allocation in the classroom. Children who need more attention, more academic support, and more behavior management by the teacher, use up the limited resources a teacher has with which to instruct the class. Students who exhaust these resources are at risk for being referred to special education for an evaluation (Gerber & Semmel, 1984).

Research literature has demonstrated that teachers most often make special education referrals of students. Students who are most commonly referred are those that are having academic problems or a combination or academic and behavioral problems in

class. Problems with attention tended to be a common behavior noted by teachers when students were referred. When students are referred, teachers are seeking to obtain additional support for the student in terms of academic and behavioral needs. From what is known about ADHD, students who have the disorder have difficulty with attention and may or may not have academic achievement problems. Given the nature and structure of classrooms and schools, it is expected that student who may have ADHD will encounter difficulties at school, will be noticed by the teacher, and subsequently referred. Once referred, the process is organized to determine what child's needs are and it is the teacher's perception of the student's academic and behavioral difficulties which may influence decision and lead to the referral. Research about teacher perception will be reviewed.

Teacher Perceptions and Decision Making

Teacher perceptions of student characteristics may affect how students are instructed, disciplined, and treated. Perceptions of students on the part of teachers may create significant problems. Teachers must decide whether or not to make special education referrals and then they will make instructional decisions based on what educational factors may be identified. Theoretical models describing how teachers form expectations and they communicate these expectations to students exist in the literature. These models, such as Brophy and Good (1970) and the interactive model (Cooper, 1979; Cooper, 1985) will be reviewed. Research on teacher perceptions specific to student personal characteristics will be discussed. Finally, social learning theory and issues related to teacher efficacy will be discussed. While there is little research done on

referral, teacher knowledge, and how student behavior may affect a teacher's decision making process (special education referral, academic instruction, behavior management), a variety of literatures indicate that teacher knowledge interacts with student behavior which leads to judgments and instructional decisions.

Brophy and Good Model

The Brophy and Good Model (1970) consists of six elements: (a) how teachers form expectations, (b) how teachers communicate these expectations, (c) how students perceive differential treatment, (d) what are the effects of differential teacher treatment on student self-concept, (e) how the effects of the expectations are reinforced for the teacher by the student conforming to the expectations, and (f) student outcomes as a result of the expectations. According to Brophy and Good (1970) at the beginning of the school year teachers develop differential expectations for student behavior and academic learning. Teacher expectations may involve the entire class, a group of students or a specific student. Information used to form these expectations include student test performance, class work performance, group placement or level of student, classroom behavior, physical appearance, ethnicity, socioeconomic status, gender, language, and special education label or disability category (Good, 1987). Teacher perception of student ability often is correct (Good, 1987).

Teacher expectations are communicated through how the teacher treats and interacts with the student (Brophy & Good, 1970). Consistent with those expectations teachers behave differently towards students. How teachers treat students indicates to the students how they should perform in the classroom, academically and behaviorally.

Some research has examined specific teacher behaviors that will communicate those expectations. Specifically, the use of wait time, rewarding inappropriate behaviors, criticizing low achievers, infrequent praise of low achievers, failure to give feedback to low achievers, paying less attention to low achievers, calling on low achievers less often, all communicate expectations to the students (Good, 1987). Other teacher behaviors and treatment of students include grading assignments differently for low achievers, having less friendly interactions with low achievers, providing less eye contact and nonverbal communication to low achievers, and demonstrating less acceptance of ideas of low achievers (Good, 1987).

The authors suggested that if teachers treat students the same over time that it will affect student self-esteem, motivation, classroom behavior, aspirations, and interactions with the teacher (Brophy & Good, 1970). Students will conform to these expectations as the effects of the expectations will reinforce the teacher's expectations and eventually will affect student achievement levels and academic outcomes (Brophy & Good, 1970). According to this model, one would see high-expectation students achieving near or up to their potential while low-expectation students will not have learned as much as they could have if the expectations had been different (Brophy & Good, 1970).

How students respond to the expectations and treatment is the third step in the Brophy and Good (1970) model. At this stage, the model suggests that students perceive differential treatment. Students' perception of this treatment appears to affect the relationship between student achievement and teacher expectations (Good, 1987). Self-

fulfilling prophecies occur when all aspects of the model are in place. In many situations one or more factors is absent. For example, a teacher's expectations may change frequently or when expectations are present the teacher is not necessarily communicating them consistently (Brophy & Good, 1970). Students also may resist those expectations in a way that makes the teacher modify the expectations (Brophy & Good, 1970).

Cooper's Model

The interactive model developed by Cooper (1979; 1985) indicates that teachers have the need to maintain control and routine in the classroom environment which results in low achieving students being treated in a way that conveys low expectations. Control of student behavior is especially important to teachers in public situations when unexpected behavior may interfere with a lesson and create classroom management problems. Low achieving students are most likely to cause problems so teachers who value control may limit these students potential through preventing them from speaking or calling on them less than other students (Cooper, 1979; 1985).

Low achieving students may be treated less warmly than high achieving students, they may not be praised as enthusiastically as high achieving students, and they may be criticized more than high achieving students (Cooper, 1979; 1985). In the long run, low achieving students will not be able to visualize that there is a relationship between hard work and positive learning outcomes which would result in lower levels of motivation to achieve and reduce their level of academic achievement (Cooper, 1979; 1985).

Perceptions Based on Individual Student Characteristics

How teachers perceive students as successful or unsuccessful learners may be mediated by individual characteristics of a child. Teacher perceptions and expectations of student's behavior are developed based on many sources, which include classroom behavior, academic achievement, ethnicity, gender, and socioeconomic status (Dusek & Joseph, 1983).

Marsh, Stoughton, and Williams (1985) investigated the effects that role, gender, age, and parental status had on the perception of childhood problems. Clinical psychologists, school psychologists, teachers, and parents rated items on the *Child Behavior Checklist (CBCL)* from 1 to 5 in terms of their level of psychological importance (Marsh et al., 1985). The sample included 83 clinical psychologists, 125 school psychologists, 75 teachers, and 194 parents. Results indicated that ratings did not discriminate among group roles (Marsh et al., 1985). Clinical and school psychologists are more likely to attribute psychological significance to various childhood behavior difficulties than are teachers and parents. With the lack of formal psychological training, teachers and more often parents might underestimate the significance of some behaviors (Marsh et al., 1985). Age of the rater also appeared to affect how items were rated in that age contributed to an item being rated as more significant (Marsh et al., 1985).

Kauffman, Wong, Lloyd, Hung, and Pullen (1991) examined teacher judgments as to what student behaviors place a child at risk. Fifty-four general education teachers completed an abbreviated version of the Inventory of *Teacher Social Behavior Standards and Expectations (SBS)*. Teachers also were asked to complete a demographic

questionnaire that included ratings about their current teaching position and ratings of job satisfaction. Results indicated that a high percentage of teachers viewed academic success, good work habits, and compliant and motivated classroom behavior as essential for classroom success (Kauffman et al., 1991). A high percentage of teachers indicated that unacceptable behaviors included disrupting the order of the class, challenging teacher authority, and displaying aggressive behavior. Few teachers expressed concern about a student's relationship with other classmates (Kauffman et al., 1991).

In terms of demographic data, one-third of teachers rated that the level of difficulty of their position was above average. Approximately one-third indicated that support services were not available to them, and that the quality of the support services was below average (Kauffman et al, 1991). None of the correlations between these variables and how teachers rated items were significant.

Results indicated that teachers did not merely identify characteristics that put a child at risk because they violated the teacher's personal standards or expectation but because the characteristics would make success in any classroom difficult to achieve, not just their own classroom (Kauffman et al., 1991). Risk for school difficulties may be perceived by teachers as a set of behaviors or characteristics that include motivation, independence, and response to failure that make classroom instruction difficult (Kauffman et al., 1991). The results also indicated that teachers discriminated between behaviors that violated their own standards and behaviors that may lead to school failure. Teachers in this sample may have viewed risk as a behavioral characteristic that would make success in any classroom difficult, not just their own (Kauffman et al., 1991).

In terms of ethnicity of students, Prieto and Zucker (1981) asked current teachers (N=119) who were taking courses in education to determine the educational placement of a child based on a vignette. The case studies given to each group were identical except for the ethnicity of the child. One group received a case describing a Caucasian student and the second group received a case describing a Mexican-American student (Prieto & Zucker, 1981). Results indicated that teachers rated placement in a class for students who have an emotional disturbance more appropriate for Mexican-American students than Caucasian students (Prieto & Zucker, 1981).

Teacher perceptions of students in their classroom affect student educational outcomes. Teachers communicate their expectations to students on a daily basis through their interactions with them. These interactions can include instructional activities, management of behavior, and interpersonal contact. If a student is perceived as having behaviors that interfere with learning and the order of the classroom, then these expectations can be communicated to the student through the interactions with the teacher. Other student characteristics also may influence teacher perceptions which include classroom behaviors, academic achievement level, gender, and socioeconomic status. However, one cannot place the burden of referral on student characteristics alone. Teacher characteristics and personal beliefs also influence referral specifically self-efficacy will be examined

Social Learning Theory and Self-Efficacy

Bandura's (1977) social learning theory states that "psychological procedures, whatever their form, serve as means of creating and strengthening expectation of

personal efficacy" (p. 193). Bandura (1977) also hypothesized that the expectations of personal efficacy determine what coping behavior a person will use, how much effort a person will exert, and how long the person will maintain this behavior when confronting difficult experiences. An efficacy expectation is the "conviction that one can successfully execute the behavior required to produce outcomes" (Bandura, 1977, p. 193).

Efficacy expectations have three dimensions that have implications for individual performance. These dimensions in which efficacy expectations can differ are magnitude, generality, and strength. Magnitude refers to the level of difficulty of a task as the efficacy expectations of individuals may extend to simple tasks, some of moderately difficult ones, or include a very difficult task (Bandura, 1977). Generality refers to how far the efficacy expectation is extended to or generalized to different situations. Strength refers to the power an efficacy expectation has as weak efficacy expectations can easily be dismissed by a person, while strong efficacy expectations may enable a person to continue with a difficult task despite the adversity being faced (Bandura, 1977).

Expectations of personal efficacy come from four sources of information: performance accomplishments, vicarious experience, verbal persuasion, and emotional arousal. These sources of information mediate a person's efficacy beliefs (Bandura, 1977). The first and most powerful source is performance accomplishment which refers to personal mastery experiences. When an individual experiences success, efficacy expectations are raised while failures lower efficacy expectations. Once an individual has established a sense of self-efficacy, improvements in behavioral functioning

generalize not only to similar situations but also to very different situations or tasks (Bandura, 1977).

The second source of information is vicarious experience which refers to the fact that efficacy expectations also are developed from observing others perform tasks without negative consequences (Bandura, 1977). A person may learn that they also can achieve at such a level if they are persistent in their efforts. While vicarious experience will enhance personal efficacy expectations, it is not as strong a source of information as personal accomplishments.

The third source of information is verbal persuasion which refers to the use of verbal suggestion in order to convince an individual into believing that he or she successfully can handle a task that has overwhelmed him or her in the past (Bandura, 1977). Again, this method of enhancing efficacy expectations is not as powerful as personal accomplishments. The fourth source of information which develops efficacy expectations is emotional arousal. This term refers to the fact that in the face of difficult situations a person becomes emotionally and physiologically aroused and this occurrence can provide information about personal skills and level of ability (Bandura, 1977). People use these four sources of information to judge their level of self-efficacy in any given situation.

Initial research on efficacy as it relates to the field of psychology and education today was completed by the Rand Corporation which was evaluating educational programs (Armor et al., 1976; Berman, McLaughlin, Bass, Pauly, & Zellman, 1977). Items were constructed for this evaluation project based on Rotter's (1966) theory of

social learning. Teacher's level of efficacy was calculated based on their total score from two questions with a 5-point Likert format response. These items were (a) " When it comes right down to it, a teacher can't really do much because most of a student's motivation and performance depends on his or her home environment, " and (b) "If I try really hard, I can get through to even the most difficult or unmotivated students." Results of both studies indicated that the higher a teacher's sense of efficacy, the more students learned and made academic gains in reading.

Developed form Bandura's social learning theory and definitions of efficacy (1977), Gibson and Dembo (1984) and Ashton and Webb (1986) proposed that if Bandura's theory is applied to the construct of teacher efficacy, outcome expectancy would reflect the extent to which a teacher believed that the classroom setting can be controlled and the extent to which students can learn given external factors such as family history, cognitive level, and school resources. According to Ashton and Webb (1986) and Gibson and Dembo (1984), there are two dimensions of efficacy: teaching efficacy and personal efficacy. Teaching efficacy is the belief that one's teaching can affect certain educational outcomes. Personal efficacy is the belief that one possesses the skills necessary to teach students successfully. These two concepts are consistent with Bandura's (1977; 1982) outcome expectations (teaching efficacy) and efficacy expectations (personal teaching efficacy).

Through the development of a measure of efficacy, Gibson and Dembo (1984) found that teacher efficacy is multidimensional and that teacher efficacy may affect a range of classroom behaviors that enhance academic achievement. They found the two

constructs of teaching efficacy and personal efficacy to be independent. Ashton and Webb (1986) through the use of two original Rand items, classroom observations, and interviews also found these two constructs to be independent and that teachers who believe that teaching is a powerful contributor to students learning may see themselves as effective or that they do not possess skills to make a difference with their students.

Additional research in the area of teacher efficacy further addressed teaching efficacy and personal efficacy, the complicated nature of defining the construct of teacher efficacy, and specific situations that would enhance a teacher's sense of efficacy. Numerous authors have indicated that there is difficulty in defining the construct of teacher efficacy (Woolfolk, Rosoff, & Hoy, 1990; Pajares, 1992; Hoy & Woolfolk, 1993; Tschannen-Moran & Woolfolk Hoy, 2001). If the construct is so difficult to define and measure, then why should it be important in educational research? Research studies have demonstrated that teacher efficacy is related to many important educational outcomes, for example, teacher persistence, enthusiasm, instructional behaviors and decision making, student achievement, and student motivation (Tschannen-Moran & Woolfolk Hoy, 2001). For these reasons, the construct is of value and given diversity of the student population (disability, language, culture) that teachers encounter and are expected to teach, it may be one important factor that contributes to teacher retention in the field of education.

