

2014

Attention-Deficit Hyperactivity Disorder: Teachers' Perceptions and Acceptability of Interventions

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Philadelphia College of Osteopathic Medicine

Department of Psychology

ATTENTION-DEFICIT HYPERACTIVITY DISORDER:
TEACHERS' PERCEPTIONS AND ACCEPTABILITY OF INTERVENTIONS

Betti Stanco Vitanza

Submitted in Partial Fulfillment of the Requirements for the Degree of

Doctor of Psychology

August 2014

**PHILADELPHIA COLLEGE OF OSTEOPATHIC MEDICINE
DEPARTMENT OF PSYCHOLOGY**

Dissertation Approval

This is to certify that the thesis presented to us by Betti Stanco Vitanza on the Second day of June, 2014, in partial fulfillment of the requirements for the degree of Doctor of Psychology, has been examined and is acceptable in both scholarship and literary quality.

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Acknowledgements

I would like to thank the following people for their guidance and support:

My esteemed Committee members: Dr. Kate Tresco, Dr. George McCloskey, and Dr. Jill Henriksen. Thank you for your mentorship throughout the years. Your accomplishments have inspired me and provided me with a vision that has helped me achieve my goals.

My Cohort: Thank you, Trish, for being so helpful. You are a wonderful friend.

My loving family: Mom, Dad, AJ, Roland, and Gigi. Thank you for your unconditional love, support, and patience.

“VENI, VIDI, VICI” ~ Julius Caesar

Abstract

The purpose of this study was to examine elementary and middle school teachers' perceptions of attention deficit/ hyperactivity disorder (ADHD) and acceptability of interventions commonly used in the treatment of ADHD. Eighty-one teachers from three elementary schools and one middle school participated in this study by completing an online survey containing the Perception of Attention Deficit Disorder Survey (PADDS) and Intervention Acceptability Survey (IAS). Results indicate that teachers feel adequately trained on the topic of ADHD and feel confident when implementing interventions for students with ADHD; however, teachers would like to receive additional in-service training on the topic of ADHD. Teachers perceive students with hyperactive-impulsive symptoms of ADHD to be more difficult to manage in comparison to students with predominantly inattentive symptoms of ADHD. Medication and positive behavioral interventions were viewed as equally favorable in the treatment of the inattentive symptoms of ADHD by teachers; however, medication was rated more favorably in the treatment of the combined (inattentive and hyperactive-impulsive) symptoms of ADHD. Large class size and lack of staff support were identified as barriers in intervention implementation, with large class size being identified as the greatest barrier. Based on this information, school psychologists and other service providers who suggest interventions for teachers to use for students with ADHD need to consider the factors that contribute to teachers' perceptions and acceptability of interventions.

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TEACHERS' PERCEPTIONS OF ADHD

Chapter 1: Introduction

Attention deficit hyperactivity disorder (ADHD) is the most common neurobehavioral disorder in children and is characterized by developmentally inappropriate levels of inattention and hyperactivity resulting in functional impairment in multiple settings, such as school and home (American Psychiatric Association, 2013). Approximately 3% to 10% of school-aged children have received a medical diagnosis of ADHD, implying that at least one child in an average- sized classroom will have the disorder, which occurs more frequently in boys (13.2%) than girls (5.6%); (Centers for Disease Control [CDC], 2010). ADHD is typically first diagnosed in childhood; however, it is considered a chronic condition that may last into adulthood. Children with ADHD usually have difficulty paying attention and controlling impulsive behaviors or may be overly active (5th ed., *DSM-5*; American Psychiatric Association, 2013).

There are three different types of ADHD, depending on which symptoms are most prevalent in the individual (5th ed., *DSM-5*; American Psychiatric Association). Individuals with a Predominantly Inattentive Presentation of ADHD may have difficulty paying attention to details, organizing and finishing tasks tasks, or following instructions. Those with a Predominantly Hyperactive-Impulsive Presentation may fidget and talk excessively, feel restless, interrupt others, grab things from others, and have difficulty waiting their turn and remaining seated. In a Combined Presentation of ADHD, symptoms of the previously mentioned two types are equally present in the individual.

Statement of the Problem

ADHD is characterized by clinical impairment in attention, activity level, and impulse control that can cause social, behavioral, and academic problems in school (Barkley, 2006). Indications of ADHD are most prominent during the elementary grades and have strong implications for academic functioning (Raggi & Chronis, 2006). Children with ADHD may exhibit a variety of school-related problems, such as difficulty following directions, listening to classroom instruction, completing assignments, and remaining seated (DuPaul & Stoner, 2003). ADHD is often comorbid with other disorders that cause additional learning and psychosocial difficulties (Hall & Gushee, 2000). More specifically, children with ADHD may also experience specific learning disabilities, conduct disorder, oppositional defiant disorder, anxiety, and depression (Barkley, 1997). Children with ADHD may also demonstrate poor peer relations, which may be accompanied by other associated problems, such as low self-esteem, that may further impact academic performance (Barkley, 2006). ADHD behavior puts children at risk for educational failure, developing substance use disorders, poor vocational experience, peer rejection, oppositional behavior, and delinquency (DuPaul & Eckert, 1997).

Although ADHD is typically identified during childhood, symptoms that persist through adolescence and adulthood represent a major mental- health problem, with approximately 1 to 2 million American adults affected by this disorder (Wiggins, Singh, Getz, & Hutchins, 1999). The number of children diagnosed with ADHD is likely to continue to increase, as data from the Centers for Disease Control indicate a steady increase over the last decade (CDC, 2010). The most current data suggest that

an estimated 6.4 million American children aged 4 through 17 years have received an ADHD diagnosis at some point in their lives, a 16% increase since 2007 and a 41% rise in the past decade. In addition, changes in the diagnostic criteria for ADHD found in the *DSM-5* (2013) include an increase in age from 7 to 12 years for symptoms to become apparent; this change is likely to result in increased prevalence rates (American Psychiatric Association). Approximately two thirds of those with a current diagnosis receive prescriptions for stimulants, such as Ritalin or Adderall, which can improve the functioning of those with this disorder, but can also result in undesirable side effects (CDC, 2010).

Although the root causes of ADHD are neurobiological, environmental conditions and triggers may contribute to the expression of ADHD symptoms (Fowler, 2010). The role of environmental factors in reducing the probability of ADHD-related behaviors is of high importance to service delivery (DuPaul & Stoner, 2003). In fact, the development of classroom interventions for ADHD is enhanced by determining the function of the ADHD-related behaviors and implementing strategies that are directly linked to behavioral function. Children with ADHD need skills that will enable them to meet behavioral expectations and produce academic work more effectively and consistently.

Currently, no cure exists for ADHD; however, performance problems can and should be managed in the classroom since this is where children spend a considerable amount of their time learning and developing life skills. Medication and behavioral interventions are considered the most effective approaches for treating the school problems experienced by children with ADHD (DuPaul & Stoner, 2003). Teachers

are often the first to notice symptoms of ADHD. As a result, the need is tremendous to understand teachers' perceptions of ADHD and their thoughts regarding various interventions used to treat this disorder within the context of the classroom. In working effectively with students with ADHD, many teacher factors must first be considered in order to more fully support the personal, social, and academic development of students with ADHD. Given the risk for poor outcomes, considering the need for training, resources, and effective strategies for teachers is crucial to improving academic performance and managing behaviors in the classroom for students with ADHD (Barkley, 2006). Teachers are an integral part of this process, and their perception and acceptability are crucial to ensuring effective implementation of strategies in the classroom. A review of the literature suggests that several variables influence teachers' perceptions of ADHD and acceptability of ADHD interventions, and that further research is needed to explore these salient variables that should be considered when aiming to promote successful outcomes in students.

Purpose of the Study

The purpose of this study was to extend previous research by examining elementary and middle-school teachers' perceptions of ADHD and acceptability ratings of various interventions used to manage the academic and behavioral needs of children diagnosed with ADHD. In working effectively with students diagnosed with ADHD, many factors must be considered. For instance, understanding teachers' perceptions of ADHD will shed light on their perceptions of the etiology of, diagnosis of, and prognosis for ADHD. Furthermore, understanding their perceptions of

ADHD and its treatment course may also provide insight toward acceptability of interventions (Power, Hess, & Bennett, 1995).

The first goal of this study was to determine teachers' perceptions of ADHD. Identifying teachers' perceptions of ADHD can provide data regarding teachers' beliefs and the information teachers are lacking so that pre-service or in-service programs can be re-evaluated. A second goal of this study was to investigate teachers' ratings of various interventions for ADHD. Acceptability ratings will indicate the interventions teachers consider suitable or inappropriate for classroom use. The third goal of this study was to utilize acceptability ratings to determine the barriers that exist and play a role in teachers' decisions not to implement certain interventions. Understanding what teachers perceive to be problematic is helpful since several interventions that have been demonstrated to work effectively can be implemented by teachers but may have low acceptability ratings resulting from various factors, such as lack of time to implement, lack of teacher training, and large class size. The fourth goal of this study was to examine the relationship between teachers' perceptions of ADHD and intervention acceptability. The fifth and final goal of this study was to determine the demographic factors, such as years of teaching experience, level of education, and amount of training on the topic of ADHD, that are related to teachers' perceptions and their acceptability of interventions. This information is important for the purpose of planning effective teacher-training programs. Also, school psychologists, educators, and school administrators can utilize this information to gain a more comprehensive understanding of intervention and teacher variables, along with what influences treatment adherence, integrity, and

efficacy, in order to help teachers better serve students with ADHD. Most importantly, school psychologists can design and help teachers implement interventions for ADHD after identifying teachers' perception of ADHD and understanding the reasons they are more willing to use certain interventions as compared to others.

Research Questions

In sum, this study attempted to answer the following research questions:

1. What is the perception of general-education and special-education elementary and middle-school teachers with regard to the symptoms of ADHD? Do teachers view the inattentive and hyperactive/impulsive symptoms of ADHD as more difficult to manage than the inattentive symptoms alone?
2. What are some of the perceived barriers that teachers face in implementing interventions for students with ADHD?
3. How well trained do teachers perceive themselves to be on the topics of ADHD and interventions for ADHD?
4. Are teachers' perceptions of ADHD influenced by a student's gender?
5. Are teacher variables, such as training level, associated with confidence levels when working with students with ADHD? Do these teacher variables affect their perceptions of ADHD?
6. What are teachers' acceptability ratings of various interventions for ADHD?
7. Are medication and medication monitoring viewed as a more acceptable intervention for students with inattentive and hyperactive-impulsive symptoms of ADHD as compared to the inattentive symptoms alone?

Chapter 2: Review of the Literature

This review of the literature begins by presenting background information pertaining to ADHD, followed by a discussion of interventions used in the treatment of ADHD. Next, information regarding teachers' perceptions of ADHD and relation to knowledge is presented. Finally, information regarding teachers' acceptability of interventions for ADHD is discussed in conjunction with barriers to implementation.

Possible Causes of ADHD

ADHD symptomatology may result from a variety of factors and mechanisms (Barkley, 2006). Establishing causality when examining the etiology of ADHD is difficult; therefore, many of the factors discussed in research studies appear to be correlational in nature (DuPaul & Stoner, 2003). Neurobiological factors, hereditary influences, and environmental toxins are discussed in the following sections.

Neurobiological Factors. Neurobiological factors have received the most attention when examining the etiological factors of ADHD. Barkley (2006) postulated that structural brain damage contributed to attentional and behavioral control difficulties. Magnetic resonance imaging (MRI) studies have indicated abnormalities in the fronto-striatal networks of the brain, namely, the prefrontal cortex, in individuals with ADHD (Tannock, 1998). The prefrontal cortex is thought to play an important role in the inhibition of behavior and mediation of responses to environmental stimuli. Furthermore, the neurotransmitters, dopamine and norepinephrine, are thought to be less present in the frontal cortex of an individual with ADHD, which may also contribute to ADHD symptomatology (Barkley, 2006). Tannock (1998) also indicated that the neurobiological differences observed in

individuals with ADHD are the result of abnormal brain development caused by genetic, hormonal, and environmental factors.

Genetic Factors. Genetic factors have also been proposed as a probable cause for ADHD (Barkley, 2006). ADHD is considered a highly heritable disorder (Faraone, 2000). The incidence of ADHD symptoms is higher among first-degree biological relatives as compared to adoptive parents and siblings for children with ADHD. In twin studies, the probability of one twin having ADHD is significantly higher among monozygotic twins that are genetically identical compared to dizygotic twins that share only 50% of their genes (Levy, Hay, McStephen, Wood, & Waldman, 1997). Heritability estimates for ADHD are among the highest for any emotional or behavioral disorder (Barkley, 2006). Several investigators have indicated that heritability estimates range anywhere from .75 to .98 and that a small portion of systematic variance is accounted for by non-shared environmental factors (Tannock, 1998; Thapar, Holmes, Poulton, & Harrington, 1999). These studies all support the strong influence of genetics in the development of ADHD.

Environmental Toxins. A variety of environmental toxins has also been suggested as a possible cause for ADHD. Barkley (1998) has discussed the role of nutritional factors, lead poisoning, and prenatal exposure to drugs or alcohol. Studies examining the role of food additives, such as artificial food dyes, on hyperactivity have indicated that dietary factors play a minimal role in the development of ADHD. Currently, some evidence indicates that lead levels are minimally associated with inattention and hyperactivity; however, children with ADHD often do not demonstrate significantly elevated lead levels in their blood (Jensen, 2000). More

importantly, studies have demonstrated that cigarette smoking and/or alcohol use during pregnancy is greater in mothers of children with ADHD as compared to mothers of children in the control group (Mick, Biederman, Faraone, Sayer, & Kleinman, 2002).