Woolfolk et al., (1990) found that "confidence in one's instructional abilities (personal efficacy) is related to a more humanistic attitudes about classroom control" (p. 146) and the optimistic belief that all students can be taught (teaching efficacy) "is

related to both more humanistic beliefs about pupil control and a greater tendency to support student autonomy in problem solving" (p. 146). The authors also suggested that the immediate feedback a teacher receives from observing a class run smoothly would foster a sense of efficacy and they were able to replicate the factor structure of efficacy using the measure developed by Gibson and Dembo (1984).

Pajares (1992; 1996) noted in reviewing the literature which investigated beliefs, knowledge, and efficacy, and efficacy research in all academic fields that there is a relationship between what a teacher believes and how they interact and work with students in the classroom. In summarizing effects of self-efficacy, he asserted that "People with low self-efficacy may believe that things are tougher than they really are…High self-efficacy, on the other hand, helps create feelings of serenity in approaching difficult tasks and activities" (Pajares, 1996, pp. 544-545). He also suggested that while teacher beliefs and educational outcomes are an important area of research in the field it has been complicated to develop a complete sense of the relationship.

Tschannen-Moran and Woolfolk Hoy (2001) asserted that a teacher's efficacy beliefs are related to their behavior in the classroom and the amount of effort they invest in teaching. The authors also reviewed current measures of teacher efficacy and then developed a measure of teacher efficacy that addresses factors different but not unrelated to teaching efficacy and personal efficacy. This measure, *Teacher's Sense of Efficacy Scale - Long Form (TSES),* measures general teaching efficacy, but also efficacy for student engagement, efficacy for instructional strategies, and efficacy for classroom

management. These three factors are important because they are directly related to instructional decision making, instructional planning, and behavior management of students which are critical components in creating success for students.

In studies specific to measuring and accounting for teacher efficacy as related to special education, Soodak and Podell (1993) examined the relationship between teacher efficacy, type of student difficulty, and professional group and referral and placement decisions. Using a case study and the *Teacher Efficacy Scale* (Gibson & Dembo, 1984), 192 teachers (96 general education and 96 special education) were asked to determine how much they felt the student's current educational placement was appropriate and how much they agreed with a decision to refer the student (Soodak & Podell, 1993).

Results indicated that teachers were more likely to agree with a general education placement if they were high in personal and teaching efficacy (Soodak & Podell, 1993). The study also found that students with combined learning and behavior problems were more likely to be referred for a special education evaluation.

Podell and Soodak (1993) examined the role of a teachers' feeling of self-efficacy, personal and teaching efficacy, and how that interacts with determining the appropriateness of a student who is experiencing academic difficulties is placed in general education. Vignettes were presented to teachers with variations in the student's socioeconomic status and cause of the learning problem. Results indicated that student socioeconomic status and efficacy interact to affect decision to refer the student to special education (Podell & Soodak, 1993).

Teachers with high self-efficacy are more likely to believe that a general education placement of a student with mild academic problems of lower socioeconomic status is appropriate than a teacher with low self-efficacy. This finding indicates that students of lower socioeconomic status are more at risk for special education referral due to teacher characteristics rather than student characteristics (Podell & Soodak, 1993). Teaching efficacy did not interact with socioeconomic status to affect the decision to refer a student to special education.

Teacher characteristics, student characteristics, and context specific characteristics all interact at some point which may lead up to referral. One teacher characteristic that is of importance and specific to this study is self-efficacy. Efficacy literature has demonstrated that individuals develop a sense of efficacy from a variety of sources through a variety of experiences. Though measuring general teaching efficacy can be a difficult task, it is an important construct to explore because previous research has demonstrated that a teacher's sense of efficacy has an effect on not only teacher behaviors, but also student motivation and academic outcomes. General teaching efficacy also can play a role in the decision to make a special education referral. One also might wonder how much knowledge a teacher has about a given disorder would affect efficacy as it relates to teaching students in general and with a specific disorder such as ADHD.

Teacher Knowledge about ADHD

Given that teachers will encounter children with ADHD in their classrooms and that the disorder will affect a child's ability to function in school, teachers need to know

about ADHD and how to work with a child with a diagnosis. It is important to note that in recent years the public has become increasingly more knowledgeable about ADHD (Desgranges et al., 1995), though the accuracy of the information is questionable. According to Sciutto et al. (2000), factors that may influence the accuracy of teacher referrals is teacher knowledge about ADHD. According to Schwean et al. (1993) teachers operate under assumptions about ADHD that are misconceptions. Pfiffner and Barkley (1990) indicated that in general teachers might not possess correct or adequate information about ADHD regarding etiology, course, and outcomes of the disorder. Teachers also may maintain misconceptions about effective treatments for the disorder.

Though there are numerous studies about ADHD, research that addresses teacher knowledge about ADHD and teachers' perspectives on the disorder is limited (Glass, 2000). In the literature, studies varied as to how they gathered information from teachers. In the investigator's opinion, in order to effectively teach students with ADHD, teachers should know what the symptoms of ADHD are, how a diagnosis of ADHD is made, how ADHD is treated, what training programs are available to educators and to parents, what classroom interventions are appropriate for ADHD, and what medical interventions are available.

Teachers Knowledge of ADHD and Referral

At present there are few studies that link teacher knowledge of ADHD to special education referral or referral for evaluation for ADHD. One published study directly related to referral of students with ADHD took place in Taiwan. Yang and Schaller (1997) wanted to determine the relationship between elementary teachers' perceptions

and ratings of ADHD symptoms of students and referral decisions. One hundred twenty one teachers participated in the study and were asked to rate the behaviors of two boys in their class, two girls in their class, (n= 478) and two students in their class who had been diagnosed with ADHD or who the teacher suspected had ADHD (n=219). Instruments used to rate student behavior included the *Conners' Abbreviated Teacher Rating Scale* and the *ADHD Checklist* which were both translated into Chinese by the first author. Teachers also provided demographic background about themselves.

Students were classified into three groups based on teacher ratings: non-nominated, nominated-non-referred, and nominated-referred. Ratings of student behavior by teachers in Taiwan correctly predicted group memberships of students based on the two measures used. Children in the non-nominated group were most likely to be correctly identified while nominated- non-referred children were most likely to be misidentified (Yang & Schaller, 1997). Ratings were more strongly associated with referral decisions for children who did not have symptoms (non-nominated) or for children who had more severe symptoms of ADHD (more than 3 standard deviations above the mean of the non-nominated group) than children whose behavior was rated less than 3 standard deviations above the non-nominated group (Yang & Schaller, 1997).

Teacher Knowledge of Other Special Populations

Teacher knowledge of other disorders, special populations, and referral is another area of research literature to consider given the limited availability in the area of ADHD. Three specific areas that will be considered are the referral of culturally and linguistically diverse students, student with learning disabilities, students with autism,

and students with emotional or behavior disorders. Although these areas have some literature in the area of knowledge, it should be noted that as in the case of ADHD, few studies were available, particularly those dealing with referral.

Voltz et al. (2003) considered the overrepresentation of culturally and linguistically diverse students (CLD) in special education and how teacher training possibly could reduce these rates. Teachers participated in Project Crisp, a professional development program designed to "foster teachers' knowledge and skills related to understanding and addressing culturally influenced learning and behavioral differences" (p.64). Special education and general education teachers completed questionnaires about how prepared they felt to work with CLD students, were interviewed about their referral practices, and had lesson plans analyzed prior to and after a three day interactive seminar in which teachers identified goals for the training and then participated in activities to accomplish these goals.

Results suggested that teachers felt unprepared to address the educational needs of CLD students and that preservice and inservice training they had received in this area was inadequate to meet the needs of students (Voltz et al., 2003). It is possible that with an increase in knowledge of how to teach students who are CLD may reduce the number of special education referrals made and thus the number of students who are CLD that unnecessarily or inappropriately are placed in special education. This knowledge also may lead to an increase in teacher efficacy related to teaching students who are CLD.

In the area of learning disabilities, research has been completed that looks at teacher beliefs, perceptions, and notions about definitions of learning disabilities. Kavale

and Reese (1991) surveyed teachers of students with learning disabilities in Iowa. The authors developed a questionnaire that dealt with definitions, etiology, prevalence, basic problems, associated features, assessment methods, and preferred method of providing services to evaluate teacher perceptions, beliefs, and knowledge about learning disabilities.

Results indicated that teachers of students with learning disabilities were well informed about their discipline (Kavale and Reese, 1991). These teachers appeared to base their beliefs on numerous sources which included "'conventional wisdom' in the field, the zeitgeist in the field, and information presented in major LD journals" (p. 158, Kavale & Reese, 1991). In general, the authors found that the teachers had a solid knowledge base which they were willing to add to and change in order to improve their understanding of learning disabilities and thus, improve their teaching skills to help students with learning disabilities.

Another study that looked at knowledge of learning disabilities was conducted with general education teachers, special education teachers, adults who were not learning disabled and children who were not learning disabled (Swanson & Christie, 1994). Three different experiments were conducted. In experiment 1, adults and children were given 30 minutes to write down characteristics of people who do and do not have learning disabilities. Results indicated that adults and children seemed to have knowledge about the characteristics of a learning disability (Swanson & Christie, 1994).

In experiment 2, general education elementary teachers, special education elementary teachers, and non-educators were also asked to write down characteristics of

people who do and do not have learning disabilities in a 30 minute time period. Results indicated that there were no significant differences between these three groups of people in their knowledge about learning disabilities (Swanson & Christie, 1994).

In experiment 3, general education teachers and special education teachers were asked to evaluate vignettes as to the degree to which the behaviors matched characteristics of someone with a learning disability (Swanson & Christie, 1994). Results indicated that both groups of teachers held similar beliefs and knowledge about learning disabilities in children. Based on these two studies, it appeared that teacher knowledge about learning disabilities was accurate.

Another area of teacher knowledge that has been addressed in the literature is autism. Stone and Rosenbaum (1988) surveyed 47 teachers, 47 parents of students with autism, and to 22 specialists in the field of autism to determine what their understanding is of the various features of autism. Items on the survey reflected common misconceptions and myths about autism. Participants responded in terms of the degree to which they agreed with each statement.

While the specialists' responses were accurate and in line with current research and knowledge about autism, both parents and teachers held misconceptions about autism in the areas of cognitive, emotional, and developmental features of the disorder (Stone & Rosenbaum, 1988). Teachers and parents tended to overestimate the cognitive ability of individuals with autism. Also, teachers and parents were more likely to perceive autism as an affective disorder with an emotional etiology. Teachers also had

difficulty differentiating between autism and childhood schizophrenia (Stone & Rosenbaum, 1988).

The final area of teacher knowledge that will be discussed in this review and that is addressed in the literature is emotional disturbance or behavioral disorders (EBD). In one study, teachers rated their own knowledge and skills in the area of EBD (Cheney & Barringer, 1995). General and special education middle school teachers (grades 5-7) rated themselves as having little to moderate knowledge or skills across the five domains measured by the *Teacher Competency Survey*. These five domains were (a) characteristics of learners, (b) managing the learning environment, (c) communication and collaboration, (d) managing individual students with EBD, and (e) monitoring students with EBD. According to the investigators the level of teacher knowledge of EBD is troublesome with regard to teacher interactions with students demonstrating externalizing behaviors (Cheney & Barringer, 1995).

Another study which examined teacher knowledge about students with behavior disorders also found a lack of teacher knowledge and skills when teaching students with emotional and behavioral needs (Sawka, McCurdy, & Mannella, 2002). The researchers developed and tested a professional development program in which teachers were trained in the areas of behavior management, academic assessment, and behavioral intervention. Teachers took pre and post training assessments during each of the 4 days of training.

Results indicated that the teachers' average percentage correct on knowledge pretests was 36%, and the average correct on posttests was 83% (Sawka et al., 2002).

The authors also gathered information on teacher satisfaction with the program, teacher use of strategies learned, and student classroom behavior. The study noted that the skills learned were not automatically implemented by teachers without consultative support which the program provided and that teachers reported a high level of satisfaction with the training program (Sawka et al., 2002).

While it appears teachers have a solid knowledge base in the area of learning disabilities, they do not necessarily possess the same amount or quality of knowledge in the area of cultural and linguistic diversity, autism, emotional disturbance, or behavior disorders. Limited studies were available when considering these other special needs and referral, as is the case with ADHD. According to the research literature available teacher knowledge about the ADHD is inconsistent as different studies measured different concepts in different ways. This topic may be in need of further investigation in order to improve educational opportunities for students with ADHD.

Myths about ADHD

According to Schwean et al. (1993) myths "continue to drive psychoeducational practice" (p. 37). The authors describe some common myths in their review. One common myth is that ADHD is an excuse rather than a viable disorder. Another myth regarding course of the disorder is that children will outgrow ADHD. In terms of assessment and diagnosis, educators may only recognize physicians as able to diagnose the disorder. In terms of intervention, educators may recognize medication as the treatment for ADHD (Schwean et al., 1993). Approximately 8% of teachers still believed that "if a child can play Nintendo for hours, he probably isn't ADHD" (Jerome et al.,

1994). Teachers who have misinformation or adhere to myths about ADHD may not implement the best or most appropriate teaching or behavior management strategies in the classroom.

Symptoms

It is important for teachers to know core symptoms of ADHD, because as reviewed previously, teachers are one of the primary individuals who refer students for assessment. One study found that teachers are most knowledgeable about symptoms and the diagnosis of ADHD as it relates to the *DSM-IV* criteria (Sciutto et al., 2000). Teachers who completed the *KADDS* (*Knowledge of Attention Deficit Disorders Scale*) demonstrated mastery of information about ADHD as it related to distractibility, fidgeting, and other primary symptoms of ADHD, as more than 80% responded correctly to the items on the measure (Sciutto et al., 2000).