Summary. At present, no known “cause” of ADHD exists. Instead, research studies have proposed several factors or correlational variables that may be related to the development of ADHD. The most important conclusion from these studies is that multiple neurobiological factors may predispose children to exhibiting higher rates of inattention, hyperactivity, and impulsivity. Hereditary influence may alter brain functioning, particularly in the frontostriatal system, which may genetically predispose children to exhibit ADHD symptomatology at a higher rate than children who do not present with such aberrations. Furthermore, twin studies show strong support for genetic influence in the etiology of ADHD. Although some environmental toxins, such as lead and food additives, has demonstrated a negligible impact on the development of ADHD, prenatal teratogens, such as alcohol and cigarettes, have shown to be more strongly correlated with ADHD.

Diagnostic Criteria of ADHD

Multimodal Assessment. Determining whether a child has ADHD entails a comprehensive, multi-step process. No single test can diagnose ADHD, and ruling out other problems (such as learning disabilities, anxiety, and depression) that may present with similar symptoms is important. Also important is ruling out poor academic instruction; neurological, sensory, or motor impairment; and an intellectual disability or emotional disturbance as causes for a child's inattention, hyperactivity,

and impulsivity (Barkley, 1990). A multimodal approach utilizing information obtained from multiple sources, including parents, teachers, and clinicians is recommended (DuPaul & Stoner, 2003). A behavioral assessment approach is typically employed in the evaluation of ADHD where multiple methods of data collection are employed across informants and settings. For example, information regarding a child's behavior is typically collected from first-hand observations of his or her performance across multiple settings and under variant task conditions in conjunction with interviews and questionnaires completed by the child's parents and teachers.

School psychologists have direct access to these sources of information and data (e.g., teachers, observations of child behavior in the school setting). In fact, problems with attention and behavioral control are the most common reasons for referral to school psychologists. Children with ADHD may be eligible for special-education services under the "Other Health Impairment" category of the Individuals with Disabilities Education Act (IDEA); therefore, school psychologists may be called upon to determine whether referred children qualify for services under this category. In addition, ADHD is recognized as a handicapping condition under Section 504 of the Rehabilitation Act of 1973, an anti-discriminatory law mandating public schools to provide accommodations for students with disabilities, including ADHD, even if they are not eligible for services under IDEA.

DSM-5. The American Psychiatric Association's *DSM-5* is used by mental-health professionals to help diagnose ADHD. The *DSM-5* was released in May 2013 and replaces the previous version, the text revision of the fourth edition (*DSM-IV-TR*;

American Psychiatric Association, 2000). This diagnostic standard helps ensure that people are appropriately diagnosed and treated for ADHD. In addition, the use of *DSM* criteria helps structure assessment in a standardized fashion, which may increase inter-professional agreement regarding an ADHD diagnosis (DuPaul & Stoner, 2003). The *DSM* approach also presents with several limitations, however. For example, the *DSM* was developed in the context of the medical model which implies that the problem exists within the child. This characterization diminishes the role or importance of environmental variables that may often serve as triggers to children with ADHD. Furthermore, the use of a psychiatric classification system and diagnostic labels may compromise a child's self-esteem and make him or her feel disordered (DuPaul & Stoner, 2003).

The American Psychiatric Association (2013) identified several symptoms of inattention, hyperactivity, and impulsivity in the *DSM-5*. For children up to age 16 years, six or more of the symptoms listed must be present for at least 6 months to a degree that is considered disruptive and developmentally inappropriate. According to the *DSM-5* (2013), symptoms of inattention include failing to give close attention to details or making careless mistakes in schoolwork, at work, or with other activities; trouble holding attention on tasks or play activities; not listening when spoken to directly; not following through on instructions and failing to finish schoolwork, chores, or duties in the workplace (e.g., loses focus, side-tracked); trouble organizing tasks and activities; avoiding, disliking, or being reluctant to do tasks that require mental effort over a long period of time, such as schoolwork or homework; losing supplies necessary for tasks and activities (e.g., school materials, pencils, books,

tools, wallets, keys, paperwork, eyeglasses, mobile telephones); being easily distracted; and being forgetful in daily activities. Symptoms of hyperactivity and impulsivity include fidgeting with or tapping hands or feet, or squirming in seat; leaving seat in situations when remaining seated is expected; running about or climbing in situations where doing so is not appropriate (adolescents or adults may be limited to feeling restless); being unable to play or take part in leisure activities quietly; being "on the go" or acting as if "driven by a motor;" talking excessively; blurting out an answer before a question has been completed; having difficulty waiting his or her turn; and interrupting or intruding on others (e.g., butting into conversations or games). In addition, several symptoms must be present before age 12 years that cause significant impairment of functioning in two or more settings (e.g. home, school). Based on the types of symptoms, three presentations of ADHD may occur: Predominantly Inattentive Presentation; Predominantly Hyperactive-Impulsive Presentation; and Combined Presentation in which symptom criteria of inattention and hyperactivity-impulsivity are both met (5th ed., *DSM-5*; American Psychiatric Association, 2013).

Difficulties Associated with ADHD

Comorbid Conditions. Children with ADHD experience several difficulties, including academic underachievement and performance problems, internalizing problems, executive dysfunction, defiance, aggression, and poor peer relationships (Barkley, 1990; DuPaul & Stoner, 2003). Jensen, Martin, and Cantwell (1997) suggested that oppositional defiant disorder is the most common codiagnosis with ADHD, occurring in approximately 40% of children diagnosed with the disorder.

Larson, Russ, Kahn and Halfon (2011) found that approximately two thirds of children with ADHD have comorbid learning disorders or other mental-health or neurodevelopmental conditions. This study found that among the sample of 5,000 children with ADHD, 33% had one comorbid disorder, 16% had two, and 18% had three or more. School and social problems, along with poor communication with parents, were significantly associated with ADHD as well. Overall, 67% of children with ADHD had at least one other mental health or neurodevelopmental disorder compared with 11% in other children. Furthermore, ADHD was associated with an elevated prevalence of learning disabilities (46% vs. 5% in other children), conduct disorder (27% vs. 2%), anxiety (18% vs. 2%), depression (14% vs. 1%), and speech problems (12% vs. 3%). Although comorbidities did not vary by age or gender, children of low socioeconomic status (SES) were 3.8 times more likely to have three or more comorbidities than children of higher SES (30% vs. 8%). Children with ADHD were also found to have higher odds of school problems (69% vs. 27%), grade repetition (29% vs. 9%), high parent aggravation scores (53% vs. 19%), low social-competence scores (43% vs. 18%), and poor parent-child communication (8% vs. 3%). Based on these results, the authors suggested that comprehensive screening for other problems that occur with ADHD is important, and treatment profiles should be tailored by comorbidity status and levels of functional impairment in home and school settings.

Academic and Intellectual Functioning. Within the classroom, students with ADHD may exhibit lower rates of on-task behavior during instructional and independent work periods. It is reported that approximately 30% of students with

ADHD are classified as learning disabled as a result of deficits in the acquisition of specific academic skills (DuPaul & Stoner, 2003). Approximately 80% of children with ADHD have been found to exhibit academic performance problems (Cantwell & Baker, 1991). Children with ADHD also are more likely to be placed in special education and to experience grade retention (Barkley, 1990; Barkley, 2006). Furthermore, chronic academic difficulty may continue into adolescence and contribute to higher rates of dropping out of school. Whether ADHD causes academic skills deficiencies or vice versa remains unclear. These disorders probably are simply correlated rather than causal.

With regard to intellectual functioning, it is estimated that children with ADHD score an average of 7 to 15 points below typical children on standardized measures of intelligence (Barkley, 2006). Possible explanations for these results include higher rates of inattention and comorbid learning disabilities among the ADHD group relative to typical children. When factoring out learning disabilities, no significant difference is apparent between the intellectual functioning of children with ADHD and typical children (Dykman & Ackerman, 1991). Kaplan, Crawford, Dewey, and Fisher (2000) suggested that intellectual functioning in children with ADHD is similar to the normal distribution in the general population, which ranges from below average to above average.

Executive Dysfunction. Barkley (1997) described children with ADHD as having more trouble doing what they know, versus knowing what to do. Children with ADHD may also experience difficulty in several areas of cognitive functioning, including tasks that require higher level problem solving and the use of organizational

skills (DuPaul & Stoner, 2003). These difficulties are thought to have a strong neuropsychological basis. Children with ADHD demonstrate insufficient use of executive functions, such as response inhibition and sustained effort. Executive functions are directive capacities that are responsible for a person's ability to engage in purposeful, organized, strategic, self-regulated, goal-directed processing of perceptions, emotions, thoughts and actions (McCloskey, Perkins & Van Divner, 2009). Executive functions are thought to be control processes involved in inhibition, self-monitoring, goal-oriented planning, flexible strategy generation, and sustaining set maintenance (Welsh & Pennington, 1988). More simply stated, executive functions are self-control functions that help people plan, organize, and complete tasks (Dawson & Guare, 2004).

The core symptoms of ADHD reflect a neuropsychological profile of impaired executive functioning that may significantly impact a child's academic and behavioral functioning (Hale, Fiorello, & Brown, 2005). Barkley (1997) described ADHD within a unifying executive function model framework, namely, as a deficit of behavioral inhibition. Behavioral inhibition refers to three interrelated processes: (a) inhibition of the initial prepotent response to an event; (b) stopping of an ongoing response, which thereby permits a delay in the decision to respond; and (c) the protection of this period of delay and the self-directed responses that occur within it from disruption by competing events and responses (interference control). According to Barkley's model, the four neuropsychological processes involved in ADHD include (a.) working memory, (b.) self-regulation of affect, (c.) internalization of speech, and (d.) reconstitution. More specifically, behavioral inhibition, working

memory, regulation of motivation, and motor control apparently are among the strongest executive-function deficits found in children with ADHD.

Mash and Barkley (2003) indicated that hindsight, forethought, sense of time, anticipatory set, persistence, flexibility, syntax, and other goal-directed behaviors may be compromised in children with ADHD. In working memory, the goals and intentions to act are retained and are formulated and used to guide the performance of goal-directed responses (Barkley, 1997). Working memory impacts several aspects of task performance in children with ADHD (Fowler, 2010). Children with ADHD were found to be less proficient in mental arithmetic and to demonstrate difficulty with information repetition, in which the incapacity to hold information in the mind creates a disability (Barkley, 1997). Similarly, delayed rule-governed behavior can lead to problem-solving difficulty in children with ADHD, as they are less likely than typical children to use organizational rules and strategies in memory tasks. Memory deficits in children with ADHD may lead to disorganization, forgetfulness, and reduced ability to manage time.

Immature self-regulation of affect, motivation, and arousal in children with ADHD may impact goal-directed behavior as a result of greater emotional expression to reactions and a reduced ability to induce motivational states (Raggi & Chronis, 2006). Drive, along with motivational and arousal states, supports goal-directed action and persistence towards that goal (Barkley, 1997). The initiation and maintenance of these goal-directed actions require the prefrontal cortex to aid in motivation and drive. Emotional self-control, objective social perspective taking, and control overdrive and stimulation are often impacted as a result of deficits in self-

directed action, including self-directed speech and self-reinforcement, which are evident when feeling frustrated, bored, angry, disappointed, or anxious. Associated features of ADHD include low frustration tolerance, temper outbursts, bossiness, stubbornness, mood lability, demoralization, dysphoria, rejection by peers, and poor self-esteem (5th ed.; *DSM-5*; American Psychiatric Association, 2013). Furthermore, the commonly noted association of ADHD with defiant or oppositional and other disruptive behaviors may in part be caused by a deficit in emotional self-regulation (Barkley, 1997).

Core Behavioral Difficulties. A strong link exists between ADHD and behavioral impairment (Sherman, Rasmussen, & Baydala, 2008). The core characteristics of ADHD (inattention, hyperactivity, impulsivity) can lead to a variety of difficulties for children in academic settings. The chronic nature of ADHD-related school issues is the cause of much frustration in teachers (Fowler, 2010). Teachers are likely to describe children with ADHD as fidgety, loud, disorganized, disruptive, careless, and messy. These students may have difficulty comprehending classroom information, have difficulty completing their homework, demonstrate poor study skills, obtain poor test grades, display troublesome behavior, and exhibit conflict with peers and teachers (Raggi & Chronis, 2006). Distractibility, inability to wait, restlessness, losing materials, or missing pieces of the whole commonly interfere with classroom performance (Fowler, 2010).

Social Performance. Children with ADHD may evidence social and emotional problems as a result of their high levels of inattention, impulsivity, and hyperactivity (Mautone et al., 2009). Children with ADHD often have difficulty

initiating and maintaining friendships (Stormont, 2001). They also may engage in behaviors that are considered troublemaking and aggressive and that are likely to be perceived by peers as negative (Kos, Richdale, & Hay, 2006). The most common social deficits associated with this disorder include inappropriate attempts to join peer activities (e.g., barging in), poor conversational behaviors (e.g., interrupting, not listening to others), employing aggressive solutions to interpersonal problems, emotional reactivity, and loss of control or temper (Guevremont, 1990). Children with ADHD also have difficulty interpreting social cues and may act inappropriately as a result (Atkinson, Robinson, & Shute, 1997). The rate of peer rejection is higher for children with ADHD than for typical children, and they typically perceive their peers to provide less than adequate social support and may experience low self-esteem and feel lonely and sad about not fitting in (Chipkala-Gaffin, 1998; Demaray & Elliott, 2001). Martin, Pescosolido, Olafsdottir, and McLeod (2007) conducted a study examining the stigma associated with ADHD and found that ADHD had the highest social rejection rate as compared to depression, normal troubles, and physical illness. In a similar study, Law, Sinclair, and Fraser (2007) asked child participants to read vignettes about a same-aged peer demonstrating symptoms of ADHD and found that participants held predominantly negative attitudes toward the described peer and reported that they were unwilling to engage with the peer in social, academic, and physical activities. Approximately 70% of children with ADHD experience unreciprocated friendships with peers (Gresham, MacMillan, Bocian, Ward, & Forness, 1998). Furthermore, children with ADHD tend to prefer the company of

other children with similar behaviors, thus increasing the likelihood of disruptive behaviors (DuPaul & Stoner, 2003).

Language and Motor Skills. Children with ADHD are also more likely to experience difficulties in the area of speech and language development (DuPaul & Stoner, 2003). Expressive language difficulties, such as disorganized, dysfluent speech and misarticulations, are not uncommon. Fine- and gross-motor-coordination difficulties also appear to be associated with ADHD and are consistent with teacher reports of students with ADHD experiencing problems with handwriting and penmanship (Barkley, 2006). Motor coordination difficulties and motor overflow movements in children with ADHD may be indicative of poor motor inhibition.

Summary. Overall, children with ADHD are at risk for several difficulties related to academic and cognitive functioning. A large percentage of these children may experience problems with socialization, problem solving, organizational skills, expressive language, and/or fine- and gross-motor skills. Not all children with ADHD experience these difficulties; however, when these difficulties are present, they may significantly impact a child's risk for scholastic underachievement. Furthermore, children with ADHD do not demonstrate lower intellectual functioning than non-diagnosed peers when factoring out comorbid learning disabilities.

Interventions for ADHD

ADHD interventions have a powerful impact because of the severity of symptoms and comorbid conditions that are sensitive to environmental variables (Pffner, DuPaul, & Barkley, 2006). Because ADHD results in deficits in behavioral and academic performance, the context in which interventions are developed is as

important as the intervention itself (Miranda, Presentacion, & Soriano, 2002). Given the risk of poor academic outcomes, interventions are needed to address academic production difficulties of children diagnosed with ADHD. These students are in need of skills that would enable them to meet classroom expectations and produce more effectively and more consistently.

Medication. Medication is often an essential part of ADHD treatment and may be used in isolation or in combination with behavioral interventions. Central nervous system (CNS) stimulants are the most commonly prescribed class of medication to manage ADHD symptoms (Golden, 2009). CNS stimulants function to boost and balance neurotransmitters and may help improve the signs and symptoms of inattention and hyperactivity, sometimes dramatically. Examples include methylphenidate (Concerta, Metadate, Ritalin), dextroamphetamine (Dexedrine), dextroamphetamine-amphetamine (Adderall XR), and lisdexamfetamine (Vyvanse). Among these, methylphenidate is the oldest and most frequently prescribed CNS stimulant medication for ADHD management. Stimulant medication is often the treatment of choice for children with ADHD, as it has demonstrated improvement in the areas of behavioral inhibition and executive functions (Barkley, 2006; Miranda et al., 2002).

Other medications used in the treatment of ADHD include atomoxetine (Strattera) and antidepressants, such as bupropion (Wellbutrin) and desipramine (Norpramin). Clonidine (Catapres) and guanfacine (Intuniv, Tenex) have also been shown to be effective. Atomoxetine and antidepressants work more slowly than stimulants and may take several weeks to take full effect; however, some consider

them good options since some children cannot take stimulants because of health problems or if stimulants cause severe/adverse side effects, such as loss of appetite, insomnia, tachycardia, and irritability (Huang & Tsai, 2011). Sometimes several different medications or dosages must be tried before finding one that works for a particular child.

Much of the treatment literature for ADHD has focused on stimulant medications; however, behavioral interventions are often still needed since much of the impairment associated with ADHD (i.e., academic impairment) is not fully addressed by medications alone (Fabiano et al., 2007). Investigators are even discovering some areas of academic functioning, such as homework completion, that psychosocial intervention can treat more effectively than can medication, (Langberg et al., 2010). Although medications impact attention and behavior to some degree, they do not increase a child's development of the skills needed to produce effectively in academic settings (Raggi & Chronis, 2006). This limitation indicates the need to develop psychosocial interventions involving parents and the school system in order to address skill development that would produce long-term benefits. Similarly, Barkley (2006) indicated that the use of psychopharmacology alone does not provide an effective delivery system, maintain long-lasting effects, or account for the diverse needs of children with ADHD.

Multimodal Treatment. The MTA Cooperative Group (1999) evaluated the leading treatments for ADHD, including behavioral therapy, medication, and the combination of the two. Results demonstrated that the best treatment outcomes were achieved with a combination of medication and behavior therapy. According to this

study, combined treatment was considered the most effective treatment when compared to medication alone and behavioral therapy alone in the reduction of ADHD symptomatology. Furthermore, combined treatment was also the most effective treatment in reducing associated features of ADHD, such as anxiety, defiance, aggression, and parent-child relationships. Overall, a multimodal treatment program should be implemented for optimal symptom reduction in ADHD (Jensen et al., 2007; Miranda et al., 2007).

School-based Interventions. Children diagnosed with ADHD are likely to experience academic and social-learning difficulties throughout their school-age years. ADHD is often a serious concern that results in difficult-to-manage classroom behavior, since behaviors associated with the disorder frequently interfere with classroom learning and socially acceptable behavior. The purpose of this following section is to discuss classroom-based strategies for managing the behaviors of children diagnosed with ADHD, as well as for facilitating the important classroom functions of teaching and learning where these children are involved (DuPaul & Stoner, 2003).

General considerations. DuPaul and Stoner (2003) provided several assumptions or guidelines that drive the selection of appropriate interventions for ADHD. First, the development and evaluation of interventions for ADHD should be empirically based, and treatments should be selected based on their demonstrated efficacy. Second, the needs of the child are critical in the selection of intervention strategies, and treatment goals are relative to those specific needs. Third, the responsibilities of those involved in the selection and implementation of the

intervention need to be delineated clearly in order to ensure treatment integrity. Fourth, the focus of treatment should be on increasing appropriate behavior, rather than simply on decreasing disruptive behavior. Finally, evaluation of intervention strategies should be ongoing since each child's response to intervention is presumed to be unique.

Intervention procedures based on principles of human behavior have a well-documented history of effectiveness in assisting children's learning and behavioral difficulties in the classroom setting by preventing and managing behavior through antecedent manipulations and environmental arrangements. These strategies have been successful in reducing disruptive, off-task behavior and increasing academic production as a result of capturing the child's attention through the motivational value of the task at hand (DuPaul & Stoner, 2003). Functional assessments of behavior in individual children with ADHD can facilitate treatment planning by revealing specific antecedent and consequent events that impact a child's academic and social functioning and that can be manipulated in order to alter that functioning (Pfiffner et al., 2006).

DuPaul and Stoner (2003) also suggested that several issues should be considered when designing behaviorally based interventions for children experiencing classroom difficulties related to ADHD: (a) Completion of a thorough assessment of the specific presenting problems is critical in order to accurately guide the selection of intervention components. (b) Initial phases of intervention should incorporate contingencies delivered in a continuous manner, since children with ADHD often require frequent and specific feedback in order to increase their level of classroom

performance. Positive reinforcement of target behaviors should occur immediately following those behaviors. (c) Since exclusive reliance on reinforcement may distract the child from the task at hand, positive reinforcement should be coupled with mild negative consequences and redirection toward appropriate task behavior. This should be delivered in a brief, calm, and quiet manner while establishing eye contact with the child. (d) Initial task instructions should involve only a few steps, and lengthier tasks and assignments should be reduced and/or broken down into smaller, more manageable units. Repetitive material should be avoided, and materials should be novel and interesting in order to avoid boredom or exacerbation of attentional difficulties. (e) Academic performance should be preferred as targets of intervention as compared with specific task-related behaviors since this increases teacher monitoring of student outcomes as well as the attention to the organizational and academic skills necessary for independent learning that are incompatible with inattentive and disruptive behaviors. (f) Preferred activities (e.g., computer time) should be used as reinforcers more often than concrete rewards (e.g., edibles). For example, access to a preferred activity may be contingent upon completing an assignment in a less preferred subject area. Reinforcers also should be varied frequently in order to prevent reinforcer satiation or disinterest. (g) The teacher and the child should review a list of possible classroom privileges prior to beginning an academic work period so that the child can choose what he or she is working towards. (h) Intervention integrity and fidelity require close monitoring and evaluation and serve as the basis for making changes in program components and determining

whether additional teacher training and support in implementing classroom interventions are needed.

Contingency management procedures. The use of positive reinforcement of appropriate academic and social behavior is a critical part of classroom-based interventions for ADHD that has been shown to enhance classroom behavior. Sulzer-Azaroff and Mayer (1991) defined a positive reinforcer as an event, condition, or stimulus that increases the future likelihood of an action or behavior that it follows. Behavioral-management strategies based on positive reinforcement may include the use of contingency contracting, positive reinforcement coupled with penalties or redirection consistent with problematic behavior, and the use of home-based contingencies that influence school behavior (DuPaul & Stoner, 2003). More specifically, token reinforcement, contingency contracting, response cost, and time out from positive reinforcement are considered effective classroom interventions for children with ADHD.

Token reinforcement. Children with ADHD typically require frequent and powerful reinforcement, often in the form of special activities or privileges. Behavioral strategies that incorporate secondary generalized reinforcers, such as in a token economy, provide the reward immediacy and potency that children with ADHD require (DuPaul & Stoner, 2003). In a token economy system, children are able to earn tokens (e.g., points, check marks, poker chips, stickers) throughout the school day for displaying appropriate behavior or academic performance and later exchange their earnings for a reward, such as a preferred activity or privilege (Piffner et al., 2006). DuPaul and Stoner (2003) suggested the following steps be taken when

designing a school-based token economy system: (a) Classroom situations should be identified as problematic and targeted for intervention following direct observations of the child along with the completion of teacher interviews and rating scales. (b) Target behaviors are selected and typically include academic productivity or specific actions that will allow for data collection and intervention monitoring. (c) Secondary reinforcers, or tokens, are to be identified in the form of points, check marks, poker chips, stickers, etc. Younger children respond well to tangible reinforcers, such as poker chips; whereas older children and adolescents respond best to acquiring check marks or points. With preschool-aged children, the use of primary reinforcers, such as parent and teacher praise or other social attention, appear to be most effective. (d) The values of target or goal behaviors must be determined according to task difficulty and may need to be broken down into component parts in order for the child to reach a certain performance criterion and feel successful and capable of expected behaviors. (e) The teacher and child should collaboratively develop a list of privileges or activities for which tokens may be exchanged. (f) Initial criteria should be established to ensure early success in earning tokens, and the value of tokens should be taught or demonstrated to the child. (g) Tokens are exchanged for privileges or activities on at least a daily basis since they may lose their value as reinforcers if they are unable to be exchanged until after an extended period of time has passed. (h) The effectiveness of the intervention should be evaluated on an ongoing basis using multiple outcome measures. Behavioral targets may be adjusted and privileges may be altered based on evaluation results. (i) Additional procedures may be necessary to enhance the generalization of effects across time and settings.

The identification of powerful reinforcers and rewards may be achieved by interviewing children regarding the activities and rewards they are motivated to earn, as well as by observing high-rate activities the child typically engages in, such as playing with Legos or playing a computer game. Pfiffner et al. (2006) found the following to be effective reinforcers: homework passes, grab bags with toys, free time, computer or videogame privileges, extra recess time, helping the teacher, playing a game with the teacher, and running errands. However, rewards available at school may not be powerful enough to alter a child's behavior, and home-based rewards may then be considered.

Reward programs, such as token economies, can be designed for individual children or for an entire classroom. Group programs targeting all students' behaviors may be advantageous since they do not single out the child with ADHD and function to improve the behavior and academic performance of all students. In addition, involving the entire class may be effective when peer contingencies are competing for teacher contingencies (e.g., peers reinforcing disruptive behavior by laughter). Pfiffner et al. (2006) discussed the following class-wide strategies: (a) Lotteries and Auctions - popular programs in which students earn tickets for demonstrating target behaviors throughout the day and exchange them for chances in the lottery or items offered during class auctions at least once a week; (b) Team Contingencies – students are divided into competing teams and earn or lose points for their team depending on their behavior; (c) Visual Aids – cards taped to students' desks keep track of progress towards established goals; (d) Class Movies and Theme Parties – posters depicting an activity to be earned (e.g., watching a movie) are kept in the classroom, and a

record of class progress is kept to alert the students as to how close they are to earning the activity; (e) Peg System – students earn pegs in a cup if they are on task during a timed period (f) Big Deals – stickers are earned by students for exhibiting target behavior/social skills (e.g., following directions), and the class earns a group party after earning a predetermined number of stickers.

Contingency contracting. Contingency contracting is a behavioral-management technique that involves the negotiation of a contractual agreement between a child and teacher (Pffifner et al., 2006). The contract typically states the desired classroom behaviors and the consequences available contingent upon their performance. Similar to a token economy program, academic and behavioral goals are identified for the child to achieve in order to earn a preferred activity or reward. Individualized reward menus should be derived in order to ensure that rewards are highly motivating and aligned with a child's preferences. With contingency contracting, the delay between behavior completion and reinforcement is longer than that with a token economy program since direct connection occurs between target behaviors and primary contingencies, as opposed to the use of secondary reinforcers, such as tokens (DuPaul & Stoner, 2003). A contingency contracting procedure is less successful with children under the age of 6 years because of their difficulty deferring reinforcement for a longer period of time. During the initial stages of contracting, extremely high standards and a large number of goals should be avoided in order to increase the probability of the behavioral contract's success. A more preferable approach is to initially target only a few simple behaviors in order for the child to

achieve success and avoid failure. More complex and difficult goals should gradually be incorporated into the contract following the demonstration of success.