Diagnosis

In examining teacher knowledge regarding ADHD as it relates to diagnosis, referral records at a pediatric clinic were reviewed (Desgranges et al., 1995). The researchers asked, are patients with a preconceived diagnosis of ADHD accurately diagnosed? The information was reviewed from patient records at the Desgranges Psychiatric Center, which is a "small outpatient psychiatric clinic specializing in the treatment of children, adolescents, and families in a suburban setting" (Desgranges et al., 1995, p. 5-6). Data collection included review of the initial interview with the parent and child and also, when available in the records, school report cards, previous treatment

records, teacher questionnaires, parent behavior checklists, physical or neurological assessments, and psychological testing results.

Of the 375 records reviewed for a one-year time period, 119 of the records were specifically evaluated for a suspected ADHD diagnosis. Of those 119 cases only 38% received a confirmatory diagnosis of ADHD. This study suggested that over-referral for ADHD assessment is possible because other children who referred for an ADHD evaluation did not receive an ADHD diagnosis. While teacher knowledge was not explicitly measured via a test or knowledge questionnaire, patient records which were reviewed included questionnaires completed by teachers regarding student behaviors (Desgranges et al., 1995). Results may suggest that behaviors that are common to ADHD and other disorders may be mistaken for ADHD at initial stages of a referral.

Treatment

Teacher knowledge about effective treatment and interventions for ADHD is important because in some cases teachers may serve as resources for parents who are seeking help for their child. Teachers also work with children on a daily basis and need to know how to best instruct and manage the behavior of a child who has an ADHD diagnosis. If special education placement or services through Section 504 are viewed as treatment then knowledge about what services are available to students in the school setting is important.

Treatment for ADHD as it is related to diet, nutrition, and sugar continues to exist. DiBattista and Shepherd (1993), Jerome et al., (1994), and Sciutto et al. (2000) have demonstrated that teachers continue to hold misconceptions about the effect of

sugar intake on behavior. Barbaresi and Olsen (1998) indicated that one myth that continues to exist is that ADHD symptoms are a result of or can be changed by nutritional intake.

Knowledge of medical interventions also has been researched. Out of 190 classroom teachers (26 special education teachers and 164 general education teachers) fifty-two to fifty-nine percent of general education teachers and nineteen to thirty-two percent of special education teachers indicated through written questionnaire that they did not know what the side effects of stimulant medications were (Kasten et al., 1992). Teachers might not have sufficient educational background or knowledge to provide correct information to physicians about the effects of stimulant medication (Kasten et al., 1992). The study also noted that even though the teachers lacked correct knowledge about stimulant medication treatment they often gave parents advice about the subject (Kasten et al., 1992). Overall, the study posited that the quality and level of information held by educators was overestimated (Kasten et al., 1992). In another study, 15.2% of teachers surveyed through questionnaire were unaware that Ritalin was a treatment (Brook, Watemberg, & Geva, 2000). According to Sciutto et al. (2000) teachers tended to be less knowledgeable about treatment of ADHD.

Jerome et al. (1994) compared American and Canadian teacher knowledge regarding ADHD. Using a true or false format, results indicated that teachers from both countries understood that medicine is not the only cure for the disorder and that the use of medication does not preclude educational interventions. Also notable, 66% of teachers endorsed the item that ADHD is caused by sugar or chemicals added to foods and that

diet is helpful in treating ADHD (Jerome et al., 1994). Long-term outcome for students with ADHD also was an area in which teachers had little knowledge. Most teachers (41% of Canadian teachers and 50% of American teachers) indicated that children with ADHD would outgrow the disorder. Piccolo-Torsky and Waishwell (1998) substantiated Jerome et al.'s (1994) finding with a similar study using the same questionnaire.

Snider et al. (2003) examined teacher knowledge of stimulant medication and ADHD. The authors surveyed general education and special education teachers in Wisconsin about their factual knowledge about ADHD, their views about stimulant medication, and their experience with students diagnosed with ADHD. Results indicated that teachers had limited knowledge about ADHD and the use of stimulant medication. Teachers particularly were uninformed about the side effects of stimulant medication (Snider et al., 2003).

Teaching Students with ADHD

Factors that influence how teachers work with students with ADHD also are of importance. Glass (2000) surveyed public and private school teachers in southeastern Virginia to determine what factors influence a teacher's choice of educational strategies. The surveys specifically addressed teacher use of positive teaching strategies, which include reduction of the amount of course work, preferential seating, use of praise, and opportunity for movement, and whether or not the teacher had received information about ADHD from the administration (Glass, 2000). Of the 225 usable returned surveys indicated that age and years of teaching experience influence whether or not a teacher would use positive teaching strategies.

Teachers who received information about ADHD from their administration were more likely to use positive teaching techniques than teachers who did not receive any information (Glass, 2000). Seventeen percent of the public school teachers reported receiving no information about ADHD from their schools and thirty-two percent of private school teachers reported receiving no information about ADHD from their schools (Glass, 2000).

Eddowes, Aldridge, and Culpepper (1994) compared teaching philosophy to a teacher's perceptions of a student with attention problems. Using a small sample of teachers (N=15) who taught kindergarten through second grade, teachers completed the Philosophy of Teaching Scale (Eddowes & Osborne, 1989), which examines how structured a classroom is and the Child Behavior Checklist (*CBCL*), which examines a student's level of hyperactivity, distractibility, persistence, and concentration (Eddowes & Aldridge, 1993). Results indicated that teachers with a more structured or ordered approach to instruction tended to view students as more hyperactive (Eddowes et al., 1994). Younger children also were rated as more hyper and easily distracted (Eddowes et al., 1994).

In examining teachers' perceptions of barriers to educating children with ADHD and level of self-efficacy, Reid, Vasa, et al. (1994) looked at teacher training and teaching experience with students with ADHD. In terms of barriers that prevent effective instruction of students with ADHD, teachers indicated that lack of training, time needed to engage in specific interventions, class size, and the level of severity of a child's problems were the four biggest barriers (Reid, Vasa, et al., 1994). There were no

differences between teachers who did or did not have prior training dealing with ADHD. Teachers indicated that they felt most confident in their ability to create a warm, accepting environment and to organize a classroom that minimized the opportunity for behavior problems (Reid, Vasa, et al., 1994). Reid, Vasa, et al. (1994) found that teachers had only a moderate level of confidence is this area and 20% of the teachers reported a low level of confidence for each item.

Bussing et al. (2002) examined sources of teacher information regarding ADHD as well as level of teacher confidence in their ability to instruct students with ADHD. The researchers also asked about what are the barriers teachers perceive in planning instruction for students with ADHD. Results indicated that teacher training in the areas of ADHD was related to years of experience. Nearly all the teachers who participated in the study had taught at least one student with ADHD in the past two years (Bussing et al., 2002). Reading a book about ADHD and having read at least one article about ADHD were some of the sources of teacher knowledge about the disorder. Other sources of information about ADHD found in another study included inservice training, other professionals, and parents of a child with ADHD (Snider et al., 2003).

More contact with students with ADHD and having read more about the disorder was an indicator of higher levels of confidence (feelings of self-efficacy) in their ability to meet the needs of students with ADHD. As found by Reid, Vasa, et al. (1994) this study also established that four common barriers encountered by teachers are large number of students in the general education classroom, time needed to implement interventions specific to ADHD, severity of a student's problems, and lack of training.

Ninety-four percent of the teachers who participated in the study wanted more training in the area, particularly how to manage stress associated with teaching this group of students (Bussing et al., 2002).

Studies of teacher knowledge as it relates to ADHD are at times inconsistent. Different studies measure different aspects of the knowledge base with different instruments and indicators. What is known is that myths about ADHD continue to exist. Adherence to these myths can have consequences for students. Teachers need to possess accurate knowledge about ADHD in order to make accurate referrals for evaluation and possible services. Operating under misconceptions can be problematic because students who are in need of identification may be overlooked while students who are experiencing transient developmental or situational challenges may be referred. Not only would knowledge influence referral decisions, but also which instructional and behavioral management methods are implemented in the classroom. Teacher knowledge has a link to student success, though at this time the strength of that link is unclear without further research.

Summary and Proposed Research Questions

Attention-Deficit / Hyperactivity Disorder is a commonly diagnosed disorder in childhood and many teachers may have students in their classroom with the disorder. While ADHD has been extensively researched, teacher knowledge about the disorder, teachers' decisions to make a referral of a student for a suspected diagnosis of the disorder, and teachers' efficacy related to teaching students with the disorder has not been explored. Five questions which are related to issues of special education referral,

teacher knowledge of ADHD symptoms, and teacher self-efficacy have resulted from this review. First, literature on special education referral has indicated that academic difficulties tend to be the reason for making a special education referral, though students with a combination of behavior and academic problems commonly are referred, too. In terms of students with ADHD characteristics, to what extent does academic achievement influence teacher decision to refer?

Second, behaviors that are part of the criteria for making an ADHD diagnosis may not be the behaviors about which teachers initially express concern when beginning the referral process. Research literature has varied in terms of what teachers do and do not know about ADHD and those methods of measuring teacher knowledge also have varied. When presented with a set of behaviors, to what extent do teacher's correctly identify behaviors that are characteristic and not characteristic of ADHD?

Third, one would anticipate that knowledge of ADHD and a high level of general teaching efficacy would predict a teacher's level of efficacy related to teaching students with ADHD. Current research literature does not address issues related to knowledge and efficacy, specifically related to ADHD. Does teacher knowledge of ADHD and general teaching self-efficacy predict self-efficacy related to ADHD? One would expect that knowledge and efficacy would interact in a way to enhance efficacy related to teaching students with ADHD.

Fourth, in the area of special education referral, research does address teacher efficacy related to making decisions about the appropriateness of placement of a student with learning and behavioral differences. Teachers with high self-efficacy are more

likely to believe general education placement is appropriate for a student with academic problems than teachers with low self-efficacy. The literature does not address extensively what would happen in the case of making special education referral decisions in terms of teaching efficacy or what influence teacher knowledge has on self-efficacy. Do teacher's perceptions of general teaching self-efficacy, self-efficacy related to teaching students with ADHD, and teacher knowledge of ADHD symptoms differentiate teachers who refer students with ADHD symptoms from those teachers who do not refer? Overall, it is hoped that if teacher knowledge of any given disorder is increased, then teaching efficacy will increase and will result in more accurate referrals for special education evaluation and a decrease in inappropriate referrals due to the successful implementation in behavioral and academic strategies.

Fifth, research literature has addressed the topic of sources of information for professional knowledge in the area of learning disabilities and for ADHD. When interviewed, what were the sources of information about ADHD as named by the teachers? Information of this nature can provide university teacher training programs as well as school districts with information about how well pre-service teachers are prepared to enter the field and how well inservice teachers are being kept up to date on new research and information with regards to ADHD. This information also can be used to design future training programs.

CHAPTER III

METHODOLOGY

Participants

Elementary school general education teachers, first through fifth grade were recruited to participate in the study from four school districts in the Houston, Texas area. Campuses in each district were selected in a variety of ways. In one district, the investigator randomly selected five campuses from the district. In two of the districts, the Director responsible for approving research studies selected the campuses. In the fourth district, the Director responsible for approving research studies in the school district recruited principals who were interested in volunteering for the study. The investigator recruited teachers at faculty meetings at twelve elementary schools by providing the faculty with a brief overview of the study and then asking for volunteers. The total number of participants recruited was 73 (female = 72, male = 1).

Demographic Characteristics and Educational Background

Teacher background information was gathered through a written questionnaire. The mean age of the participants was 39.51 years, the standard deviation was 11.15, and the range was 23-62 years. Over 80.8% was Caucasian/White, another 13.7% was Hispanic, another was 2.7% African-American, and 2.7% indicated other (e.g. biracial: Hispanic and Caucasian or African-American and Caucasian).

In terms of educational background, 78.1% of the teachers had 1 degree, 19.2% of the teachers had 2 degrees, and 2.7% of the teachers had 3 degrees. Of the first degree identified, 24.7% of the teachers held a bachelor of arts, 74.0% held a bachelor of

science, and 1.4% held a bachelor of business administration. Of those teachers who held a second degree, 68.8% held a master's of education and 12.5% held a master's of arts. A complete summary of teacher educational background is listed in Table 2.

Teaching Experience

Information about teaching experience and current teaching position also was gathered. The average number of years of teaching experience among the participants was 12.19 years which ranged between 1 year of experience and 38 years of experience. Teachers included in this sample taught grades 1 through 5 with 24.7% of the sample teaching third grade, 23.3% teaching second grade, 20.5% teaching fifth grade, 17.8% teaching first grade, and 13.7% teaching fourth grade. Of these teachers, 11.0% teach in a bilingual classroom (English/Spanish). Current teaching positions of teachers are listed in Table 3.

Information about the teachers' experiences with students with disabilities was collected. The mean number of students with disabilities in teacher's current class was approximately 3 (2.63) students (median = 3, mode = 4). Over 90% of the teachers currently had students with disabilities in their class while over 40% have 4 or more students with disabilities in their current class. Teachers appeared to have the most experience with students with speech impairments (60.3%), with students with ADHD (57.5%), and with students with learning disabilities (53.4%) in their current class. Experience teaching students with disabilities (current class) is listed in Table 4.