Response cost. Response cost involves the loss of a reinforcer (e.g., privilege, activity) contingent upon inappropriate behavior (Pfiffner et al., 2006). Response cost has been used in conjunction with a token economy program to manage the disruptive behavior of children with ADHD, as tokens are lost as a result of inappropriate behavior. The removal of privileges, tokens, or points contingent upon inattentive and disruptive behavior has proved beneficial when combined with reinforcement-based procedures in increasing the levels of on-task behavior, productivity, and academic accuracy in children with ADHD (DuPaul & Stoner, 2003; Tresco, Lefler & Power, 2010). Response cost can be adapted to a variety of situations and is considered a convenient and easy-to-use method. Rapport, Murphy, and Bailey (1980) studied the effects of response cost with stimulant medication on the behavior and academic performance of two hyperactive children and found that response cost procedures resulted in an increase in both on-task behavior and academic performance.

Several issues must be considered when deciding to use response cost procedures. DuPaul and Stoner (2003) suggested that response cost may result in a child's negative view of the token system since response cost is a form of punishment. They advised that the program's positive aspects be emphasized and that initial contingencies be arranged in a manner such that the child is earning more points or tokens than he or she is losing. Also, a child's point total should never fall below zero, and if zero point totals are a common occurrence, the contingencies may

need to be altered so that points are not lost for minor infractions. Special efforts should be made to continue monitoring and praising appropriate behaviors when response cost programs are in effect to avoid excessive attention to negative behavior (Pffifner et al., 2006). Similar to other punishment procedures, response cost is most effective when applied immediately and consistently (Tresco et al., 2010).

Time out. Time out is another form of mild punishment that involves restricting the child's access to positive reinforcement (DuPaul & Stoner, 2003). This procedure involves the withdrawal of positive reinforcement contingent upon inappropriate behavior (Pffifner et al., 2006). Time out is often effective for children with ADHD who display disruptive and aggressive behaviors. Examples of time out procedures that can be used in the classroom include removal of a student from the classroom to an empty "time out" room for short periods of time, removal of adult or peer attention by removing the child from the opportunity to earn reinforcement, removal of classroom materials in order to eliminate the opportunity to earn reinforcement for academic performance, and institution of a "do a task" procedure in which the child is asked to complete sheets of simple academic work in the back of the classroom.

To be effective, time out procedures should be (a) implemented only when there is a reinforcing environment to be removed from, (b) implemented immediately following an infraction, (c) applied consistently, and (d) employed for brief periods of time (e.g., 1-5 minutes) (DuPaul & Stoner, 2003). Overall, time out appears to be an effective procedure for reducing disruptive behaviors that are maintained by teacher or peer attention, but is not effective in cases when disruptive behavior is the result of

a desire to work alone since time out may reinforce such instances. Nonetheless, procedural safeguards are important to ensure time out is used in an ethical manner. In addition, if a child's behavior escalates during time out, alternative procedures may be indicated (Pfiffner et al., 2006).

Home-based Contingencies. Home-based contingency management procedures may be used as a supplement to classroom-based behavioral-change systems. Kelley (1990) described the provision of contingencies in the home that are based upon the teacher's report of the child's classroom performance. The teacher's report, or report card, lists the target behaviors and a quantifiable rating for each behavior, and is sent home on a daily basis (Pfiffner et al., 2006). A typical daily report card designed for a child with ADHD is likely to include target behaviors (e.g., participation, class work, submitted homework, interaction with other children) that are rated by the teacher on a scale from 1 to 5 (e.g., 1 = *excellent*, 5 = *very poor*) and then initialed and commented on by the teacher before it is sent home each day for parents to review. Some beneficial features of these procedures include direct teacher feedback on a daily basis regarding the child's classroom performance (DuPaul, Weyandt, & Janusis, 2011). Also, teacher-parent relationships may be strengthened as a result of ongoing communication. This frequent method of communication is preferable to quarterly report cards and parent-teacher conferences, which require a longer wait time. In addition, the parental component of these procedures prevents the problem of a restricted range of reinforcing classroom-based contingencies since parents are involved in providing reinforcement for on-task

classroom behavior (DuPaul & Stoner, 2003). For example, a positive daily report card may translate into a later bedtime, TV time, a special snack, or a new toy.

Pfiffner et al. (2006) suggested that teachers should consider the following points when tailoring daily report cards for students: (a) Important target goals should be selected along with at least two positive behaviors that the child is currently displaying so that the child will be able to earn points early on; (b) Only a few behaviors should be targeted initially to maximize the child's likelihood of success; (c) Daily ratings of each target behavior should be quantifiable and clearly and objectively defined; (d) Children should be monitored closely throughout the school day and provided feedback during every class; (e) The system for translating teacher reports into consequences at home should be clear and consistent in order for daily reports to function successfully; and (f) Involvement of parents is required in the initial stages and in the planning of the daily report card system in order to ensure their understanding and cooperation.

Home-based contingency programs offer children and parents more frequent feedback regarding classroom performance and prompt parents when to reinforce the child's behavior. Most child behavior can be targeted for intervention using a home-based contingency program, and the type and quality of reinforcers available to parents are more extensive than those available solely in the classroom, which may help motivate on-task behavior in children with ADHD. In addition, school-home collaboration may equate to less teacher time and effort than strictly classroom-based interventions and is considered an acceptable procedure by teachers who view the use of classroom rewards for only some students unfair (Pfiffner et al., 2006).

DuPaul and Stoner (2003) discussed issues that must be considered when using home-based contingency programs, as well as factors that may limit the effectiveness of such programs. For example, home-based reinforcers may be less powerful than classroom-based contingencies since children with ADHD typically respond best to immediate reinforcement. Also, classroom-based contingencies may be more directly linked to behaviors of interest. Schools also have limited methods for evaluating parental implementation of these procedures, making it difficult in accounting for implementation integrity and fidelity. Parents may also rely too heavily on material rewards, which can lose their potency over time, so they should be provided with assistance in selecting a variety of potential reinforcers that are not just material, but rather activities that are social in nature, salient to the child, and readily available. Despite these issues, when implemented correctly, home-based contingency programs serve as an effective adjunct to classroom-based reinforcement.

Self-management Interventions. One of the goals of treatment for ADHD is to enable children to develop adequate levels of self-control, or appropriate social and academic behaviors, on an independent basis with minimal environmental support (DuPaul & Stoner, 2003). This goal can be challenging, considering the multifaceted nature of ADHD. Self-management interventions for ADHD consist of strategies incorporating self-monitoring, self-reinforcement, and self-instruction; these interventions were originally created to address the impulsive and nonreflective manner in which children with ADHD approached academic tasks and social interactions (Pfiffner et al., 2006). The reasoning behind these interventions was that

children with ADHD would reduce their need for extrinsic rewards when they further developed their self-control capacities. Maintenance and generalization of gains made by children with ADHD were also thought to increase with the presence of greater self-control. These strategies are sometimes referred to as cognitive-behavioral interventions because of their nature of changing variables that are within the child, and they have become increasingly popular treatments for a variety of classroom difficulties, particularly in children with ADHD.

Self-monitoring. Self-monitoring refers to children observing and recording the occurrence of their own behaviors (DuPaul & Stoner, 2003). Zlomke and Zlomke (2003) indicated that self-monitoring is an effective technique used to improve behavior in youth with emotional or behavioral disorders. For example, a child with ADHD might be taught to recognize and record occurrences of off-task behavior during the completion of academic work. A stimulus (auditory or visual) may be used periodically during a specific time period to serve as a signal for the child to observe his or her current behavior. The child then records on a chart taped to his or her desk whether he or she was on task. Self-monitoring techniques may be used in isolation or in conjunction with other self-management strategies. When combined with self-reinforcement or external reinforcement, self-monitoring has been shown to be particularly effective in increasing attentive behaviors (DuPaul & Stoner, 2003).

Self-reinforcement. Self-reinforcement requires students to monitor their own behaviors and reinforce their own performances (DuPaul & Stoner, 2003). Children may reward themselves, typically with tokens or points, based on their self-evaluation. Training is required in order to teach children how to observe and record

their behaviors and how to determine whether they deserve a reward (Piffner et al., 2006). Self-reinforcement strategies are considered to be the most promising self-monitoring intervention when addressing ADHD-related behaviors. The goal is for positive behavioral change to be maintained despite the reduction in teacher feedback since the child is trained to monitor and reinforce his or her behavior while fading the use of an externally based contingency management program. Back-up reinforcers, such as classroom or home privileges, must be used during the fading of teacher feedback. Self-reinforcement is also considered appropriate for the treatment of ADHD when teachers and students are hesitant to use contingency management procedures.

Self-instruction. Meichenbaum and Goodman (1971) originally employed self-instruction techniques with hyperactive children and found improvements in behavior when used in combination with other procedures. Self-instruction training involves teaching a child to “stop, look, and listen” (DuPaul & Stoner, 2003). The steps involved in self-instruction training include a trainer modeling a systematic approach to task completion by stating steps aloud to the child. The child is then asked to imitate the trainer’s completion of the task by stating all of the steps aloud. Next, the child completes the task while whispering the steps. Finally, the child thinks through the task while completing the problem, as the trainer initially provides reinforcement for successfully completing the task, which eventually becomes self-initiated as the child learns to praise his or her own efforts.

Despite its appeal in helping increase levels of self-control, self-instruction training has demonstrated questionable efficacy when used in isolation as a result of

its lack of generalization beyond training sessions and onto real-life settings, such as the classroom. In addition, it remains unclear whether success demonstrated in self-instruction training is a function of cognitive training, or rather a direct result of motivational components, which would not differentiate it from simple reinforcement procedures (DuPaul & Stoner, 2003).

Overall, self-monitoring and self-reinforcement strategies are considered to be among the most promising self-management interventions; however, continued adult monitoring is necessary to encourage children's application of these skills in multiple settings. In addition, self-management programs are best used as adjuncts to teacher-administered contingency programs, such as a token economy (Pffiffer et al., 2006). In this context, self-management programs are considered simple to implement and may increase child participation and help fade token reinforcement programs used in children with academic and behavioral goals.

Social-skills training. Children with ADHD often have difficulty in the areas of interacting with peers and sustaining close friendships as a result of their difficulties with attention and impulse control (DuPaul & Stoner, 2003). More specifically, children with ADHD may enter peer activities in a disruptive fashion that may lead their peers to become dissatisfied with their behavior and reject future socialization attempts. Children with ADHD may also have difficulty following rules, listening to others, and maintaining conversation, since they may interrupt others and respond in an irrelevant manner. Children with ADHD are also more likely to respond to interpersonal problems in an aggressive manner, given the association between ADHD and physical aggression (DuPaul & Stoner, 2003).

Arguments and loss of temper may be a common occurrence in children with ADHD, since they may be easily provoked by teasing from others. Children with ADHD and comorbid aggression problems may have difficulty with perception regarding peer motives, as well as with information processing about social interactions. Of note, social-skills training may result in an acceleration of antisocial behavior if children with conduct problems are placed together in therapy groups (Dishion, McCord, & Poulin, 1999). Parker and Asher (1987) also found that the rejected status of these children is often pervasive over the course of their lifetimes; thus, interventions designed to address the numerous social difficulties experienced by children with ADHD must be implemented over an extended period of time to address the high risk for problematic future outcomes.

Social-skills training can be conducted in either school or clinical settings (Pfiffner et al., 2006). Since children with ADHD may experience heterogeneous social-interaction problems, social skills training programs should focus on a variety of strategies that address the unique, individual needs of children with this complex disorder (Hinshaw, 1992). Children with ADHD typically experience social-performance difficulties, whereby they have difficulty acting in accord with rules about which they are well aware (DuPaul & Stoner, 2003). Consequently, social-performance deficits can be challenging to remediate since most social-relationship interventions target skills, rather than performance. Traditional social-skills training, which occurs in a group therapy format, has demonstrated some gains in problem-solving skills, anger control, and conversational skills; however, these improvements have not led to gains in interpersonal functioning in the real world since these

improvements rarely continue once the child leaves the therapy room (DuPaul et al., 2011). These interventions should be implemented by a variety of individuals across situations and settings (e.g., classroom, playground, community) in order to more effectively target social performance problems that exist in the daily lives of children with ADHD (DuPaul & Stoner, 2003).

Guevremont (1990) proposed a more comprehensive approach to social-skills training programs that addressed the lack of maintenance and generalization surrounding the traditional implementation of these interventions. This approach incorporates three interrelated treatment components that can be easily adapted to the school environment: (a) social-skills and cognitive-behavioral training focusing on social entry, conversational skills, conflict resolution, and anger control; (b) generalization programming entailing strategies that structure the environment to support the enactment of prosocial behaviors; and (c) strategic peer involvement that enlists the child's peers to support the generalization of prosocial behaviors across settings. To increase generalizability, one should implement other procedures such as role playing, assigning homework, and having refresher sessions to reinforce previous training.

At present, social-skills training for children with ADHD may be an effective intervention for improving social-performance problems when implemented in ways to generalize behaviors across settings and when tailored to specific social needs. This level of intensity may be time consuming and impractical to implement. In addition, social-skills training is best used in conjunction with other treatments in order to maximize treatment efficacy. Considering the importance of long-term

social adjustment, continued development of interventions to improve socialization skills in children with ADHD remains of high importance (Pffifner et al., 2006). Furthermore, various procedures must be incorporated into social-skills sessions to increase the likelihood of generalizability to real-world settings (DuPaul & Stoner, 2003).

Educational strategies. Children with ADHD are likely to benefit from prevention-oriented behavioral and classroom management strategies. According to DuPaul and Stoner (2003), targeting classroom difficulties experienced by children with this disorder should involve multiple prevention and intervention components, including (a) ongoing teaching of classroom rules, routines, and expectations for appropriate behavior; (b) grading practices and contingencies to support these rules and procedures; (c) changes in instructional routines and curricula to improve rates of learning; (d) ongoing monitoring of progress in the basic skill and content areas; and (e) teaching students such competencies as organizational and study skills. Several variables need to be analyzed (e.g., the child's basic academic skills, observable classroom behaviors) in order to determine potential interferences with the child's classroom performance. Determining whether the problem is a skill (e.g., academic competency) or a condition (e.g., instructional design) problem is also important in order to decide on the appropriateness of intervention procedures. In most cases, multiple interventions delivered in isolation or in combination are required when classroom difficulties are a the result of both skill and condition problems.

Teaching classroom rules and expectations. Cues, prompts, signals, and performance feedback can be effective strategies in managing problematic classroom

behaviors and improving academic performance (DuPaul & Stoner, 2003). Simple educational procedures, such as clearly teaching classroom rules and expectations, are strategies that may be taken for granted by educators. For instance, children with ADHD may have greater difficulty than other children complying with classroom expectations if they do not fully understand the rules. Incorporating these strategies into classroom routines can be useful in preventing and managing problematic classroom behavior and may lead to improvements in student achievement. Proactive teacher behaviors are necessary in promoting appropriate classroom behavior. Examples of these behaviors include (a) providing frequent reminders of the classroom rules through examples and active ongoing discussions, (b) maintaining eye contact with students during lessons and activities, (c) providing behavioral expectation reminders before beginning a new lesson or activity, (d) circulating throughout the classroom to monitor students' behaviors and levels of task completion and to provide feedback unobtrusively, (e) using nonverbal cues and signals to redirect students, (f) ensuring instructional lessons are teacher directed, (g) ensuring that all academic and nonacademic routines are understood by students and transitions from one activity to another are managed in a brief and well-organized manner, and (h) frequently and clearly communicating expectations about the use of class time.

Basic instructional management and remediation. Effective teaching involves six instructional procedures that are sequential in nature (Rosenshine, 1987). These include (a) *Review* – checking for prerequisite skills and knowledge and discussion of previously taught material, (b) *Presentation* – presenting new material in manageable

steps using clear examples, (c) *Guided Practice* – providing students with opportunities for guided practice of newly presented material, (d) *Corrections and Feedback* –providing students with corrections and feedback based on their performance during practice exercises, (e) *Independent Practice* – students applying newly learned material within a variety of contexts, and (f) *Weekly/Monthly Reviews* – reviewing this process in order to continue to build fluency and independent application of learned material. Instructional support and remediation strategies that allow for opportunities to learn through active responses to teacher instruction and feedback have demonstrated improved classroom performance in children with ADHD (DuPaul & Stoner, 2003).

Peer tutoring. Peer tutoring is a method of instruction in which children with ADHD are paired with a peer tutor who provides assistance in learning academic material (Raggi & Chronis, 2006). This one-to-one instruction is individually tailored to the child's academic ability and is delivered at the child's own pace (DuPaul & Stoner, 2003). Peer tutoring appears to have great potential for classroom instruction since it incorporates active responding to academic material under conditions of immediate feedback provided by the peer tutor in the form of prompts and praise. Peer tutoring can be implemented in general-education classrooms with a high level of fidelity since peer tutors are readily available in the classroom and benefits can extend to multiple students. Peer tutoring also appears to possess a higher level of efficacy with regard to teacher time and effort and monetary costs as compared to teacher-mediated contingency management programs (DuPaul & Stoner, 2003). In addition, peer tutoring may provide opportunities for the development of prosocial

behaviors in children with ADHD while increasing both on-task behavior and academic accuracy (DuPaul & Eckert, 1997; Raggi & Chronis, 2006).

Multicultural Issues in the Treatment of ADHD

ADHD occurs across cultures, social classes, nationalities, and SES (Barkley, 2006). Multicultural issues related to children with ADHD include over-identification, under-identification of needs, under-utilization of services, shortage of providers, accessibility, and costs. Defining emotional and behavioral problems in children is not a straightforward process since various cultures may have different views regarding the meaning of *inattentive* and *hyperactive*. Moreover, culture can influence a caregiver's perception of emotional and behavioral problems, which may not always be in accordance with the school or diagnostic perspective of their child.

African American and Hispanic children are more likely to be over-diagnosed with ADHD and exposed to risk factors that might adversely impact their lives. Froehlich et al. (2007) reported that 8.7% of African American children, 6% of Hispanic children, and 9.8% of Caucasian children are diagnosed with ADHD. Stevens (1980) found that ethnicity and SES produced negative halo effects on teachers' ratings of ADHD behaviors. More specifically, the videotaped behaviors of African American and poor children were considered to be more deviant than those of Caucasian and middle-class children, regardless of identical rates of disruptive behaviors. Such biases increase the probability of producing errors in teachers' judgments and can be problematic when evaluating the presence of ADHD behaviors in the classroom.

Many African American parents do not consider ADHD to be a legitimate disorder and feel that minority children are overdiagnosed by medical professionals (Olaniyan et al., 2007). African American and Hispanic parents are less likely to seek information regarding treatment options for ADHD and are generally more opposed to the use of medication for ADHD than are Caucasian parents. African American and Hispanic children are also less likely to be treated for ADHD than are Caucasian children. Among children diagnosed with ADHD, 76% of Caucasian children were receiving medication treatment as compared to 56% of African American children and 53% of Hispanic children (Rowland et al., 2002). Consistent with these findings, teachers are more likely to recommend interventions requiring less family support for ethnic students as compared to Caucasian students (Wood, Heiskell, Delay, Jongeling, & Perry, 2009). Although treatment rates among African American and Hispanic children are increasing, they are still significantly lower than those for Caucasian children, a finding that may be related to several factors, including poverty, lack of health insurance, lack of transportation, lack of trust in medical professionals, and overreliance on discipline as a treatment method, all of which contribute to the health-seeking behaviors, or lack thereof, of parents of minority children.

Cultural norms must be considered when examining the impact of perceptions on treatment-seeking behavior since African American and Hispanic parents may be more fearful of stigmatization as a result of their children being labeled by the community as having ADHD (Risher & Fitts, 2002). Treatment-seeking behavior may also be impacted by a lack of trust in medical professionals and the fear of

culturally insensitive diagnostic instruments/methods, particularly in African American individuals (Boulware, Cooper, Ratner, LaVeist, & Powe, 2003). In sum, treatment adherence appears to be influenced by multiple cultural factors and individual differences that ultimately impact an individual's willingness to seek and adhere to treatment. Methods to determine the prevalence of children with ADHD-related needs must take into account developmental process and cultural norms. These issues have made difficult an accurate estimate of the population prevalence of mental disorders in children and adolescents. Understanding the ways cultural perceptions contribute to multicultural disparities in ADHD diagnosis and treatment can assist in the development of culturally sensitive interventions to improve the management of ADHD among children from diverse cultural backgrounds.

Teachers' Perceptions of ADHD

Teachers are considered one of the most valuable sources of information regarding children with ADHD since they have daily exposure to children in a variety of relevant situations (Sciutto, Terjesen, & Bender Frank, 2000). Teachers are often the first to suspect that a child has ADHD and to recommend a child be referred for a comprehensive assessment (Stevens, Quittner & Abikoff, 1998; Vereb & DiPerna, 2004). Understanding teachers' perceptions of children with ADHD is important because teachers play a major role in the child's school experience. Teachers' perceptions and the overall classroom environment can greatly impact the academic and personal outcomes of children with ADHD (Rush & Harrison, 2008). Furthermore, teachers' perceptions are highly important since they are often asked to complete standardized rating scales used to make decisions regarding treatment

and educational placement, as well as to monitor treatment progress. This present study aimed to distinguish between perception (what teachers believe) and knowledge (what teachers know). This distinction is important since research has demonstrated that perception may be a determining factor in the degree to which one engages in and successfully performs an activity (Bandura, 1986, as cited in Rush & Harrison, 2008); thus, understanding teachers' perceptions of ADHD will provide integral information regarding their behavior and interactions with children with this disorder.

With prevalence rates of ADHD increasing, teachers will undoubtedly encounter students with ADHD (Harlacher, Roberts, & Merrell, 2006). Teachers play an important role in identifying academic and behavioral difficulties because of their extensive contact with children in structured and unstructured settings, along with their knowledge of developmentally appropriate skills and behavior (Stevens et al., 1998). Teaching children with ADHD can be challenging because of the various academic, cognitive, executive, behavioral, and social difficulties experienced by these children. The classroom may represent one of the most difficult settings for children with ADHD since these children are required to engage in behaviors that are contrary to the symptoms they may experience (Kos et al., 2006). Although teachers are concerned with the social difficulties experienced by children with ADHD, they tend to place a greater emphasis on the problematic behaviors involving achievement and listening to instructions (Kauffman, Lloyd, & McGee, 1989).

Research has demonstrated that teachers' perceptions of a student with ADHD can influence other students' perceptions of that student (Atkinson et al., 1997). Furthermore, Daniels and Wiener (2002) found that students were more likely to

display poor social perceptions when teachers responded negatively to disruptive ADHD behaviors, thus emphasizing the benefit of a positive and preventative outlook. Li (1985) found that teachers typically perceive acting-out behaviors to be more problematic than withdrawn behaviors. Stevens et al. (1998) found that the presence of oppositional and disruptive behaviors exerted a negative halo effect on teachers' ratings of inattention and hyperactivity. These findings are likely the result of withdrawn behaviors being perceived as less disruptive to the classroom environment than overt behaviors, along with the belief that internalizing behaviors have a better prognosis than externalizing behaviors. Furthermore, boys are more likely than girls to be identified as displaying the overt symptoms of ADHD by their teachers (Sciutto, Nolfi, & Bluhm, 2004). As a result of the challenging behaviors demonstrated by children with ADHD, teachers may perceive these children as requiring extra teaching time and effort (Atkinson et al., 1997). In addition, teachers may feel pessimistic about teaching children with ADHD because of the frequency of negative behaviors and may hold negative perceptions regarding their academic skills (Eisenberg & Schneider, 2007; Kauffman et al., 1989). These negative perceptions teachers hold often influence children's behavior and academic success; therefore, the threat of self-fulfilling prophecy appears salient for children with ADHD.

Although teachers may feel pessimistic about teaching children with ADHD, they perceive themselves as being competent to handle these difficulties. Research has demonstrated that teachers' perceptions of children with ADHD are influenced by their perceptions of their own competence (Li, 1985). Rizzo and Vispoel (1991) found that the more competent teachers felt, the more favorable their attitude

regarding teaching children with disabilities. In addition, a positive correlation was found between perceived competence and years of teaching experience, suggesting that teachers who have previously taught a child with ADHD feel more confident in their ability to teach students with ADHD. Teachers with more training and experience in the area of ADHD also expressed more confidence in modifying the behaviors of children with the disorder (Reid, Vasa, Maag, & Wright, 1994). Similarly, Kauffman et al. (1989) found that most teachers believed they were capable of teaching students how to listen and follow classroom rules, as well as of managing problematic behaviors, such as stealing and tantrums. One should note, however, that these results may not be representative of typical teachers since the teachers who participated in this study were enrolled in an in-service behavioral management course.

Teacher Factors Influencing Perception. Teacher factors, namely, knowledge, acceptability, and implementation integrity of ADHD interventions, play important roles in teachers' perceptions of ADHD, as well as in the referral, diagnosis, treatment, and academic and behavioral outcomes of children with this disorder (Sherman et al., 2008). Sheridan and Gutnik (2000) indicated that "Teacher variables, including skill set, willingness to learn new skills, confidence, acceptance of intervention plans, perceived role, and ecological 'fit' of intervention plans are germane to teachers' perceptions of students with special needs" (as cited in Rush & Harrison, 2008, p. 208). Reid et al. (1994) found that several factors, such as the severity of student behavioral problems, class size, and lack of training, were the most troublesome concerns related to teachers' management of ADHD in the classroom.

Knowledge. Teaching children with ADHD can be challenging; therefore, to effectively teach a child with ADHD, teachers must demonstrate knowledge about this disorder. Knowledge is defined as the amount of information a teacher has regarding a disorder or treatment (Elliot, 1988). Understanding the level of teacher knowledge of ADHD is critical (Barkley, 2006). Glass and Wegar (2000) found that the majority of teachers consider ADHD to be a biological abnormality as opposed to the result of environmental factors; therefore, teachers apparently view the undesirable behaviors seen in ADHD as inherent within the child and not affected by outside influence. Studies of ADHD knowledge have also suggested that teachers hold specific misconceptions about ADHD. Some common misconceptions are that ADHD symptoms can be caused or modified through dietary changes and that children with ADHD will outgrow their symptoms by adulthood (Jerome, Gordon, & Hustler, 1994).

Sciutto et al. (2000) surveyed New York elementary-school teachers' knowledge of ADHD using the Knowledge of Attention Deficit Disorders Scale (KADDS) and found that teachers demonstrated greater understanding of ADHD symptoms and diagnosis as compared to treatment options, thus indicating the need for information and training regarding treatments and interventions for ADHD. Furthermore, overall knowledge of ADHD was related to teachers' past experiences with children with ADHD, so teachers who reported having taught a child with ADHD scored significantly higher than teachers who had no prior teaching experience with a child with ADHD. Similarly, Vereb and DiPerna (2004) surveyed elementary-school teachers in Pennsylvania using the Knowledge of ADHD Rating

Evaluation (KARE) and found that teachers scored well on their core knowledge of ADHD but less so on treatment knowledge. Elementary-school and special-education teachers were found to possess more knowledge of ADHD as compared to middle-school and regular-education teachers (Wood et al., 2004, as cited in Wood et al., 2009). This finding may be the result of higher prevalence of symptoms in younger children and therefore a higher level of education and training of elementary-school teachers.