Table 2
Demographic Characteristics and Educational Background of Participants (N=73)

Demographic Characteristic	N	Percent
Gender		
Male	1	1.4
Female	72	98.6
Age (years)		
Mean = 39.51		
Standard Deviation = 11.15		
Range = 23-62		
Ethnicity		
African-American	2	2.7
Biracial	2	2.7
Hispanic	10	13.7
White/Caucasian	59	80.8

Educational Degree of Participants	N	Percent
Bachelor of Arts	18	24.7
Bachelor of Science	54	74.0
Bachelor of Business Administration	1	1.4
Master of Arts	2	2.7
Master of Education	11	15.1

Table 3
Current Teaching Position of Participants

Current Position	N	Percent
1st grade	13	17.8
2nd grade	17	23.3
3rd grade	18	24.7
4th grade	10	13.7
5th grade	15	20.5
Bilingual	8	11.0

Table 4
Current Teaching Experience with Students with Disabilities

Number of students with disabilities in current class	Percent
0	4.1
1	24.7
2	16.4
3	13.7
4 or more	41.1

Percent of teachers with students in each of the disability categories	Percent
Autism	16.4
ADHD	57.5
Dyslexia	21.9
Emotional Disturbance	19.2
Auditory Impairment	9.6
Learning Disability	53.4
Mental Retardation	4.1
Other Health Impairment	17.8
Orthopedic Impairment	6.8
Speech Impairment	60.3

Table 4 Continued

Percent of teachers with students in each of the disability categories	Percent
Visual Impartment	7.0

The average number of students with disabilities that the teachers taught in the previous three school years was approximately 11 students. Teachers appeared to have the most experience with students with ADHD (93.2%), with students with learning disabilities (75.3%), and with students with speech impairments (71.2%), in their previous three years of teaching. Of the teachers interviewed 95.9% reported having taught a student diagnosed with ADHD during their career. Experience with students with disabilities in the previous three years is listed in Table 5.

Table 5
Students with Disabilities Taught in the Previous 3 Years

Mean = 10.67
Standard deviation = 8.00
Median = 10.00
Range = 40

Disability Categories of Students in past 3 years	Percent
Autism	32.9
ADHD	93.2
Dyslexia	38.4

Table 5 Continued

Disability Categories of Students in past 3 years	Percent
Emotional Disturbance	52.1
Auditory Impairment	19.2
Learning Disability	75.3
Mental Retardation	15.1
Other Health Impairment	28.8
Orthopedic Impairment	16.4
Speech Impairment	71.2
Visual Impairment	15.1
Other	4.1

Referral Experience

Information also was collected about the teachers' experiences with the special education referral process. Of the sample, 87.7% had made a special education referral since they had been teaching. The mean number of special education referrals made in the current school year was approximately 1 (median = 1, mode = 0), while the mean number of referrals made in the previous school year was approximately 2 (1.78) (median = 1, mode = 1). Only 34.2% of teachers (N=73) reported making referrals specifically for concerns about ADHD. The average number of ADHD referrals made by these teachers was approximately 2 while the number of ADHD referrals made in this school year and in the previous school year was less than 1. Teachers also reported being satisfied with the referral process in general at their school (Mean rating = 3.80).

Of the 65.8% of teachers who did not make referrals for concerns specific to ADHD, a variety of reasons were presented spontaneously to the investigator. First, many teachers reported that they were "not allowed" to indicate any specific diagnosis to

a parent or guardian when there were behavioral or academic concerns about a child. This response may be due to the recent passage of a law in Texas in which school personnel are not permitted to suggest or make medical diagnoses. Second, some teachers told the investigator that they had suggested concerns about a child (i.e. unable to focus, trouble paying attention) to parents and that the parents had taken the initiative to seek a medical or mental health professional evaluation and that on their campus this action was not considered a "referral." Third, the investigator noted that at schools within the same district different policies and procedures appeared to apply in making referrals when there was a concern about a student having a possible ADHD diagnosis.

Teachers reported on what services were available in their school district for students diagnosed with ADHD. The mean number of services named was 2.75, though a total of 34 different types of services were named. Teachers identified special education (14.1%) and the general education classroom with modifications (13.7%) most frequently. Services available for students diagnosed with ADHD are listed in Table 6. See Appendix A for a copy of the background questionnaire.

Table 6
Teacher Identified Services Available for Students Diagnosed with ADHD

Teacher responses	Percent
Special Education	14.1
General Ed. Classroom with Modification	13.7
Content Mastery	9.8
Resource Class	7.3

Table 6 Continued

Teacher Responses	Percent
General Education	6.8
504 Modifications	4.5
Behavior Contract / Behavior Modification plan	3.4
Counseling	2.9
Not Sure	2.4
AB or Special class for severe cases	2.4
Social Skills counseling group at school	2.4
Put on Medication	2.0
Pre-referral team modifications	2.0
Special education aides / paraprofessionals utilized in general education classroom	2.0
Tutoring	2.0
General education inclusion with special education teacher help / support	1.5
Dyslexia Services	1.5
Parent Groups	0.9
Speakers brought to the district	0.9
Consultation with a psychologist	0.9
Consultation with behavior specialist / interventionist	0.9
School nurse monitors student / is involved	0.9
Removal from class	0.5
Psychological testing	0.5
Basic Skills class for instruction	0.5
Speech services	0.5
Life Skills class	0.5
Literacy Coach support	0.5
After school programs	0.5
Volunteer mentor	0.5
Psychologist works with the student	0.5
None	2.0
Very Few	1.5
Miscellaneous	6.8

Measures

In order to gather information on teacher knowledge about ADHD and measures of teaching efficacy, three instruments were utilized. First, two case vignettes have been developed each describing a student with a variety of ADHD related behaviors. Second, teachers completed a card sort activity in which they identified symptoms that are and are not behaviors associated with a student who is diagnosed with ADHD. Third, teachers completed two measures of self-efficacy: general teaching self-efficacy and self-efficacy related to teaching students with ADHD.

Case Vignettes

Two case vignettes were developed with an 8-year-old male as the subject as most ADHD research uses male children as subjects (Thurber, Heller, & Hinshaw, 2002) and there is a ratio of 3 to 1 or 4 to 1 of boys to girls with this disorder (Arnold, 1996; Silverthorn, Frick, Kuper, & Ott, 1996; Whalen & Henker, 1998). Both students have a combination of symptoms of hyperactivity/impulsivity, symptoms of inattention, and deficits in executive functioning. One student has deficits in academic achievement and one does not. Having deficits in academic achievement was selected based on current research that suggests students with ADHD commonly have difficulty in school (APA, 2000; Barkley, 1998a; DuPaul & Stoner, 1994; 2003). Academic achievement deficits also were one primary reason for teachers making referrals to special education (Lloyd et al., 1991).

Symptoms of hyperactivity/impulsivity and symptoms of inattention were included in the vignettes based on characteristics described in the *Diagnostic and*

Statistical Manual – 4th Edition – Text Revision (APA, 2000) and other research literature (AACAP, 1997; Barkley & Murphy, 1998; Ota & DuPaul, 2002). Deficits in executive functioning were included based on the model developed by Barkley (1997a). While literature supports the notion that teachers recognize academic and behavioral difficulties as problematic for being successful in general education there is limited research on teacher knowledge of executive functioning and the role it plays in a student school performance. Teachers were asked whether or not they would suggest a colleague refer the child described. In the original case vignettes, the student without academic difficulties did not have his report card grades listed. One of the teachers requested information about his grades and so changes were made given this suggestion. See Appendix B for a copy of the case vignettes.

Characteristics of ADHD

In order to determine what knowledge teachers have about the symptoms of ADHD, teachers were presented with thirty index cards listing behavioral characteristics of ADHD (18 behaviors from the *DSM-IV-TR*; APA, 2000) and 12 behaviors that are not part of the *DSM-IV-TR* criteria for diagnosing ADHD (one behavior per card). Behaviors that would be expected to be observed in a student with ADHD were chosen based on *DSM-IV-TR* (APA, 2000) criteria and descriptions of ADHD. Other behaviors that are not part of the *DSM-IV-TR* criteria of ADHD were selected from the diagnostic criteria of Oppositional Defiant Disorder* (often deliberately annoys other people and often

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blames others for his or her mistakes; APA, 2000), were selected from the diagnostic criteria of Generalized Anxiety Disorder* (irritability; APA, 2000) or were selected because they are behaviors that commonly may be observed in classrooms or noted when a referral to special education is made (Hutton, 1985). First, teachers were asked to sort the behaviors in terms of whether or not the behavior would be expected to be observed in a student who is referred for a possible diagnosis of ADHD.

Next, of the behaviors that would be observed in a student referred for a possible diagnosis of ADHD, teachers were asked to select the five behaviors that would be of most concern to them and would lead them to recommend a referral. This activity was used as a measure of teacher knowledge of ADHD. Total score was calculated based on the number of items correct from the 18 behaviors associated with ADHD and the number of items correct based on the 12 non-ADHD behaviors. These two numbers were added together. See Appendix C for a copy of the list of the behaviors. The reliability of this measure was moderate, $\alpha = 0.48$. When reliability analyses were completed separating the items into two measures, ADHD behaviors and non-ADHD behaviors, reliability improved ($\alpha = 0.78$ and $\alpha = 0.79$, respectively).

Measures of Self-Efficacy

The *Teachers Sense of Efficacy Scale-Long Form* (Tschannen-Moran & Woolfolk Hoy, 2001) was used to determine how confident teachers are in their ability

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to influence student engagement, to use instructional strategies, and to use classroom management techniques. This measure was developed for research purposes.
The mean for the total score of this measure in this study is 7.37 and the standard deviation is 0.69 with high reliability ($\alpha = 0.92$).

Six additional teaching efficacy questions have been developed by the investigator related to teaching students with ADHD. These questions were developed in order to capture how confident a teacher is in his/her ability to manage behavior, implement instruction, and provide information to a parent of a child with ADHD. The mean for the total score of this measure in this study is 6.12 and the standard deviation is 1.03 with moderate reliability ($\alpha = 0.84$). See Appendix D and Appendix E for copies of each measure.

Procedures

In order to recruit teachers for participation in the study, the investigator, after gaining access to elementary schools, attended faculty meetings and provided an overview of the study. Teachers who were interested in participating were given a piece of paper to complete with their name, school, grade level taught, phone number, and if they have experience with the referral process. Teachers who were interested in participating were contacted and individual interviews were scheduled. The process of collecting data from individual teachers entailed five steps that took approximately 20-30 minutes in the format of an individual interview. The interview was piloted with two teachers.

First, teachers were provided with a verbal overview of the study. The investigator stated that the purpose of the study was to investigate teachers' knowledge of students with behavior problems in the classroom and whether or not they would make a referral to special education. This information may be used to inform school districts and individuals who train teachers so that they can better prepare future teachers and to develop more effective teacher in-service programs. Teachers were assured that all information would be kept confidential and that no forms included names or other identifying information. Initial volunteer forms were destroyed and e-mail correspondence was deleted after the interview was completed. Teachers signed an individual consent form giving their permission to participate.

Second, teachers were asked to complete the first portion of the background questionnaire independently. After they completed this form, the second half of the form was completed as an interview. After the interview was completed, the teacher was then given two case vignettes. All teachers completed two case vignettes, "Billy" and "Joey". Cases were presented to teachers separately and in a different order with each administration (i.e. counterbalance). In this third step, the teachers were told that they have two cases to read. They were to read each case and based on the information they were provided they were to determine whether or not they would suggest to their colleague to refer the student. They can circle "Refer the child" or "Do not refer the child" after each vignette.

Fourth, the teachers were presented behaviors individually listed on index cards. The cards were shuffled prior to each administration so that the behaviors were

presented in random order. Each behavior as described previously is a symptom of ADHD as prescribed by the *DSM-IV-TR* or is a behavior that would be observed in a classroom. Teachers were told that they have been given a stack of thirty index cards with one behavior listed on each card. They were to sort the single stack of cards into two stacks, one stack of behaviors that they would expect to observe in a student diagnosed with ADHD and the other stack of behaviors they would not expect to observe in a student diagnosed with ADHD. If they were uncertain about some behaviors they were told to make their best guess.

After they completed the sorting of the cards, the stack of behaviors they selected that they would not expect to observe in a student with ADHD was set aside and recorded by the investigator. With the stack of behaviors designated as behaviors they would expect to observe in a student diagnosed with ADHD set out to be viewed, the teachers were asked to select the five behaviors that would be of most concern to them and might lead them to recommend to a colleague to make a referral. Total score on this measure equals the number of behaviors identified correct in each category. Fifth, the teachers completed the *Teachers' Sense of Efficacy – Long Form* measure and the additional six teaching efficacy questions related to teaching students with ADHD independently. Directions are printed at the top of the measure.

CHAPTER IV

RESULTS

Results of this investigation will be presented by research questions.

Question 1

For students with ADHD characteristics, to what extent does academic achievement influence a teacher's decision to refer?

A Chi-square Test of Association was calculated. The data used in this analysis included whether or not the teacher decided to recommend referral for "Billy" (no academic problems; B+ average) and "Joey" (academic problems; D average). See Table 7 for the crosstabs results of this analysis. For the student who did not have academic achievement difficulties, "Billy", 65.8% of the teachers decided not to refer him while 34.2 % of the teachers decided to refer him for a special education evaluation. For the student who did have poor academic achievement, "Joey", 13.7 % of the teachers decided not to refer him, while 86.3% of the teachers decided to refer him for a special education evaluation. The Pearson's X^2 (1, N = 73) = 41.306, Cramer's V = 0.532 was significant. Results indicated that academic problems are an important factor when teachers are making special education referral decisions and that teachers are sensitive to the academic achievement and progress of their students.

Question 2

To what extent do teachers correctly identify behaviors that are characteristic and not characteristic of ADHD?

Descriptive statistics for the ADHD knowledge measure were calculated. Scores were calculated based on the number of items correct out of a possible total of 30. For the total card sort score, teachers obtained a mean score of 21.56 (*SD*= 3.09). For the ADHD symptoms, scores were calculated based on the number of items correct out of a possible 18, and teachers obtained a mean score of 15.27 (*SD* = 2.89). For the non-ADHD symptoms, scores were calculated based on the number of items correct out of 12, teachers obtained a mean score of 6.29 (*SD* = 3.24).

Table 7
Crosstabulation Results of Teachers Who Referred "Billy" and "Joey" for Special Education Evaluations

	Did not refer	Referred	Percent
Billy (B+ average)	65.8% (48)	34.2% (25)	100% (73)
Joey (D average)	13.7% (10)	86.3% (63)	100% (73)
Total	39.7% (58)	60.3% (88)	100% (146)

Note: Numbers in parentheses indicate frequency of responses.