Impact of Teacher Knowledge of ADHD on Perception. Although previously mentioned studies indicate that teachers are generally familiar with the symptoms and diagnosis of ADHD, they fail to provide insight regarding the impact of teachers' knowledge on their perceptions of children with ADHD. Ghanizadeh, Bahredar, and Moeini (2006) suggested that attitudes toward students with ADHD improve as knowledge improves. Similarly, Bekle (2004) asked teachers in Australia to complete a knowledge of ADHD questionnaire and then rate how favorably they viewed students with ADHD. Results indicated that teachers who knew more about ADHD viewed students with ADHD more favorably. The experience and knowledge acquired by teachers likely influence their expectations and beliefs. Anderson, Watt, Noble, and Shanley (2012) found that as teachers gain experience in the classroom, their knowledge of ADHD increases and they develop more favorable behaviors toward teaching children with ADHD. Knowledge of ADHD intervention techniques, patience, the ability to collaborate with an interdisciplinary team, and a positive attitude towards children with special needs, were found to be associated with student success (Sherman et al., 2008).

In contrast, Scitutto et al. (2004) failed to find a relationship between teacher knowledge and perception of ADHD. More specifically, teachers' perception ratings of how disruptive they thought a child would be in their classroom and how likely they would be to refer the child for professional services were not significantly related to their overall knowledge of ADHD. More recently, Ohan, Cormier, Hepp, Visser, and Strain (2008) found that teachers' knowledge of ADHD has a significant impact on their reported behavior and perceptions. Teachers with high knowledge of ADHD were significantly more likely to report that children with ADHD would benefit from professional assessment services. Results also found that teachers with high knowledge of ADHD rated children with ADHD as more likely to interfere with the classroom (e.g., disruptive) and their peer relationships. This finding is logical, considering that teachers with more knowledge of ADHD tend to be more familiar with the difficulties it can pose in the areas of classroom and social performance. This study also yielded a surprising result suggesting that teachers with average and high knowledge of ADHD reported less confidence in managing a child with ADHD in the classroom as compared to teachers with low ADHD knowledge. These findings are contrary to previously mentioned studies (Kauffman et al., 1989; Li, 1985; Rizzo & Vispoel, 1991), indicating that further research is needed to determine the interplay between ADHD knowledge and teacher confidence and competence.

Teacher training in ADHD. Successfully teaching children with ADHD poses a challenge to both general-education and special-education teachers since many teachers consider themselves lacking pertinent information regarding ADHD and its treatment (Bussing, Gary, Leon, Garvan, & Reid, 2002). Teacher knowledge,

or lack thereof, may result in general misinformation about ADHD. Teachers who lack knowledge about ADHD may overlook behaviors signifying a child in need of assistance (Ohan et al., 2008). Jones and Chronis-Tuscano (2008) found that teachers who participated in their study reported having little prior training related to ADHD, with regular-education teachers reporting less training than special-education teachers. Anderson et al. (2012) reported that in-service teachers were found to have significantly higher total knowledge of ADHD and higher perceived knowledge than those of preservice teachers. In addition, teachers were found to have reasonable knowledge of characteristics and causes of ADHD but to have limited knowledge of treatments for ADHD, thus indicating that teacher-training institutes need to provide accurate and comprehensive information about ADHD and its treatment.

Martinussen, Tannock, and Chaban (2010) found that the majority of general-education teachers in their study (76%) and almost half (41%) of the special-education teachers reported having no or brief in-service training in ADHD. General-education teachers with moderate to extensive in-service training in ADHD reported significantly greater use of the recommended interventions. Similarly, Piccolo-Torsky and Waishwell (1998) found that 83% of elementary-school teachers in their sample had received no formal training in ADHD, although 90% of teachers indicated they would like more training. More recently, Bussing et al. (2002) found that 50% of general-education elementary-school teachers in their sample received ADHD training during their education, and 65% received brief in-service training after graduation. In addition, 94% of general-education elementary-school teachers wanted more ADHD training.

Furthermore, appropriate education for teachers on identifying the characteristics of ADHD should be emphasized in the educational setting so that teachers can differentiate between symptoms of ADHD and extremes of normal childhood behavior. Identifying a child as having ADHD without consideration and evaluation of learning disabilities, emotional difficulties, or stress in the child's life does a disservice to the child and the supporting educational system (Glass & Weigar, 2000). In some cases, a child's ADHD-like symptoms may lie within the educational system, and not within the child. Teachers who believe a large portion of their students have ADHD should first evaluate their teaching methods and look for more flexible instructional approaches. For example, allowing students opportunities for frequent movement and participation in hands-on activities may help reduce some of the symptoms of ADHD (Glass & Weigar, 2000).

Treatment acceptability. A review of the literature indicates that classroom-based interventions can be effective in improving academic performance and reducing behavioral problems in children with ADHD (Barkley, 2004; DuPaul & Eckert, 1997). The success of a school-based approach to intervention depends on both the efficacy of the treatment being used and the teachers' perceptions regarding the acceptability of the intervention (Power et al., 1995). Assessing the acceptability of interventions is important since teachers are often responsible for the implementation, with integrity, of time-consuming interventions over long periods of time. Treatment integrity is defined as the degree to which interventions are implemented as planned (Gresham, 1989). Compromised treatment integrity may affect the overall outcome and effectiveness of a treatment when considered

inappropriate or disagreeable by the teacher who is responsible for implementation. Teachers may fail to implement treatments appropriately unless they recognize the importance of the intervention and believe it can successfully improve the difficulties experienced by children with ADHD (Eckert & Hintze, 2000). School psychologists and other clinicians must recognize that designing an effective intervention is not possible without considering how teachers will accept the intervention (Sherman et al., 2008).

ADHD treatments that are considered acceptable are more likely to be implemented appropriately (Hall & Kataria, 1992). Treatment acceptability is defined as the degree to which interventions are perceived as fair, reasonable, appropriate for the given problem, and nonintrusive (Kazdin, 1981, as cited in Mautone et al., 2009). Numerous factors contribute to teachers' acceptability of interventions, including the type of intervention (positive vs. negative consequences) and the amount of teacher time and effort required (Power et al., 1995). Eckert and Hintze (2000) identified key variables that influence the acceptability of treatments for ADHD, including treatment knowledge, effort, complexity, intrusiveness, severity, use, side effects, and effectiveness. Teacher acceptability has been linked to treatments that are positive and require minimal time, effort, resources, and supervision (Power et al., 1995; Witt & Martens, 1983, Wood et al., 2009). Von Brock and Elliott (1987) investigated the impact of treatment effectiveness on teachers' ratings of treatment acceptability and found that teachers' views on treatment acceptability influenced their views on treatment effectiveness: When

teachers do not consider a treatment acceptable, they are also more likely to consider it ineffective.

Teachers' acceptance of ADHD interventions also is linked to the likelihood of a successful outcome, and they are more likely to perceive medication as a positive intervention when combined with behavioral support. Witt and Martens (1983) found that intervention acceptability ratings are influenced by whether an intervention is viewed as helpful for a child and appropriate in the mainstream classroom. Power et al. (1995) found that teachers prefer behavioral interventions using positive instead of negative consequences. Teachers also rated daily report procedures as more acceptable than response cost or pharmacological intervention. Furthermore, teachers rated pharmacological intervention as more acceptable when used in combination with behavioral interventions instead of when used in isolation, a result consistent with the findings of the MTA Cooperative Group (1999). Similarly, when given a choice of (a) the use of medication, (b) behavioral modification, (c) medication and behavioral modification, or (d) no treatment, an overwhelming majority of teachers chose the third option (medication and behavioral modification) as the most acceptable treatment for children with ADHD (Glass & Weigar, 2000). Pisecco, Huzinec and Curtis (2001) also found that teachers considered daily report procedures to be more acceptable, more effective, and quicker to produce change than other behavioral strategies. Interestingly, the use of medication was rated as more effective, but less acceptable, than the use of response cost techniques (Glass & Weigar, 2000).

Teacher acceptability ratings also may be impacted by child characteristics, such as gender and severity of behavior (Sherman et al., 2008; Wood et al., 2009). Abikoff et al. (2002) found that boys with ADHD demonstrated higher levels of aggressive behavior as compared to girls with ADHD. DuPaul et al. (2006) found that boys and girls with ADHD exhibit similar impairments in school functioning; however, teachers perceive boys to exhibit ADHD symptoms that are more severe than those of girls. These findings are significant since teachers' behavioral expectations of a child may be a function of the child's gender. Teachers are more accepting of potentially effective behavioral interventions when students present with externalizing behaviors rather than internalizing problems (Fairbanks & Stinnett, 1997). Pisecco et al. (2001) found that teachers opposed the use of stimulant medication more often in girls than in boys and were more likely to attempt behavioral interventions with female students than with male students. Based on this finding, the overrepresentation of boys in the clinical setting may be to some degree the function of gender and teachers' beliefs that medication is more acceptable for boys with ADHD than for girls with ADHD. Furthermore, one may also speculate that these beliefs may influence clinic and school-based referral patterns.

Barriers to treating ADHD. Although teachers are expected to teach students with diverse academic and behavioral needs, barriers may be present that prevent teachers from effectively dealing with children with ADHD. Large classroom sizes, lack of teaching assistants, increased academic demands, and inadequate funding are among the common barriers experienced by teachers when faced with meeting the needs of students (Glass & Weigar, 2000). Reid et al. (1994) found that teachers

considered the most important barriers to intervening with students with ADHD to be (a) time-consuming administration, (b) lack of training, (c) large class size, and (d) severity of problems. Reinke, Stormont, Herman, Puri, and Goel (2011) found that 89% of teachers agreed that schools should be involved in addressing the mental-health needs of children. However, only 34% of teachers reported that they felt they had the skills and resources necessary to support these needs in children. The top four treatment barriers identified by these teachers included the lack of (a) adequate parental support programs, (b) prevention programs for students with externalizing behavior, (c) prevention programs for internalizing programs, and (d) staff training and coaching. In addition, teachers indicated insufficient number of school mental-health professionals, lack of training for dealing with children's mental-health needs, and lack of funding for school-based mental health as barriers to supporting children with mental-health needs in schools.

Similarly, Forman, Olin, Eaton Hoagwood, Crowe, & Saka (2009) indicated that prior to the implementation of intervention programs in schools, a number of important issues related to school organization and implementer characteristics should be addressed, including (a) development of principal and other administrator support; (b) development of teacher support; (c) development of financial resources to sustain practice; (d) provision of high-quality training and consultation to ensure fidelity; (e) alignment of the intervention with school philosophy, goals, policies, and programs; (f) ensuring that program outcomes and impact are visible to key stakeholders; and (g) development of methods for addressing turnover in school staff and administrators. [High-quality training and ongoing consultation were also

frequently cited as a necessary prerequisite for effective intervention implementation (Forman et al., 2009).] Based on these findings, models for granting access to information, skills, and resources will be required to increase the use of evidence-based interventions for ADHD in the classroom setting.

Conclusion. Children with ADHD are at risk for significant educational and behavioral impairments (DuPaul & Stoner, 2003). A child with ADHD in the classroom can present several challenges to teachers, and the child's difficulties with sustaining attention, controlling impulses, and remaining seated may result in academic problems, social-skills deficits, peer and adult conflicts, and emotional problems (Barkley, 1997; Ohan et al., 2008). Teachers play an important role in the treatment of ADHD since children spend a significant amount of time in the classroom. Although various school-based interventions have been demonstrated as effective in the treatment of ADHD, the review of the literature has shown that teachers are lacking in knowledge of and training in ADHD. This is problematic since teachers' knowledge may shape their perceptions of ADHD and of acceptability of interventions for ADHD. However, one must also consider the importance of other variables that may influence teachers' acceptability of ADHD interventions, such as overall feasibility, the amount of time involved to implement the intervention, and whether the intervention has positive or negative consequences. Barriers to treating ADHD, such as lack of teacher training and resources, are also important to consider in the implementation of school-based interventions. Furthermore, an examination of teacher-training programs and inservice training programs in ADHD is needed, as the literature has indicated that many teachers lack ADHD training.

Few studies have examined the role of teachers' perceptions of ADHD in relation to intervention acceptability, as much of the literature has focused on teacher knowledge of ADHD. The present study attempted to (a) identify teachers' perceptions of ADHD, (b) investigate teachers' ratings of various interventions for ADHD, (c) determine the barriers that influence acceptability ratings, (d) examine the relationship between teachers' perceptions of ADHD and intervention acceptability, and (e) determine if demographic factors are related to teachers' perceptions of ADHD and their acceptability of interventions. The following hypotheses are predicted:

1. Teachers' perceptions will reflect more difficulty in the management of hyperactive/impulsive symptoms of ADHD as compared to the inattentive symptoms.
2. Teachers will perceive large class size and lack of staff support to be barriers when teaching students with ADHD.
3. Teachers will feel inadequately trained on the topic of ADHD.
4. Teachers will perceive boys with ADHD as being more disruptive than girls with ADHD.
5. Teachers with more ADHD training will feel more comfortable working with students with ADHD.
6. Teachers will assign the lowest acceptability ratings to punishment procedures as compared to medication and positive behavioral interventions.

7. Acceptability ratings for medication will be higher for children with combined inattentive and hyperactive/impulsive symptoms as compared to children with predominantly inattentive symptoms.