X^2 of All Behaviors

The first X^2 analysis completed was a two by thirty (accurate response / inaccurate response by ADHD and non-ADHD symptoms) to allow for the comparison of all of the behaviors. See Table 8 for the crosstabs results of this analysis. In this

analysis, Pearson's X^2 (29, N = 73) = 376.240, Cramer's V = 0.414, p = 0.00. Results indicated that teachers differentiated those behaviors that were symptoms used in the diagnosis of ADHD and those that were not symptoms used in the diagnosis of ADHD.

X^2 of ADHD Behaviors

Within the two categories of behaviors (ADHD, non-ADHD) additional X^2 analyses were completed. The second X^2 completed was a two by eighteen (accurate response / inaccurate response by ADHD symptoms) for behaviors that are symptoms of ADHD. See Table 9 the crosstabs results of this analysis. Results indicated Pearson's X^2 (17, N = 73) = 80.497, Cramer's V = 0.248, p = 0.00. Results indicated that teachers are knowledgeable about ADHD symptoms. Some behavioral symptoms, identified by 90% of the teachers or more as being associated with ADHD included: difficulty sustaining attention to tasks or leisure activities, fails to finish tasks, has difficulty organizing tasks and activities, becomes easily distracted by extraneous stimuli, leaves seat in situations in which remaining seated is expected, runs around the room or climbs on furniture, and is "on the go" or acts as if "driven by a motor".

X^2 of Non-ADHD Behaviors

The third X^2 completed was a two by twelve (accurate response / inaccurate response by Non-ADHD symptoms) for behaviors that are not symptoms of ADHD. Within those behaviors that are not diagnostic symptoms of ADHD are there behaviors that teachers believe to be diagnostic symptoms of ADHD? See Table 10 for the crosstabs results of this analysis. Results indicated Pearson's X^2 (11, N = 73) = 36.661, Cramer's V = 0.205, p = 0.00. While results indicated that teachers can identify some

behaviors that are not symptoms of ADHD correctly, there are some behaviors that they do believe

Table 8
Crosstabulation Results for Two by Thirty X^2 Analysis (All Behaviors)

Behavior	Correct	Incorrect	
Fails to give attention to detail	72.6% (53)	27.4% (20)	
Difficulty sustaining attention	93.2% (68)	6.8% (5)	
Fails to finish tasks	93.2% (68)	6.8% (5)	
Has difficulty organizing tasks and activities	90.4% (66)	9.6% (7)	
Avoids engaging in tasks	74.0% (54)	26.0% (19)	
Becomes easily distracted by extraneous stimuli	98.6% (72)	1.4% (1)	
Is forgetful in daily activities	87.7% (64)	12.3% (9)	
Fidgets with hands or feet	89.0% (65)	11.0% (8)	
Leaves seat	93.2% (68)	6.8% (5)	
Runs around the room or climbs on furniture	90.4% (66)	9.6% (7)	
Talks excessively	79.5% (58)	20.5% (15)	
Has difficulty waiting for a turn	87.7% (64)	12.3% (9)	
Does not seem to listen when spoken to directly	86.3% (63)	13.7% (10)	
Often loses things necessary for daily activities	83.6% (61)	16.4% (12)	
Often has difficulty playing quietly	64.4% (47)	35.6% (26)	
Is “on the go” or acts as if “driven by a motor”	93.2% (68)	6.8% (5)	
Blurts out answers	79.5% (58)	20.5% (15)	
Interrupts others	75.3% (55)	24.7% (18)	
Talks back to adults	76.7% (56)	23.3% (17)	
Is unable to get along with peers	54.8% (40)	45.2% (33)	
Is physically aggressive with peers	56.2% (41)	43.8% (32)	
Often deliberately annoys others	60.3% (44)	39.7% (29)	
Often blames others for his/her mistakes or behavior	58.9% (43)	41.1% (30)	
Mood swings	39.7% (29)	60.3% (44)	
Irritability	37.0% (27)	63.0% (44)	
Appears clumsy or has poor motor skills	56.2% (41)	43.8% (32)	
Fails to do homework	47.9% (35)	43.8% (32)	
Poor social skills	46.6% (34)	53.4% (39)	
Lack of motivation to do school work	47.9% (35)	52.1% (38)	
Poor academic performance	45.2% (33)	54.8% (40)	
Total	72.0% (1576)	28.0% (614)	100% (2190)

Note: Numbers in parentheses indicate frequency of responses.

Table 9
Crosstabulation Results for Two by Eighteen X^2 Analysis (ADHD Behaviors)

Behavior	Correct	Incorrect	
Fails to give attention to detail	72.6% (53)	27.4% (20)	
Difficulty sustaining attention	93.2% (68)	6.8% (5)	
Fails to finish tasks	93.2% (68)	6.8% (5)	
Has difficulty organizing tasks and activities	90.4% (66)	9.6% (7)	
Avoids engaging in tasks	74.0% (54)	26.0% (19)	
Becomes easily distracted by extraneous stimuli	98.6% (72)	1.4% (1)	
Is forgetful in daily activities	87.7% (64)	12.3% (9)	
Fidgets with hands or feet	89.0% (65)	11.0% (8)	
Leaves seat	93.2% (68)	6.8% (5)	
Runs around the room or climbs on furniture	90.4% (66)	9.6% (7)	
Talks excessively	79.5% (58)	20.5% (15)	
Has difficulty waiting for a turn	87.7% (64)	12.3% (9)	
Does not seem to listen when spoken to directly	86.3% (63)	13.7% (10)	
Often loses things necessary for daily activities	83.6% (61)	16.4% (12)	
Often has difficulty playing quietly	64.4% (47)	35.6% (26)	
Is “on the go” or acts as if “driven by a motor”	93.2% (68)	6.8% (5)	
Blurts out answers	79.5% (58)	20.5% (15)	
Interrupts others	75.3% (55)	24.7% (18)	
Total	85.1 (1118)	14.9 (196)	100% (1314)

Note: Numbers in parentheses indicate frequency of responses.

to be part of the disorder. More specifically there were no behaviors in this category that 90% or more of the teachers identified correctly.

Behaviors that are not diagnostic symptoms of ADHD but which teachers identified as being associated with ADHD were irritability, mood swings, and poor academic performance. These three behavioral symptoms were the most commonly overgeneralized to being associated with ADHD. Teachers were divided almost evenly

in the case of three other behaviors as to whether or not they would expect to observe them in a child diagnosed with ADHD. These behaviors included: fails to do homework, poor social skills, and lack of motivation to do school work. Within this subcatgory of the card sort, non - ADHD symptoms, variation was indicated in teacher knowledge of the behaviors.

T-test of ADHD and Non-ADHD Behaviors

In order to further investigate teacher knowledge of the diagnostic symptoms of ADHD, the card sort scores were standardized and a paired sample t-test was completed. Card sort scores were standardized by dividing the number of items correct by the total number of cards in the measure, 18 for ADHD behaviors and 12 for non-ADHD behaviors. See Table 11 for the results of this analysis. Findings indicated that the teachers tend to know and recognize behaviors that are associated with an ADHD diagnosis, while they may over identify behaviors that are not diagnostic of ADHD being associated with the disorder (t = 7.352, p = 0.00, df = 72).

Table 10
Crosstabulation Results for Two by Twelve X^2 Analysis (Non-ADHD Behaviors)

Behavior	Correct	Incorrect
Talks back to adults	76.7% (56)	23.3% (17)
Is unable to get along with peers	54.8% (40)	45.2% (33)
Is physically aggressive with peers	56.2% (41)	43.8% (32)
Often deliberately annoys others	60.3% (44)	39.7% (29)
Often blames others for his/her mistakes or behavior	58.9% (43)	41.1% (30)

Table 10 Continued

Behavior	Correct	Incorrect	
Mood swings	39.7% (29)	60.3% (44)	
Irritability	37.0% (27)	63.0% (44)	
Appears clumsy or has poor motor skills	56.2% (41)	43.8% (32)	
Fails to do homework	47.9% (35)	43.8% (32)	
Poor social skills	46.6% (34)	53.4% (39)	
Lack of motivation to do school work	47.9% (35)	52.1% (38)	
Poor academic performance	45.2% (33)	54.8% (40)	
Total	52.3 (458)	47.7 (418)	100% (876)

Note: Numbers in parentheses indicate frequency of responses.

Table 11
Results of the *t*-test for ADHD and Non-ADHD Behaviors (Standardized Scores)

M	SD	t	df	Significance
0.3237	0.3762	7.352	72	.000

Question 3

Does teacher knowledge of ADHD and general teaching self-efficacy predict self-efficacy related to teaching students with ADHD?

A linear regression analysis was completed to determine if teacher knowledge of ADHD behaviors (ADHD card sort total score) and general teaching self-efficacy predicted self-efficacy related to teaching students with ADHD. See Table 12 for the correlations between each measure and Table 13 for the complete regression analysis. One significant correlation noted was between the measure of general teaching self-

efficacy and the measure of efficacy related to teaching students with ADHD (r = 0.600). Neither efficacy measure demonstrated a relationship with the knowledge of ADHD measure.

In terms of predicting efficacy related to teaching students with ADHD from the knowledge measure and general teaching efficacy measure, the knowledge measure did not contribute to teacher perception of efficacy related to teaching students with ADHD, while the general measure of teacher efficacy did predict efficacy related to teaching students with ADHD (B = 0.603). Overall, the results of this model accounted for 36.8% of the variance in the self-efficacy related to teaching students with ADHD.

Table 12
Correlations Between Teacher Knowledge of ADHD, Teacher Sense of Self-Efficacy Scal*e* (TSES), and Teacher Efficacy Related to Teaching Students with ADHD (Standardized Knowledge Scores)

Measure	1	2	3	4	5
1. Teacher Knowledge (Total Score)	-				
2. *TSES*	0.031	-			
3. Teacher Efficacy - ADHD	-0.077	0.600*	-		
4. ADHD Symptoms score	0.414*	0.193	0.176	-	
5. Non-ADHD Symptoms score	0.582*	-0.148	-0.228	-0.498*	-

*Correlation significant at the 0.01 level

Table 13
Predictors of Self-Efficacy Related to Teaching Students with ADHD – Knowledge of ADHD and General Teacher Efficacy Measure (TSES) (N = 73)

R	R square	Adjusted R square	Std. Error of Estimate
0.607	0.368	0.350	0.830

	B	SE B	Standardized B
Constant	0.185	1.234	
TSES	0.895	0.141	0.603
ADHD Card Sort	-0.932	0.962	-0.092

Supplementary Analyses

In an attempt to further understand this relationship and given that teacher knowledge of ADHD symptoms (total score) was unrelated to predicting efficacy related to teaching students with ADHD, supplementary regression analyses were conducted. Specifically, scores from the card sort were entered as two separate variables, a score on the ADHD diagnostic symptoms and a score on the non-ADHD diagnostic symptoms. Given that the Cronbach's alpha was too low for the entire card sort measure, (all 30 items, $\alpha = 0.48$), but increased to a moderate level when the two sets of items were separated (ADHD behaviors, ($\alpha = 0.78$ and non-ADHD behavior, $\alpha = 0.79$) one might expect an increased ability to predict teacher efficacy related to ADHD when entering the scores in the analysis in this manner.

Three significant correlations were found in this analysis: Between the non-ADHD symptom score and the ADHD symptoms score ($r = -0.498$), between the Total symptoms score and the non-ADHD symptom score ($r = 0.582$), between the Total

symptoms score and the ADHD symptoms score (r = 0.414). A regression analysis was completed in which the two scores from the card sort and the scores from the measures of self-efficacy were used (ADHD card sort ADHD symptom score, ADHD card sort non-ADHD symptom score, and general teaching self-efficacy measure = self-efficacy related to teaching students with ADHD). See Table 14 for the complete regression analysis. Again, while general teaching self-efficacy predicted some of the efficacy related to teaching students with ADHD, knowledge of ADHD symptoms and non-ADHD symptoms did not predict efficacy related to teaching students with ADHD. Overall, the results of this model accounted for 38.0% of the variance.

Table 14
Predictors of Self-Efficacy Related to ADHD – Knowledge of ADHD Symptoms, Non-ADHD Symptoms and General Teacher Efficacy Measure (TSES) (N= 73)

R	R square	Adjusted R square	Std. Error of Estimate
0.616	0.380	0.353	0.828

	B	SE B	B
Constant	0.109	1.234	
TSES	0.861	0.144	0.580
ADHD Symptoms	-0.056	0.418	-0.009
Non-ADHD Symptoms	-0.560	0.710	-0.147

Question 4

Do teachers' perceptions of general teaching self-efficacy, self-efficacy related to teaching students with ADHD, and knowledge of ADHD symptoms differentiate teachers who refer students with ADHD symptoms and those teachers who do not refer?

A discriminant analysis was completed to determine if teachers ADHD knowledge and efficacy perceptions influence teachers referral decisions for students described in the case vignettes. See Table 7 for the frequency and percent of teachers who did and did not refer the students in the case vignettes. This analysis was completed using the variables listed in Table 15, which included the total score of self-efficacy related to teaching students with ADHD, the total score of the general teaching self-efficacy measure, the total score of the teacher knowledge of ADHD symptoms. Two separate discriminant analyses were completed using teacher responses of whether or not they would refer the students in both case vignettes ("Billy" and "Joey").

Table 15
Variables Used in the Discriminant Analyses

Variables
Decision to Refer Billy (no academic problems; B+ average)
Decision to Refer Joey (academic problems; D average)
General Teacher Efficacy Measure Total Score (*TSES*)
Efficacy Measure Related to Teaching Students with ADHD
Knowledge of ADHD (card sort total score out of 30)

Table 15 Continued

Variables
Knowledge of ADHD Diagnostic Symptoms (ADHD behaviors card sort score out of 18)
Knowledge of non-ADHD Diagnostic Symptoms (non-ADHD behaviors card sort score out of 12)

Billy

In the case of "Billy", the student without academic achievement difficulties, teachers who did and did not make a referral did not score differently on the two measures of efficacy or on the ADHD knowledge measure. Little contribution to the discriminant function was indicated by Wilks' Lambda = 0.993. Refer to Table 16 for complete results of this analysis. Given the reliability information obtained on the ADHD knowledge measure, an additional discriminant analysis was completed for each of the case vignettes using separate scores rather than a total score for the knowledge measure. In the case of "Billy", the student without academic achievement difficulties, teachers who did and did not make a referral did not score differently on the two measures of efficacy, ADHD diagnostic symptom knowledge, or non-ADHD diagnostic symptom knowledge as indicated by Wilks' Lambda = 0.971. Refer to Table 17 for complete results of this analysis.

Table 16
Discriminant Analysis – "Billy" with Total Card Sort Score

Function	Eigenvalue	Canonical Correlation	Wilks' Lambda	df	sig.
1	0.007	0.083	0.993	3	0.924

Table 17
Discriminant Analysis – "Billy" with Separate Card Sort Scores (ADHD Symptoms and Non-ADHD Symptoms)

Function	Eigenvalue	Canonical Correlation	Wilks' Lambda	df	sig.
1	0.030	0.171	0.971	4	0.726

Joey

In the case of "Joey", the student with academic achievement difficulties, teachers who did and did not make a referral did not score differently on measures of efficacy or ADHD knowledge, as indicated by Wilks' Lambda = 0.972. Refer to Table 18 for complete results of this analysis. A second discriminant analysis also was completed using separate scores rather than a total score for the knowledge measure. In the case of "Joey", teachers who did and did not make a referral did not score differently on measures of efficacy, ADHD diagnostic symptom knowledge, or non-ADHD diagnostic symptom knowledge, as indicated by Wilks' Lambda = 0.972. Refer to Table

19 for complete results of this analysis. Results of both analyses indicated that the teachers who did and did not refer each of the students did not score differently on both measures of self-efficacy and in their knowledge of ADHD symptoms.

Table 18
Discriminant Analysis – "Joey" with Total Card Sort Score

Function	Eigenvalue	Canonical Correlation	Wilks' Lambda	df	sig.
1	0.029	0.167	0.972	3	0.578

Table 19
Discriminant Analysis – "Joey" with Separate Card Sort Scores (ADHD Symptoms and Non-ADHD Symptoms)

Function	Eigenvalue	Canonical Correlation	Wilks' Lambda	df	sig.
1	0.029	0.167	0.972	4	0.743

Supplementary Analysis

An additional discriminant analysis was completed in which the teachers who made accurate referral decisions for both cases (did not refer Billy and did refer Joey) (N=40) were compared to the other teachers with the varying referral patterns (N=33).

Teachers whose referral pattern varied (a) did not refer Billy and did not refer Joey, (b) did refer Billy and did refer Joey, or (c) did refer Billy and did not refer Joey. This analysis was completed in order to determine if the two groups would differ on measures of knowledge of ADHD diagnostic symptoms, knowledge of non-ADHD diagnostic symptoms, general teaching self-efficacy, and self-efficacy related to teaching students with ADHD. In this manner of comparing the teachers, teachers with accurate referral decisions were not different from teachers with varied referral patterns on measures of knowledge of ADHD diagnostic symptoms, knowledge of non-ADHD diagnostic symptoms, general self-efficacy, and self-efficacy related to teaching students with ADHD. Table 20 lists the complete results of this analysis. Results indicated that regardless of how teachers were grouped and whether or not they decided to refer each of the students presented in the vignettes, they can not be identified by their efficacy scores (general teaching or related to teaching students with ADHD) or knowledge of ADHD symptoms and non-ADHD symptoms as indicated by the little contribution made by Wilks' Lambda = 0.975.

Table 20
Discriminant Analysis – Teachers with Accurate Referral Decisions (N = 40) and Teachers with Other Referral Decisions (N = 33) for the Case Vignettes with Separate Card Sort Scores (ADHD Symptoms and Non-ADHD Symptoms)

Function	Eigenvalue	Canonical Correlation	Wilks' Lambda	df	sig.
1	0.026	0.158	0.975	4	0.782

Question 5

What were the sources of information about ADHD as named by the teachers?

In interviewing the teachers, the investigator wanted to identify where teachers obtain information about ADHD. Teachers were asked to name the number of sources about ADHD that they had encountered in the past 3 years. Table 21 lists the sources that teachers identified along with the frequencies and percentages. The mean number of sources as named by the teachers was 5.11 (SD = 5.22). Only three teachers out of the entire sample had not obtained information about ADHD in the past three years. Of the teachers interviewed 16.4% identified magazines as a source of information about ADHD. These magazines included *Time*, *Ladies' Home Journal*, *Good Housekeeping*, *Reader's Digest*, *Child*, and *Newsweek*.

Another common source of information named by teachers was books (13.3%). Titles of these books were *Keys to Working with ADHD Students*, *Framework for Understanding Children with Poverty*, *Is this your Child?*, *What Would you do with a Child like This?*, *Understanding ADHD*, *ADHD in the Middle School*, *A Son that only a Mother Could Love*, *Hunter Brain*, *Healing ADHD*, and one book by Barkley (title not given).

The internet also was named as a source (8.4%). Websites viewed included LDOnline.com, AdultADD.com, and the Department of Education website. Only 6.6% of teachers identified professional journals as sources of information and 7.5% of teachers reported obtaining information from through school district inservice programs.

Interesting to the investigator, 7.2 % of teachers indicated that they received information from colleagues (school counselor, administrator) who had left articles or handouts copied in their school mailbox. The teachers were unable to name the sources of these articles.

Table 21
Source of Information about ADHD as Named by the Teachers

Source	Frequency	Percent
Magazines	37	16.4
Books	30	13.3
Articles	22	9.7
Internet	19	8.4
District Inservices	17	7.5
Copies of materials made by colleagues	16	7.2
Professional Development / Conference/ Workshop	15	6.6
Professional Journal	15	6.6
Information from physicians	10	4.4
Networking with colleagues	7	3.1
Television	6	2.7
Newspaper	5	2.2
Information presented on campus by fellow faculty members	5	2.2
Has a child with ADHD/ ADD	5	2.2
Talking to a parent whose child has ADHD	5	2.2
Teacher resources	3	1.3
Video	2	0.9
Course work	2	0.9
Miscellaneous	5	2.2

CHAPTER V

DISCUSSION AND CONCLUSIONS

This chapter will summarize the findings of the current study, discuss the limitations of this study, and offer recommendations for practice and future research.

Summary

Attention-Deficit / Hyperactivity Disorder (ADHD) continues to be one of the most commonly diagnosed disorders in school-aged children (Barkley & Murphy, 1998). As teachers are important gatekeepers for referring students who are in need of special services or classroom modifications (Gottlieb et al., 1991), understanding what teachers know about ADHD and the factors that may lead to referral are important. The present study examined whether or not teachers were sensitive to academic achievement when making special education referrals, if teachers could differentiate between ADHD behaviors and non-ADHD behaviors, the role of general teaching self-efficacy and self-efficacy related to teaching students with ADHD in making referrals, and what sources of information about ADHD teachers accessed.

While research about referral practices and teacher efficacy demonstrates some consistent themes, current research literature in the area of ADHD varies because methodologies frequently differ as does the type of knowledge researchers are looking to measure. One study noted that teachers continued to adhere to myths about the disorder (Schwean et al., 1993). This type of knowledge and application of it can affect referral decisions (Sciutto et al., 2000).

Question 1: For students with ADHD characteristics, to what extent does academic achievement influence teacher decision to refer?

Results of this study indicated that academic achievement is an important factor when teachers are making special education referral decisions and teachers are sensitive to the academic achievement and the progress of their students. Previous research literature also confirmed this finding. Lloyd et al. (1991), Gottlieb and Weinberg (1999), and Voltz et al. (2003) all determined that one of the primary reasons for special education referral was related to academic performance. This sensitivity was clear to the investigator during the data collection process as many teachers indicated that as part of the pre-referral intervention process, evidence of educational need had to be present when beginning the special education referral process with any student. Also teachers may be familiar with special education law, and know that in addition to meeting eligibility criteria for a disability category a student must demonstrate an educational need. Current findings have supported previous research.

Question 2: To what extent do teachers correctly identify behaviors that are characteristic and not characteristic of ADHD?

Current research on teacher knowledge about ADHD is mixed. It is important to consider that in recent years the public has become increasingly more knowledgeable about ADHD (Desgranges et al., 1995), though the accuracy of the information is questionable. According to Schwean et al. (1993) teachers operate under assumptions about ADHD that are misconceptions. Pfiffner and Barkley (1990) indicate that in

general teachers might not possess correct or adequate information about ADHD regarding etiology, course, and outcomes of the disorder.

The current study has demonstrated that teachers were able to identify diagnostic symptoms of ADHD with accuracy (mean score on ADHD symptoms was approximately 15 out of 18 or 83% correct). This result was consistent with the findings of Sciutto et al. (2000). In this study teachers were most knowledgeable about symptoms and the diagnosis of ADHD as it relates to the *DSM-IV- TR* criteria as more than 80% responded correctly to the items on the measure. Jerome et al. (1994) found that teachers in general were knowledgeable about ADHD symptoms with the mean score obtained of approximately 15 on a 20-item measure (75% correct). Using Jerome's measure, Piccolo-Torsky and Waishwell (1998) found that teachers also demonstrated knowledge of the disorder (80.9%).

The current study did demonstrate, however, that of behaviors that are not diagnostic symptoms of ADHD, were those behaviors in which teachers tended to overgeneralize and classify as ADHD symptoms. Teachers obtained a mean score of approximately 6 out of 12 (50% correct) on the non-ADHD measure of knowledge. In general, teachers were likely to classify irritability, mood swings, and poor academic achievement as behaviors that they would expect to observe in a student diagnosed with ADHD. Overgeneralization, overattribution, or anchoring is common in the inferential process (Quattrone, 1982).

Teacher knowledge of the diagnostic symptoms of ADHD was an important finding as teachers are often the initial source of a special education referral and from

research it is known that one of the primary methods of identifying children with disabilities is teacher referral (Lloyd el al., 1991; Snider et al., 2003). Also contributing to the argument that teachers do possess knowledge of ADHD symptoms was the work by Yang and Schaller (1997) who found that teachers are accurate in identifying the students with more severe symptoms of ADHD.

Question 3: Does teacher knowledge of ADHD and general teaching self-efficacy predict self-efficacy related to teaching students with ADHD?

Results from this study indicate that general teaching efficacy as measured by the *Teacher Sense of Self-efficacy Scale - Long Form* did predict some of the self-efficacy related to teaching students with ADHD, although knowledge of ADHD symptoms did not. Although 38% of the variance was accounted for and even when the ADHD symptoms scale was broken into two measures (ADHD and non-ADHD), knowledge was not an accurate predictor of efficacy related to ADHD. It might be that characteristics internal to the teacher and extensive knowledge about the student (Stough & Palmer, 2003) are more predictive of feelings of self-efficacy. These internal characteristics also might provide indicators of how likely a teacher is to make a special education referral.

According to two research studies (Podell & Soodak, 1993; Soodak & Podell, 1993), self-efficacy plays an important role in special education decision making though the authors did not examine the knowledge issue and were not studying a specific disorder, but rather learning and behavior problems in general. According to Soodak and Podell (1993) teachers were more likely to agree with a general education placement

(not make a referral) if they were high in personal and teaching efficacy. Also, teachers with high self-efficacy are more likely to believe that a general education placement (not make a referral) of a student with mild academic problems of lower socioeconomic status is appropriate than a teacher with low self-efficacy (Podell & Soodak, 1993).

In the current study, efficacy related to teaching students with ADHD mean was 6.12, though the range was 3.83 to 8.00, indicating a moderate level of efficacy. In addressing efficacy related to teaching students with ADHD, Reid, Vasa, et al. (1994) found that teachers had only a moderate level of confidence is this area and 20% of the teachers reported a low level of confidence for each item. Bussing et al. (2002) using that same instrument found that 77% of teachers surveyed had an average confidence score related to ADHD. The confidence measure used in these investigations dealt with instructional practices derived from a set of competencies that are important for teaching all students with disabilities in a general education classroom. No studies were found which directly examined whether or not knowledge of a disorder predicted self-efficacy.

Question 4: Do teacher's perceptions of general teaching self-efficacy, self-efficacy related to teaching students with ADHD, and teacher knowledge of ADHD symptoms differentiate teachers who refer students with ADHD symptoms from those teachers who do not refer?

The ability to predict group membership of the teachers who did and did not recommend referral from teacher self-efficacy related to teaching students with ADHD, general teaching self-efficacy, and teacher knowledge of ADHD scores was not proven in this study. After the initial analyses were completed with no significant results,

additional exploratory analyses also did not provide significant findings. These additional analyses which separated teachers into groups based on their accuracy of the referral decisions they made in each of the case vignettes as well as using separate ADHD knowledge scores also did not predict teacher group membership based on referral decisions.

In terms of the individual responses to the vignettes, 65.8% of teachers did not refer the student without academic achievement problems (“Billy”, B+ average) and 34.2% did refer him. For the student with academic achievement problems (“Joey, D average), 13.7% did not refer him and 86.3% did refer him. Research literature supports the accuracy of teacher referrals in terms of ADHD at a mean rate of 75% (Yang & Schaller, 1997). Students who were not nominated and not referred were most accurately classified (norm group) while students who were nominated but not referred were most often misclassified. Lane (2003) found that teachers were accurate at identifying students who were at risk for antisocial behaviors as 77.5% of students at-risk were accurately classified and 66.67% of typical students were accurately classified. Current research literature supported the findings of this study. (It was interesting to note that 55% of the teachers were accurate for both vignettes, while approximately 42% were only accurate with one case and 3% were inaccurate with both cases.)