Chapter 3: Method

Participants and Procedures

Eighty-one regular and special-education teachers from two public school districts (elementary and middle school) located in a middle-class, suburban community in Long Island, NY, participated in this study. Participants were recruited via email where they received a description of the research study, informed consent, and a link to a survey to be completed via Survey Monkey. A mass email was sent to all teachers in the district (approximately 100) asking for their voluntary participation in this research study. The email and survey introduction letter explained that teachers have the choice not to participate and that their responses would be kept anonymous (see Appendix A). The surveys took approximately 20 minutes to complete, and all teachers completed the survey online via Survey Monkey.

Permission was obtained from each building's principal prior to recruiting teachers. All male and female general-education and special-education teachers were included in the recruitment email. The participating school districts were divided into three elementary schools, Grades K through 6, and one middle school, Grades 7 through 8. The majority of participants were Caucasian women. Teachers were provided the option to complete the demographic portion of the survey, resulting in a limited response rate for all demographic items. The majority of respondents who completed the demographic information were women, between the ages of 41 to 50 years, had a master's degree, taught Grades 3-6, and had between 16 to 25 years of teaching experience. Please see Table 1 for complete demographic information, including the percentage of respondents not completing each demographic item.

Table 1

Respondent Demographic Characteristics

Demographic	Frequency	Percentage
Gender		
Male	8	9.9
Female	38	46.9
Not specified by respondent	35	43.2
Age range ($M = 45.11$, $SD = 7.83$)		
21 to 30 years	1	1.2
31 to 40 years	13	16.0
41 to 50 years	21	25.9
51 to 60 years	11	13.6
Age not provided by respondent	35	43.2
Highest degree		
Master's degree	34	42.0
Master's plus	6	7.4
2 Master's degrees	2	2.5
Professional diploma	1	1.2
Administrative degree	2	2.5
Doctoral degree	1	1.2

Table 1 cont.

Demographic	Frequency	Percentage
Not provided by respondent	35	43.2
Grade taught		
Kindergarten – Grade 2	7	8.6
Grade 3 – Grade 6	32	39.5
Grade 7 – Grade 8	4	4.9
Not specified by respondent	38	46.9
Years total teaching experience ($M=17.91$, $SD=7.51$)		
0-3	1	1.2
4-8	5	6.2
9-15	13	16.0
16-25	20	24.7
26+	7	8.6
Not specified by respondent	35	43.2
Teacher certification		
General education	26	32.1
Special education	20	24.7
Not specified by respondent	35	43.2

Measures and Materials

Teachers were asked to complete two surveys that took approximately 20 minutes to complete. The Perception of Attention Deficit Disorder Survey (PADDS) was administered to teachers to assess their perception of ADHD (see Appendix B). The PADDS is a modified version of the Knowledge of Attention Deficit Disorders Scale (KADDS) designed by Sciutto et al. (2000). Unlike the KADDS, the PADDS was designed to evaluate teachers' unique views and perceptions of ADHD, not just their knowledge of ADHD. The PADDS is a 17-item rating scale designed to: (a) assess teachers' general perceptions of ADHD, (b) perceived barriers, (c) perceived skill set/confidence level, and (d) perception of ADHD based on symptomatology. The items on this survey were measured on a Likert scale ranging from 1 to 5 points (1 = *strongly disagree*; 2 = *disagree*; 3 = *neutral*; 4 = *agree*; 5 = *strongly agree*). Nine items (1, 3, 9, 10, 11, 13, 15, 16 and 17) were included in the general perception subscale; three items (5, 6, and 12) were included in the barriers subscale; three items (7, 8, and 14) were included in the Perceived Skill/Confidence Level subscale; and two items (2 and 4) were included in the Perception of ADHD Based on Symptomatology subscale. Alpha coefficients were acceptable for all subscales (.64 - .71), with the exception of the Total Perception subscale (.36), which indicates that those items may not measure the same construct.

The Intervention Acceptability Survey (IAS) was also developed for the purpose of this study and was administered to teachers to assess their acceptability of five ADHD interventions corresponding to two vignettes for ADHD (Inattentive and Combined Inattentive and Hyperactive-Impulsive Presentation). The Inattentive

vignette described a child who is primarily easily distracted and forgetful, thereby corresponding to a predominantly Inattentive Presentation of ADHD. The Combined Inattentive and Hyperactive-Impulsive vignette described a child who not only is distractible and forgetful, but also has difficulty remaining seated and is loud and disruptive, thereby corresponding to a Combined Presentation of ADHD. See Appendix C for a full description of the vignettes. There were 12 questions on each of the five interventions on the IAS survey which were measured on a Likert scale ranging from 1 to 5 points (1 = *strongly disagree*; 2 = *disagree*; 3 = *neutral*; 4 = *agree*; 5 = *strongly agree*). Teachers were asked to provide acceptability ratings for the following four interventions: (a) Medication and Medication Monitoring (b) Positive Classroom-Based Contingency Management Procedures (c) Punishment Procedures (d) Home-Based Contingency Management Procedures, and (e) Self-Management Procedures (see Appendix D). Individual questions on the IAS assessed teachers' (a) acceptability of the intervention (b) barriers to intervention implementation, and (c) confidence/skill level for each of the five interventions. Individual questions on the IAS Acceptability scale evaluated teachers' perceived effectiveness, appropriateness, benefit, and overall acceptance of the intervention. Individual questions on the Barriers scale evaluated teachers' perceived barriers with regard to ease of implementation, level of support/resources needed, teacher skill level, class size, and implementation practicality/time required. Individual questions on the teacher Confidence/Skill Level scale evaluated whether teachers felt adequately trained and confident enough to implement these interventions. Demographic information was asked at the end of each survey which included age,

gender, years of teaching experience, level of education, level of training, and type of teacher (see Appendix E).

Chapter 4: Results

Data from the PADDs, IAS, and demographic questions of the survey were examined and are presented as they relate to each research hypothesis. Results are primarily descriptive in nature, detailing frequencies of responses to items and including statistical methods of comparison where appropriate.

Hypothesis 1

The first hypothesis predicted that teachers' ratings on the PADDs would reflect a greater perceived difficulty in the management of hyperactive-impulsive symptoms of ADHD as compared to the inattentive symptoms. Item 4 on the PADDs was used to assess this perception, and on a scale of 1 to 5, the mean score was 3.2. The majority of respondents agreed that the symptoms of hyperactivity and impulsivity are more difficult to manage than the symptoms of inattention, thereby supporting the hypothesis. See Table 2 for a breakdown of responses on all items of the PADDs.

Table 2

PADDs Responses and Response Rates

Question	N	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree	
		N	%	N	%	N	%	N	%	N	%
1. ADHD is a purely behavioral disorder; not a brain-based medical disorder.	81	37	46	35	43	5	6	1	1	3	4
2. Most children w/ADHD exhibit disruptive behaviors that are difficult to manage in the classroom.	81	7	9	29	36	15	19	28	35	2	2
3. ADHD behavior is highly influenced by the surrounding environment.	81	2	2	19	23	20	25	33	41	7	9
4. Symptoms of hyperactivity & impulsivity are more difficult to manage than symptoms of inattention.	81	5	6	24	30	8	10	38	47	6	7
5. Large class size interferes w/effectively teaching students w/ADHD.	81	1	1	5	6	8	10	44	54	23	28
6. Teaching children w/ADHD requires extra time & effort.	81	0	0	0	0	5	6	46	57	30	37
7. I sometimes feel pessimistic when teaching children w/ADHD due to the frequency &/or intensity of their symptoms.	81	9	11	27	33	11	14	32	40	2	2
8. I feel adequately trained to teach children with ADHD.	81	2	2	26	32	16	20	31	38	6	7

Table 2 cont.

PADDs Responses and Response Rates

Question	Strongly Disagree			Disagree		Neutral		Agree		Strongly Agree	
	N	N	%	N	%	N	%	N	%	N	%
9. Children w/ADHD are more likely than other children to also have other psychiatric problems such as depression and anxiety.	81	4	5	19	23	20	25	34	42	4	5
10. Children w/ADHD are more likely to demonstrate social skills deficits.	81	2	2	14	17	12	15	46	57	7	9
11. ADHD is not a life-long disorder & most children outgrow their symptoms.	81	7	9	43	53	25	31	6	7	0	0
12. Lack of staff support interferes w/effectively teaching students w/ADHD.	81	4	5	9	11	11	14	39	48	18	22
13. ADHD involves impairments in motivation & memory.	81	7	9	23	28	14	17	33	41	4	5
14. I feel confident when teaching children w/ADHD.	81	1	1	13	16	29	36	32	40	6	7
15. Teacher efforts & behavioral interventions are less effective than medication in the treatment of ADHD.	81	9	11	26	32	27	33	15	19	4	5
16. Boys w/ADHD are more disruptive than girls w/ADHD.	81	9	11	31	38	21	26	15	19	5	6
17. Dietary changes can reduce the symptoms of ADHD.	81	10	12	33	41	28	35	10	12	81	100

Hypothesis 2

The second hypothesis predicted that teachers' ratings on the PADDs would reflect a perception that large class size and lack of support staff are barriers when teaching students with ADHD. Items 5 and 12 were the items on the PADDs assessing perceptions about class size and support staff, respectively (see Table 2). The majority of teacher participants agreed or strongly agreed that large class size interferes with effectively teaching students with ADHD, thereby supporting the hypothesis. The majority of teacher participants also agreed or strongly agreed that lack of staff support interferes with effectively teaching students with ADHD, also supporting the hypothesis. The mean of Item 5 ($M = 4.02$) is slightly greater than that of Item 12 ($M = 3.72$), indicating that teacher participants may have perceived large class size to be a greater barrier than lack of support staff.

The IAS also examined additional barriers that teachers may face when implementing interventions for students with ADHD. The barriers included in this survey were class size (Item 3), ease (Item 4), time consumption and practicality (Item 5), resources available (Item 9), and level of parental support (Item 12). See Table 3 for a breakdown of the percentages of responses provided by teacher respondents on the IAS. Results suggest that the majority of teacher respondents considered class size and level of parental support to be barriers affecting their implementation of interventions, regardless of whether the presentation of ADHD was based on Inattentive or Combined Inattentive and Hyperactive-Impulsive symptomatology. Most teachers disagreed that the interventions could be implemented effectively without parent support. This suggests that a lack of parent

support is viewed as a significant barrier when implementing any intervention. Most teachers agreed that a smaller class size would facilitate intervention implementation, making class size another barrier to intervention implementation. The majority of participants disagreed that positive classroom-based contingencies and home-based contingencies were easy to implement. The majority agreed that medication monitoring, punishment, and self-management procedures were easy to implement. With regard to time consumption and practicality, most teachers disagreed that the interventions were time consuming and not practical. In terms of classroom resources, most teachers agreed that they had the resources needed to implement the interventions. Of note, the percentages provided for the ADHD Combined Inattentive and Hyperactive-Impulsive Presentation vignette were almost always slightly higher than those for the ADHD Inattentive Presentation vignette, which may indicate that teachers view these barriers as more problematic when intervening with children with both inattentive and hyperactive-impulsive symptomatology.

Table 3

Intervention Acceptability Survey Item Responses - Barriers

Medication/Medication Monitoring Responses				
Item	ADHD Combined Vignette <i>N</i> = 74		ADHD Inattentive Vignette <i>N</i> = 51	
	% Strongly Agree/Agree	% Strongly Disagree/Disagree	% Strongly Agree/Agree	% Strongly Disagree/Disagree
3. A smaller class size makes this intervention easier to implement.	69%	22%	61%	22%
4. This intervention is easy to implement.	61%	26%	71%	29%
5. This intervention is time consuming and not practical.	9%	77%	20%	59%
9. I have the classroom resources needed to implement this intervention.	57%	20%	53%	14%
12. This intervention could be implemented effectively without parent support.	5%	92%	12%	86%

Positive Classroom Based Contingencies Responses				
Item	ADHD Combined Vignette <i>N = 72</i>		ADHD Inattentive Vignette <i>N = 48</i>	
	% Strongly Agree/Agree	% Strongly Disagree/Disagree	% Strongly Agree/Agree	% Strongly Disagree/Disagree
3. A smaller class size would make this intervention easier to implement.	83%	10%	88%	6%
4. This intervention is easy to implement.	40%	43%	63%	25%
5. This intervention is time consuming and not practical.	19%	56%	19%	54%
9. I have the classroom resources needed to implement this intervention.	71%	15%	71%	13%
12. This intervention could be implemented effectively without parent support.	24%	68%	23%	67%

Punishment Procedures Responses				
Item	ADHD Combined Vignette <i>N</i> = 71		ADHD Inattentive Vignette <i>N</i> = 48	
	% Strongly Agree/Agree	% Strongly Disagree/Disagree	% Strongly Agree/Agree	% Strongly Disagree/Disagree
3. A smaller class size would make this intervention easier to implement.	49%	34%	48%	25%
4. This intervention is easy to implement.	45%	35%	40%	35%
5. This intervention is time consuming and not practical.	30%	39%	25%	38%
9. I have the classroom resources needed to implement this intervention.	49%	18%	48%	17%
12. This intervention could be implemented effectively without parent support.	18%	73%	4%	85%

Home-Based Contingencies Responses				
Item	ADHD Combined Vignette <i>N</i> = 70		ADHD Inattentive Vignette <i>N</i> = 47	
	% Strongly Agree/Agree	% Strongly Disagree/Disagree	% Strongly Agree/Agree	% Strongly Disagree/Disagree
3. A smaller class size would make this intervention easier to implement.	56%	23%	68%	19%
4. This intervention is easy to implement.	41%	47%	45%	34%
5. This intervention is time consuming and not practical.	33%	41%	25%	49%
9. I have the classroom resources needed to implement this intervention.	64%	17%	58%	21%
12. This intervention could be implemented effectively without parent support.	3%	96%	5%	83%

Self-Management Procedures Responses				
Item	ADHD Combined Vignette <i>N</i> = 69		ADHD Inattentive Vignette <i>N</i> = 46	
	% Strongly Agree/Agree	% Strongly Disagree/Disagree	% Strongly Agree/Agree	% Strongly Disagree/Disagree
3. A smaller class size would make this intervention easier to implement.	61%	28%	61%	22%
4. This intervention is easy to implement.	33%	45%	33%	35%
5. This intervention is time consuming and not practical.	26%	36%	11%	43%
9. I have the classroom resources needed to implement this intervention.	59%	19%	61%	13%
12. This intervention could be implemented effectively without parent support.	20%	70%	17%	65%

Hypothesis 3

The third hypothesis predicted that teachers' ratings on the PADDs would demonstrate a feeling of being inadequately trained on the topic of ADHD. Item 8 on the PADDs assessed whether teachers felt adequately trained on the topic of ADHD. The majority of teacher respondents either agreed or strongly agreed that they felt adequately trained to teach children with ADHD, providing evidence that is contrary to the hypothesis (see Table 2). Respondents also provided information regarding their experience with ADHD training and, if applicable, where they had received such training (see Table 4). The most common type of training among respondents was workshops, followed by courses and books. Many respondents indicated they received in-service training on the topic of ADHD, with the Internet designated by respondents as the least frequently used source in acquiring information about ADHD. Although most respondents received training on the topic of ADHD and felt adequately trained, many of them indicated that they wished to receive more ADHD training in the future.