It appears as though teachers who did and did not recommend referral involved many other factors which may include but are not limited to efficacy and knowledge of ADHD. Some of these factors could include the referral process policies and procedures, knowledge of the referral process, additional services available to a student that can be

accessed prior to a special education referral and / or placement, level of home and family support for the teacher and student, and administrator support for the teacher, to name a few. Christenson, Ysseldyke, and Algozzine (1982) through surveying teachers identified institutional constraints and external pressures which affected a teacher's decision to refer. These barriers included district's rules and guidelines, length of time between referral and the evaluation, inadequate inservice training on behaviors that suggest a student has a disability, "hassle" of making a referral, skepticism about the results of a referral, and parental pressure.

Question 5: What were the sources of information about ADHD as named by the teachers?

In interviewing the teachers, the investigator was able to identify where teachers obtained information about ADHD. Teachers were asked to name the number of sources about ADHD that they had encountered in the past 3 years. The mean number of sources named by the teachers was approximately 5. Of these sources, teachers most commonly named magazines that are part of the popular literature or media (16.4%) such as *Time, Journal, Good Housekeeping, Reader's Digest, Child,* and *Newsweek.* Teachers also identified books (13.3%) as common sources of information about ADHD. Titles of these books were *Keys to Working with ADHD Students, Framework for Understanding Children with Poverty, Is this your Child, What Would you do with a Child like this?, Understanding ADHD, ADHD in the Middle School, A Son that only a Mother Could Love, Hunter Brain, Healing ADHD,* and one book by Barkley (title not given). Only 7.5% of the teachers reported receiving any inservice training in the current study.

Two published studies have asked teachers about sources of ADHD information. Bussing et al. (2002) found that 39% of teachers had read one or two books about ADHD and about 97% of the teachers had read at least one article on ADHD. The authors did not specify the source of the articles. Of this sample, 50% reported receiving no preservice training while 30% reported receiving brief preservice training on ADHD. In terms of inservice training, 24% reported receiving no inservice training while 65% reported receiving brief inservice training. These findings were different from the findings in the current study, though methods of reporting training and information sources by the participants differed between the studies.

According to Snider et al. (2003), 80% of teachers reported that they received information from inservice training, 66% reported that they received information from other colleagues, and 57% reported that they received information from parents of children with ADHD. These results also differed from the current study and the previous study as very few teachers reported receiving inservice training (7.5%), collaborating with colleagues (3.1%), or speaking to a parent whose child is diagnosed with ADHD (2.2%). In the current study teachers were asked the open ended question “Where did you learn or get information about ADHD? Please list the specific names of the sources (i.e. magazine articles, journals, professional development programs, etc.).” Snider et al. (2003) asked teachers to “Check all that apply” and were given a list of choices while Bussing et al. (2002) also asked closed ended questions in which teacher could indicate the number of sources read (none, 1 or 2, 3-5, 6 +) and the type of training received (non, brief, extensive). The variation on how questions were asked (mail out survey,

individual interview) as well as the type of question asked may have affected the responses.

Limitations of Current Study

While this study provided additional information to the field of psychology and education in the area of teacher knowledge of ADHD and special education referral, limitations exist. First, the use of a small sample size might limit the generalizability of findings to the larger population of elementary school teachers, grades first through fifth. This sample was not large enough to have a systematic sampling plan in place so that all ethnicities, age groups, and levels of experience could be interviewed.

Second, relating to the sample size, the only requirement for participation in this study was that participants taught general education first through fifth grades. The sample of participants was predominantly female and White/Caucasian. The applicability of these results to male elementary teachers and teachers of other ethnicities might be limited. It is not known whether or not years of experience, degree, certification, or age played a role in teachers' willingness to participate or if these factors influenced knowledge or efficacy. The vast majority of teachers who did participate had experience teaching students with an ADHD diagnosis (95.9%). Also, with reference to the sample of teachers who participated, out of the four school districts, only one was in a predominantly urban area and the other three districts were suburban. Within and across school districts there also was variation in the socioeconomic status of the student population served.

Third, differences between each school district and referral policies also affected types of responses provided by teachers. One background interview question asked, "Have you referred a parent to a physician, psychologist, or psychiatrist to obtain an ADHD evaluation for their child in the past 3 years?" Teachers in some school districts were adamant that students were not referred to prereferral intervention teams for a suspected diagnosis of ADHD, as it is against the law for a teacher to suggest a diagnosis. Teachers in other school districts responded to the same question with a yes. Variation between school district policies and procedures was noted and also might affect the generalizability of the results.

Fourth, the use of simulation procedures and case vignettes could be problematic. Case vignettes, though provide ease of use for investigators, might not provide the most accurate information. The two vignettes used in this investigation were identical except for the student's grades and level of academic achievement. A number of teachers commented to the investigator during the interviews that the vignettes were incomplete. Teachers, for example, wanted to know what prereferral strategies were previously attempted. Also, it was unclear if the vignettes were only measuring teacher sensitivity to academic achievement or if other factors such as experience with a specific student or school district policies were influencing referral decisions.

Implications for Practice

While the current study has demonstrated that teachers are able to identify diagnostic symptoms of ADHD symptom (83% correct in the current study; 75% correct in Jerome et al., 1994), there are still gaps in knowledge and a tendency to

overgeneralize other problematic behaviors to ADHD. This finding is important for a few reasons. First, it is important for teachers and members of pre-referral intervention teams to explore numerous causes and reasons for behavioral and academic difficulties. Symptoms of inattention can be signs of other childhood problems besides ADHD. Some of these other problems could include other disorders such as learning disabilities, language disorders, anxiety, depression, medical problems or the inattention and distractibility problems could be situational in nature such as is the case with the second language acquisition process, grief or loss, or lack of sleep (Barkley, 1990; Carroll, 1997; DuPaul & Stoner, 1994; 2003).

Many factors contribute to whether or not a child is able to attend and focus in school. These factors may not necessarily reside within the child. Other factors could include instructional techniques and strategies, student and teacher personality conflicts, inadequate resources within the school itself, and overcrowding of classes. Knowlton (1998) suggested that attentional skills should be viewed on a continuum and that "the ability to focus, concentrate, tune out other distracting stimuli and actively attend is a function of a variety of factors" (p. 86). Training teachers to thin in this manner may affect their views on ADHD and students with an ADHD diagnosis.

Second, although academic problems and mood disturbances can co-exist with a diagnosis of ADHD, they are not defining symptoms of the disorder according to the *DSM-IV-TR*. Educators need to be cautious when they observe such symptoms and should not over attribute these symptoms to one diagnosis, in this case ADHD. While some research literature provides a strong basis for the accuracy of teacher referrals,

according to Sciutto et al. (2000), factors that may influence the accuracy of teacher referrals is teacher knowledge about ADHD. University training programs and school districts also should consider ways to enhance teacher knowledge of not only eligibility criteria for special education but also behaviors that are warning signs for other psychological and behavioral disorders. These efforts may increase the accuracy of referrals and reduce inappropriate referrals for assessment.

In terms of the predictability of teacher efficacy related to ADHD, this study determined that teacher knowledge of ADHD symptoms does not predict efficacy related to teaching students with ADHD, while general teaching efficacy did predict efficacy related to ADHD. From Bandura's work it is known that the first and most powerful source of self-efficacy is performance accomplishment, which refers to personal mastery experiences. University trainers of future teachers may want to consider mandating field based opportunities for preservice teachers to work in general education classrooms where students with disabilities are included (particularly students with ADHD diagnoses). Research literature has supported this idea for preparing future teachers to work with students with learning problems (Blanton, Blanton, & Cross, 1994). An opportunity to work successfully with these students under the guidance of an experienced teacher would increase personal mastery experiences. Fritz, Miller-Heyl, Kreutzer, and MacPhee (1995) suggest that those involved with staff development need to understand the role of teacher self-efficacy in order to develop ways to enhance it in staff development programs.

Also, for inservice teachers who have the opportunity to collaborate with other teachers, classroom situations can be arranged such that a lead or mentor teacher observes teachers who have sought out assistance or who are less experienced. Teachers can be taught how to implement instructional and behavioral strategies known to be effective for students with ADHD and then observed implementing what they have learned. The opportunity for performance accomplishment would be important in increasing self-efficacy. For those inservice teachers in which direct performance assessment and close collaboration is not readily available, the opportunity to observe other teachers successfully working in an inclusive setting with students with ADHD also would increase self-efficacy, through the vicarious experience. An increase in efficacy of the teaching profession as a whole possibly would contribute to increased teacher retention in the field. Teacher training should not only address experiences necessary for increasing efficacy, but also should address teacher confidence and "involvement in their professional roles" (Fritz et al., 1995, p. 207).

The sources of information about ADHD that the teachers named, particularly in this study, is important for school districts and university training programs to consider. First, university training programs which prepare future teachers may need to add or re-evaluate current requirements in the curriculum which include course work and field based experiences in working with children with special needs in a general education setting.

Second, teachers who participated in this current study indicated receiving limited training from inservice programs provided by their school districts. When asked

during the individual interview whether or not they believed they would benefit from additional training in the area of ADHD, 97.3% of teachers indicated that they could benefit from additional training in the area. This result is consistent with Jerome et al. (1994) in which 98% of American teachers wanted additional training. Teachers in the current study wanted to know and learn specific academic and behavioral strategies and techniques (29.0%) and how to work with or teach the child (21.8%). Other areas that teachers desired knowledge about include information about the effects of medication, how to work with children with and without ADHD in the same classroom, how to identify it, how to work with a child who is not on medication, how to boost self-esteem, how to teach organizational skills, and information about social skills.

Third, reliance on popular literature and media for information may not provide teachers with the most accurate or in depth information about ADHD which they need to successfully work with these students. While teachers were able to accurately identify diagnostic characteristics of the disorder, the tendency to overgeneralize other behaviors is problematic. School districts have an opportunity to provide the necessary and, from this study, wanted information that is accurate and provides what teachers need. Also, school psychologists can serve a consultative role in helping to develop and present training programs appropriate for teachers. Additional research in this area would be valuable in preparing effective professional development programs as well as offering insight into the changing role of school psychologists. Such opportunities for teacher training can provide for the role expansion of the school psychologist. These professionals can be involved in program development, presentation, and evaluation.

School psychologists possess knowledge and skills to provide this type of training to other professionals in school districts. This knowledge includes assessment of ADHD, diagnostic symptoms, effective treatment, course of the disorder, effective classroom strategies, as well as how to develop behavior modification plans for students. School psychologists also are trained in consultation skills that are necessary in providing large group training as well as individual consultation and therapeutic services. These professionals also have access to current research in the field about ADHD which they can easily provide for the school district they serve.

Recommendations for Future Research

Current research literature and the current study primarily examined student behaviors that influence the special education referral process. Other student factors that could be explored in terms of ADHD could include variation in ethnicity and age of the student presented in the vignette. In this study, it was noted that two of the teachers without experience with students with ADHD diagnoses taught in a bilingual classrooms. Issues of underidentification of Hispanic students and culturally appropriate assessment of ADHD in this population should be explored.

In addition to exploring student ethnicity characteristics, age and grade of the student could vary in the case vignettes. Besides providing information about the referral decision-making process, information about what behaviors teacher do and do not find acceptable at different developmental stages could be examined. While ADHD referral is not stated in each of the case vignettes, teachers also could be asked for what eligibility do they suspect from the description if they were to make a referral.

Additionally, examination of teacher characteristics may provide information about which teachers are and are not likely to make special education referrals.

Besides examining student characteristics, future research should address teacher and system level factors which influence the referral decision making process (Christenson et al., 1982; Robbins, Mercer, & Meyers, 1967). Teacher characteristics may exist that influence special education referral and increase the likelihood that a referral will be made. While the current study did not find any link between efficacy and knowledge of ADHD symptoms, it is possible that factors internal to the teacher are more influential than issues of knowledge. Some of these factors to be investigated include teaching experience, teaching experience with students with disabilities, teacher knowledge of strategies that are effective for students with ADHD, a teacher's history with the referral process, and what services become available if a referral ends with a student being eligible. Also, it is important to consider that teacher sensitivity to academic achievement may be so defining that regardless of efficacy, teachers know that referral is necessary if a child is not progressing academically. This heightened awareness to recognize academic underperformance and failure may cancel out the knowledge issue. Further research is necessary in this area.

The difficulties that students experience in school possibly may result from the interaction between student characteristics, teacher characteristics, school policies, school procedures, district policies, school climate, and school culture. Research should address specifically how these factors interact and influence student achievement and referral. Teachers and parents of children receiving special education services or services

through Section 504 could provide information about what they know about district policies and procedures, what benefits of the referral process exist, what limitations exist, level of satisfaction, who are key decision makers in the process, and other key information about special education referral. Students are part of a system and many factors come together when a referral is made and further defining what those factors are may improve the referral process and outcomes for students.

While the ADHD symptom knowledge instrument used in this analysis initially was thought to be a single measure of ADHD knowledge, it turned out to be two separate measures: (a) knowledge of ADHD symptoms and (b) knowledge of non-ADHD symptom. This result is evidenced by Cronbach's alpha computed for the entire measure and then for each separate scale, $\alpha = 0.48$ (Total score), $\alpha = 0.78$ (ADHD symptoms), and $\alpha = 0.79$ (non-ADHD symptoms). This finding was of importance for future researchers in that it might be more accurate to develop a measure with only one type or set of behaviors as in this case ADHD and ask that participants endorse or deny items rather than developing a measure with two types of items in which the participant must endorse or deny both sets of items.

The issue of teacher training is another area in need of research. While this study demonstrated that teachers do have basic knowledge about ADHD symptoms, there is still a need and desire on the part of teachers for additional training. Sawka et al. (2002) developed and empirically supported program for training teachers to work with students with emotional and behavioral problems. Two components of this program are believed to be critical by this investigator. The first component is teacher satisfaction. Teachers

had the opportunity to evaluate the training and provide feedback to presenters. They could tell presenters what they liked, disliked, and learned (Sawka et al. 2002). This feature of the training established the teachers as more active participants in their own learning. The second critical component of this training module was consultative support provided to the teachers outside of the training sessions. Teachers were provided with follow-up support by the presenters in order to help the teachers begin implementing the strategies learned in the training.

This research in the area of emotional and behavioral disorders can be applied to teaching students with ADHD and should be considered when preparing inservice trainings for teachers in school districts. Though state and district requirements dictate what some school districts inservices should be, teachers should have the opportunity to select inservice trainings, provide feedback on those trainings, and receive consultative support outside of the inservice in order to successfully implement what they have learned in the training. Zumpfe, Howard, and Landau (2003) have developed guidelines for a training program for preparing teachers to teach students with ADHD and have included the components of feedback and consultation. Research on the implementation of their program and empirical evidence of its effectiveness should be completed.

Conclusion

The current study examined teacher knowledge of ADHD symptoms, teacher efficacy, and the special education referral process. Results of this study, first, demonstrated that academic achievement does play an important role in the special education referral process. Second, teachers possessed the same amount or more

knowledge about ADHD symptoms and behaviors than would be expected based on current studies. Third, knowledge of ADHD did not predict efficacy related to teaching students with ADHD, while general teaching efficacy did. Fourth, knowledge and efficacy did not affect referral decisions of the student in the case vignettes. Fifth, the sources of information about ADHD that teachers accessed were not what would be expected given the sources named in other studies.

While the study was not able to demonstrate that knowledge and efficacy affect teacher referral decisions and that knowledge does not predict efficacy related to teaching students with ADHD, other findings may influence current practices and future research in this area. First, teachers do have a general knowledge of what are some of the symptoms of ADHD that may help them identify students who are having school difficulty. Teachers, however, tend to overgeneralize some behavior problems to ADHD. This tendency to overgeneralize may be one factor that leads to inaccurate referrals. Second, although knowledge of symptoms did not predict efficacy related to teaching students with ADHD, opportunities to increase general teaching efficacy may lead to greater teaching efficacy with students with ADHD.

Third, school districts and university training programs have an excellent opportunity to provide teachers with the desired and needed information about how to successfully work with students with ADHD. Finally, teacher training is one area in which school psychologists can expand their current role. School psychologists have knowledge and skills to provide training to teachers and then consult with teachers on how to best implement strategies learned at trainings. It is possible that when the fields

of psychology and education begin to work together closely that learning opportunities for students will be enhanced.

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APPENDIX A

BACKGROUND QUESTIONNAIRE

ID #_____

_____

Teacher Background Questionnaire
Please check the space next to your response.

Personal Background

Age _____

Gender
____Female
____Male

Ethnicity
____African-American
____Asian
____Caucasian
____Hispanic
____Other: _____

Professional Education

Certifications held
_____Early childhood education
_____Elementary education
_____Secondary Education - content area: _____
_____Special Education
_____Other_____

Number of degrees held
_____1
_____2
_____3
_____4 or more

First degree held

_____B.A.
_____B.S.
_____M.A.
_____M.S.
_____M. Ed.
_____Ed. D.
_____Ph. D.

Major: _____

Second degree held
_____B.A.
_____B.S.
_____M.A.
_____M.S.
_____M. Ed.
_____Ed. D.
_____Ph. D.

Major: _____

Teaching Experience

Current Teaching Position
_____1st grade
_____2nd grade
_____3rd grade
_____4th grade
_____5th grade

Number of years teaching this grade level: _____

Total number of years teaching: _____

Experience with children with disabilities
Number of children with disabilities or special needs *in your current class*:
_____1
_____2
_____3
_____4 or more

What types of disabilities or special needs do each of these children have?

_____Autism
_____ADHD
_____Dyslexia
_____Emotional disturbance
_____Hearing impairment
_____Learning disability
_____Mental retardation
_____Other health impairment
_____Physical disability
_____Speech impairment
_____Visually impairment
_____Other: _____

How many children in the past three years have you taught with disabilities or special needs? _____

What types of disabilities or special needs did each of these children have?
_____Autism
_____ADHD
_____Dyslexia
_____Emotional disturbance
_____Hearing impairment
_____Learning disability
_____Mental retardation
_____Other health impairment
_____Physical disability
_____Speech impairment
_____Visually impairment
_____Other: _____

Have you taught children with Attention-Deficit / Hyperactivity Disorder (ADHD, ADD)? _____Yes
_____No
If yes, in the past…
____Year
____2 years
____3 years
____4 years
____5 years
____6 years or more

<u>Referral Process</u>

Have you referred a child for a special education evaluation at your school in the past 3 years?
_____Yes
_____No

If Yes…

How many children did you refer for a special education evaluation in this school year? _____
In the previous school year? _____

How would you rate your satisfaction with the referral process and outcomes? Circle your response.

1 2 3 4 5 6

Very Dissatisfied Very Satisfied

Please describe your experience.

_____

_____

_____

_____

_____

_____

Referral for ADHD

Have you referred a parent to a physician, psychologist, or psychiatrist to obtain an ADHD evaluation for their child in the past 3 years? (first time)
_____No
_____Yes

If yes…

When? _____

Which type of professional? _____

What were the outcomes of this evaluation?

_____

_____

_____

Have you referred a parent to a physician, psychologist, or psychiatrist to obtain an ADHD evaluation for their child in the past 3 years? (second time)
_____No
_____Yes

If yes…

When? _____

Which type of professional? _____

What were the outcomes of this evaluation?

_____

_____

_____

How many times have you made this type of referral? _____

How many children did you refer for this type of evaluation in this school year? _____

In the previous school year? _____

(If you have referred more than 2 students for this type of evaluation please tell the interviewer that you need additional pages.)

The following portion to be completed as an interview.

Do teachers refer students for evaluations for learning and/or behavior problems?
_____ yes
_____ no

If yes, tell me about the referral process at your school for a child who is suspected of having learning and/or behavior problems.

Do parents refer their children for evaluations for learning and/or behavior problems?
_____ yes
_____ no
If yes, tell me about the referral process a parent would go through at your school for their child who is suspected of having learning and/or behavior problems.

What services are available in your school district for children diagnosed with ADHD?

How many outside sources have you read about ADHD in the past three years?
_____

Where did you learn or get information about ADHD? Please list the specific names of the sources (i.e. magazine articles, journals, professional development programs, etc.).

_____

_____

_____

Do you believe that you could benefit from additional training in the area of ADHD? _____ If yes, what kind of training would you find most beneficial?

_____

_____

_____

APPENDIX B

CASE VIGNETTES

Case 1

Billy is an 8-year-old boy who is working on grade level with no known deficits in academic achievement. He has a B+ average and is working on grade level in his academic subjects (reading, writing, math). Behaviorally, his teacher reports that he frequently gets out of his seat, talks to his peers, and speaks without raising his hand. At times he can pay attention to hands on math activities or play games with classmates for extended periods of time and at other times he quickly loses interest in activities leaving them incomplete or unfinished. He often loses or misplaces homework assignments, he becomes easily frustrated when an assignment is difficult, and he easily forgets materials he needs to do class work and homework. His teacher is undecided about whether or not to make a special education referral. What would you recommend his teacher do?

Case 2

Joey is an 8-year-old boy who is having behavior problems at school. He has a D average and is working below grade level in his academic subjects (reading, writing, and math). Behaviorally, his teacher reports that he frequently gets out of his seat, talks to his peers, and speaks without raising his hand. At times he can pay attention to activities for extended periods of time and at other times he quickly loses interest in activities leaving them incomplete or unfinished. He often loses or misplaces homework assignments, he becomes easily frustrated when an assignment is difficult, and he easily forgets materials he needs to do class work and homework. His teacher is undecided about whether or not to make a special education referral. What would you recommend his teacher do?

APPENDIX C

ADHD SYMPTOMS AND NON-ADHD SYMPTOMS

Behaviors that would be expected to be observed in a student with ADHD from the *DSM-IV-TR*

1. Fails to give attention to detail
2. Difficulty sustaining attention to tasks (for example, homework, class work, listening to a speaker) or leisure activities (for example playing games, watching television)
3. Fails to finish tasks
4. Has difficulty organizing tasks and activities
5. Avoids engaging in tasks that require sustained mental effort
6. Becomes easily distracted by extraneous stimuli
7. Is forgetful in daily activities
8. Fidgets with hands or feet
9. Leaves seat in situations in which remaining seated is expected
10. Runs around the room or climbs on furniture
11. Talks excessively
12. Has difficulty waiting for a turn
13. Does not seem to listen when spoken to directly
14. Often loses things necessary for daily activities
15. Often has difficulty playing quietly
16. Is “on the go” or acts as if “driven by a motor”
17. Blurts out answers before questions have been completed
18. Interrupts others

Behaviors that are not part of *DSM-IV-TR* symptoms of ADHD

1. Talks back to adults
2. Is unable to get along with peers
3. Is physically aggressive with peers
4. Often deliberately annoys others
5. Often blames others for his/her mistakes or behavior
6. Mood swings
7. Irritability
8. Appears clumsy or has poor motor skills
9. Fails to do homework
10. Poor social skills
11. Lack of motivation to do school work
12. Poor academic performance

APPENDIX D

TEACHER SENSE OF SELF-EFFICACY SCALE – LONG FORM*

(Tschannen-Moran & Woolfolk Hoy, 2001)

Directions: This questionnaire is designed to help us gain a better understanding of the kinds of things that create difficulties for teachers in their school activities. Please indicate your opinion about each of the statements below. Your answers are confidential.

1. How much can you do to get through to the most difficult students?

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Nothing		Very Little		Some		Quite A Bit		A Great Deal

2. How much can you do to help your students think critically?

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Nothing		Very Little		Some		Quite A Bit		A Great Deal

3. How much can you do to control disruptive behavior in the classroom?

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Nothing		Very Little		Some		Quite A Bit		A Great Deal

4. How much can you do to motivate students who show low interest in school work?

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Nothing		Very Little		Some		Quite A Bit		A Great Deal

5. To what extent can you make your expectations clear about student behavior?

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Nothing		Very Little		Some		Quite A Bit		A Great Deal

6. How much can you do to get students to believe they can do well in school work?

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Nothing		Very Little		Some		Quite A Bit		A Great Deal

7. How well can you respond to difficult questions from your students?

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Nothing		Very Little		Some		Quite A Bit		A Great Deal

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8. How well can you establish routines to keep activities running smoothly?

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Nothing		Very Little		Some		Quite A Bit		A Great Deal

9. How much can you do to help your students value learning?

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Nothing		Very Little		Some		Quite A Bit		A Great Deal

10. How much can you gauge student comprehension of what you have taught?

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Nothing		Very Little		Some		Quite A Bit		A Great Deal

11. To what extent can you craft good questions for your students?

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Nothing		Very Little		Some		Quite A Bit		A Great Deal

12. How much can you do to foster student creativity?

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Nothing		Very Little		Some		Quite A Bit		A Great Deal

13. How much can you do to get children to follow classroom rules?

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Nothing		Very Little		Some		Quite A Bit		A Great Deal

14. How much can you do to improve the understanding of a student who is failing?

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Nothing		Very Little		Some		Quite A Bit		A Great Deal

15. How much can you do to calm a student who is disruptive or noisy?

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Nothing		Very Little		Some		Quite A Bit		A Great Deal

16. How well can you establish a classroom management system with each group of students?

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Nothing		Very Little		Some		Quite A Bit		A Great Deal

17. How much can you do to adjust your lessons to the proper level for individual students?

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Nothing		Very Little		Some		Quite A Bit		A Great Deal

18. How much can you use a variety of assessment strategies?

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Nothing		Very Little		Some		Quite A Bit		A Great Deal

19. How well can you keep a few problem students form ruining an entire lesson?

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Nothing		Very Little		Some		Quite A Bit		A Great Deal

20. To what extent can you provide an alternative explanation or example when students are confused?

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Nothing		Very Little		Some		Quite A Bit		A Great Deal

21. How well can you respond to defiant students?

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Nothing		Very Little		Some		Quite A Bit		A Great Deal

22. How much can you assist families in helping their children do well in school?

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Nothing		Very Little		Some		Quite A Bit		A Great Deal

23. How well can you implement alternative strategies in your classroom?

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Nothing		Very Little		Some		Quite A Bit		A Great Deal

24. How well can you provide appropriate challenges for very capable students?

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Nothing		Very Little		Some		Quite A Bit		A Great Deal

APPENDIX E

ADDITIONAL EFFICACY QUESTIONS RELATED

TO TEACHING STUDENTS WITH ADHD

Directions: These questions are designed to help us gain a better understanding of the kinds of things that create difficulties for teachers when working with students with ADHD. Please indicate your opinion by answering the following questions.

1. How confident are you that you can re-direct a student who is having difficulty paying attention to a lesson?

1 2 3 4 5 6 7 8
not confident somewhat confident very confident

2. How confident are you that you can re-direct a student who is having difficulty staying in his seat and is talking frequently?

1 2 3 4 5 6 7 8
not confident somewhat confident very confident

3. How confident are you that you can share information with parents who have questions about ADHD?

1 2 3 4 5 6 7 8
not confident somewhat confident very confident

4. How confident are you that you can manage the behavior of a child diagnosed with ADHD?

1 2 3 4 5 6 7 8
not confident somewhat confident very confident

5. How confident are you that you can modify the presentation of academic content for a student diagnosed with ADHD so that the student will benefit from the instruction?

1 2 3 4 5 6 7 8
not confident somewhat confident very confident

6. How confident are you that you can effectively teach a child diagnosed with ADHD?

1 2 3 4 5 6 7 8
not confident somewhat confident very confident

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PUBLICATIONS

Macey, K. D. (2003). A Review of the Conners' Adult ADHD Rating Scale. *Archives of Clinical Neuropsychology, 18,* 431-437.

DeGeorge, K.L. (1998). Friendship and stories: Using children's literature to teach friendship skills to children with learning disabilities. *Intervention in School and Clinic, 33,* 157-162.

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