Table 4

Respondents' Experiences with ADHD Training

	Frequency	%
Type of training received		
No training	9	11.1
Courses	24	29.6
Workshops	27	33.3
In-Service Training	22	27.2
Books	24	29.6
Internet	14	17.3
More training wanted		
Yes	40	49.4
No	6	7.4
Not specified by respondent	35	43.2

Hypothesis 4

The fourth hypothesis predicted that teachers' ratings on the PADDs would demonstrate a perceived notion that boys with ADHD are more disruptive than girls with ADHD. Item 16 on the PADDs (*Boys with ADHD are more disruptive than girls with ADHD*) assessed teachers' level of agreement with this statement, with the majority of respondents indicating that they disagree or feel neutral about this statement (see Table 2). This response pattern is contrary to the stated hypothesis.

Hypothesis 5

The fifth hypothesis predicted that teachers' ratings on the PADDs could be determined by the amount of ADHD training the teacher had received. Item 14 on the PADDs (see Table 2) assessed a teacher's level of confidence in working with a student with ADHD, and at the end of the survey, teachers were able to convey various methods of ADHD training they had received, if any (see Table 4). The majority of respondents indicated that they agreed with the statement that they feel confident working with students with ADHD. It was discovered that out of the teachers who had only zero to one method of ADHD training, only two teachers agreed with the statement, "I feel confident when teaching children with ADHD." Of those teachers with two or more methods of ADHD training, 19 (41%) teachers were in agreement with this same statement. This demonstrates that teachers in this group ($n = 46$) felt more confident teaching students with ADHD if they had more ADHD training, which therefore supports this hypothesis.

Results of a bivariate correlation revealed a significant correlation of .376 between confidence level and level of ADHD training at the .01 level. Results of a one-way ANOVA indicated that the comfort level of these groups of teachers differed significantly, $F(5, 40) = 2.98, p < .05$. Teachers were also asked to rate each of the five interventions on how well trained they perceived themselves to be in order to implement the interventions. On Item 10 of the IAS, teachers rated the statement, "I feel I am adequately trained to implement this intervention." Positive Classroom-Based Contingency Management Procedures was the highest rated intervention based on how the teachers perceived their training with respect to the five interventions,

followed by Home-Based Contingency Procedures (see Table 5). Based on the means of all of these interventions, the majority of teachers considered themselves to be adequately trained to implement any of these interventions.

A bivariate correlation was conducted in order to determine the significance of the relationships between teacher characteristics and domain scores (see Table 6). The type of teacher (general education or special education) correlated significantly with the Total Perception score and the Perceived Skill/Confidence Level domain, both at the $p < .01$ level. The amount of ADHD training correlated with Total Perception and Perception of ADHD Based on Symptomatology at the $p < .01$ level, and with Perceived Skill/Confidence Level at the $p < .05$ level. Total Perception also correlated with General Perception, Barriers, Perceived Skill/Confidence Level, and Perception of ADHD Based on Symptomatology scores, all at the $p < .01$ level. Barriers scores correlated with the Perceived Skill/Confidence Level and Perception of ADHD Based on Symptomatology scores as well, and Perceived Skill/Confidence Level and Perception of ADHD Based on Symptomatology scores were also correlated.

Table 5

Results for Item 10 on the IAS and Means and Standard Deviations for Interventions

Medication/Medication Monitoring Responses				
	ADHD Combined <i>N</i> = 74		ADHD Inattentive <i>N</i> = 51	
	Agree/ Strongly Agree	Disagree/ Strongly Disagree	Agree/ Strongly Agree	Disagree/ Strongly Disagree
<i>M</i> = 3.41 <i>SD</i> = 0.93				
10. I feel I am adequately trained to implement this intervention.	54%	28%	63%	30%
Positive Classroom Based Contingencies Responses				
	ADHD Combined <i>N</i> = 72		ADHD Inattentive <i>N</i> = 48	
	Agree/ Strongly Agree	Disagree/ Strongly Disagree	Agree/ Strongly Agree	Disagree/ Strongly Disagree
<i>M</i> = 3.78 <i>SD</i> = 0.78				
10. I feel I am adequately trained to implement this intervention.	72%	9%	79%	10%

Punishment Procedures Responses				
<i>M</i> = 3.22 <i>SD</i> = 1.03	ADHD Combined <i>N</i> = 71		ADHD Inattentive <i>N</i> = 48	
	Agree/ Strongly Agree	Disagree/ Strongly Disagree	Agree/ Strongly Agree	Disagree/ Strongly Disagree
10. I feel I am adequately trained to implement this intervention.	46%	34%	50%	41%
Home-Based Contingencies Responses				
<i>M</i> = 3.57 <i>SD</i> = 0.85	ADHD Combined <i>N</i> = 70		ADHD Inattentive <i>N</i> = 47	
	Agree/ Strongly Agree	Disagree/ Strongly Disagree	Agree/ Strongly Agree	Disagree/ Strongly Disagree
10. I feel I am adequately trained to implement this intervention.	64%	25%	68%	27%

Self-Management Procedures Responses				
	ADHD Combined <i>N</i> = 69		ADHD Inattentive <i>N</i> = 46	
	Agree/ Strongly Agree	Disagree/ Strongly Disagree	Agree/ Strongly Agree	Disagree/ Strongly Disagree
<i>M</i> = 3.48 <i>SD</i> = 0.98				
10. I feel I am adequately trained to implement this intervention.	57%	30%	65%	32%

Table 6

Significant Correlations for Teacher Characteristics

	Total Perception	General Perception	Barriers	Perceived Skill/ Confidence	Perception Based on Symptoms
Age	-.063	-.028	.029	.014	-.209
Teacher Exp.	-.011	.056	.090	-.049	-.176
Teacher Certification	.445**	.271	.020	.452**	.255
ADHD Training	.406**	.270	-.061	.382*	.523**
Total Perception	-	.607**	.462**	.712**	.606**
General Perception	.607**	-	-.114	.142	.026
Barriers	.462**	-.114	-	.231*	.321**
Perceived Skill/Conf.	.712**	.142	.231*	-	.389**
Perception Based On Symptom	.606**	.026	.321**	.389**	-

	Age	Teacher Exp.	Teacher Certification	ADHD Training
Age	-	.544**	.098	.149
Teacher Exp.	.544**	-	.012	-.045
Teacher Cert.	.098	.012	-	.398**
ADHD Training	.149	-.045	.398**	-

* $p < .05$. ** $p < .01$

Hypothesis 6

The sixth hypothesis predicted that teacher ratings on two different vignettes for various interventions would demonstrate a lower acceptability rating for punishment procedures as an intervention when compared with medication and positive behavioral interventions. The statement teachers rated based on their level of agreement was, "Overall, I consider this to be an acceptable intervention" (Item 11 on the IAS). The mean for teachers' ratings for punishment procedures was 2.55, which demonstrates a higher level of disagreement with the statement than agreement. The means for agreement with this statement with regard to medication and positive classroom-based contingency management procedures were 3.52 and 3.99, respectively (see Table 7). Positive behavioral supports were found to be significant at the $p < .01$ level for both vignettes, as compared to medication. Positive classroom-based contingency management procedures were rated as the most acceptable intervention among teachers, with 79% of teachers rating them positively for the ADHD Combined Inattentive and Hyperactive-Impulsive Presentation vignette, and 88% positive for the ADHD Inattentive Presentation vignette. The second most acceptable intervention was Medication and Medication Monitoring followed by Home-Based Contingency Management Procedures and Self-Management Procedures. Punishment Procedures were rated as the least acceptable intervention, with 61% of respondents disagreeing or strongly disagreeing that this intervention is acceptable for the ADHD Combined Inattentive and Hyperactive-Impulsive Presentation vignette, and 58% of respondents disagreeing or strongly disagreeing that this intervention is acceptable for the ADHD Inattentive Presentation vignette.

Items 1, 2 and 7 on the IAS also examined whether teachers considered interventions for ADHD to be effective, appropriate and beneficial to students based on their presentation of symptoms (see Table 8). Regardless of the presentation of symptoms, the majority of teachers agreed that all of the interventions were effective, appropriate, and beneficial with the exception of Punishment Procedures, where the majority of teachers disagreed that they were effective, appropriate, and beneficial to the student, thus providing further evidence in support of the hypothesis.

Table 7

Teachers' Ratings of Acceptability of Interventions

Type of Intervention	Mean	SD
Medication and Medication Monitoring	3.52	0.70
Positive Classroom-Based Contingency Management Procedures	3.99	0.50
Punishment Procedures	2.55	1.05
Home-Based Contingency Management Procedures	3.52	0.88
Self-Management Procedures	3.22	1.00
All interventions combined	3.36	0.52

Table 8

Intervention Acceptability Survey Item Responses Across Vignettes

Medication/Medication Monitoring Responses				
	ADHD Combined Vignette <i>N</i> = 74		ADHD Inattentive Vignette <i>N</i> = 51	
	Agree/Strongly Agree	Disagree/ Strongly Disagree	Agree/Strongly Agree	Disagree/ Strongly Disagree
1. This is an effective intervention for the child's behavior.	61%	10%	63%	13%
2. This intervention is appropriate for use in my classroom.	62%	9%	65%	10%
7. This intervention will benefit the child.	59%	12%	53%	11%
11. Overall, I consider this to be an acceptable intervention.	65%	7%	61%	9%
Positive Classroom Based Contingencies Responses				
	ADHD Combined Vignette <i>N</i> = 72		ADHD Inattentive Vignette <i>N</i> = 48	
	Agree/Strongly Agree	Disagree/ Strongly Disagree	Agree/Strongly Agree	Disagree/ Strongly Disagree
1. This is an effective intervention for the child's behavior.	76%	11%	88%	6%
2. This intervention is appropriate for use in my classroom.	81%	10%	85%	8%
7. This intervention will benefit the child.	76%	7%	83%	10%
11. Overall, I consider this to be an acceptable intervention.	79%	13%	88%	5%

Punishment Procedures Responses				
	ADHD Combined Vignette <i>N</i> = 71		ADHD Inattentive Vignette <i>N</i> = 48	
	Agree/Strongly Agree	Disagree/ Strongly Disagree	Agree/Strongly Agree	Disagree/ Strongly Disagree
1. This is an effective intervention for the child's behavior.	8%	59%	6%	63%
2. This intervention is appropriate for use in my classroom.	8%	61%	5%	65%
7. This intervention will benefit the child.	9%	65%	6%	58%
11. Overall, I consider this to be an acceptable intervention.	10%	61%	9%	58%
Home-Based Contingencies Responses				
	ADHD Combined Vignette <i>N</i> = 70		ADHD Inattentive Vignette <i>N</i> = 47	
	Agree/Strongly Agree	Disagree/ Strongly Disagree	Agree/Strongly Agree	Disagree/ Strongly Disagree
1. This is an effective intervention for the child's behavior.	66%	9%	72%	10%
2. This intervention is appropriate for use in my classroom.	57%	10%	62%	9%
7. This intervention will benefit the child.	64%	8%	72%	7%
11. Overall, I consider this to be an acceptable intervention.	59%	6%	68%	6%

Self-Management Procedures Responses				
	ADHD Combined		ADHD Inattentive	
	Majority Responses	N (%)	Majority Responses	N (%)
1. This is an effective intervention for the child's behavior.	Agree/Strongly Agree	30 (43%)	Agree/Strongly Agree	25 (54%)
2. This intervention is appropriate for use in my classroom.	Agree/Strongly Agree	29 (42%)	Agree/Strongly Agree	25 (54%)
7. This intervention will benefit the child.	Agree/Strongly Agree	33 (48%)	Agree/Strongly Agree	25 (54%)
11. Overall, I consider this to be an acceptable intervention.	Agree/Strongly Agree	33 (48%)	Agree/Strongly Agree	25 (54%)
TOTAL RESPONDENTS	<i>N</i> = 69		<i>N</i> = 46	

Hypothesis 7

The seventh hypothesis predicted that acceptability ratings for medication would be higher for children with combined inattentive and hyperactive-impulsive symptoms as compared to predominantly inattentive symptoms. One vignette described a student who had combined symptoms, and the other vignette described a student who had the predominantly inattentive symptoms. Responses on Item 11 on the IAS (*Overall, I consider this to be an acceptable intervention*) were examined to evaluate this hypothesis. The mean for this statement was 3.57 for the Medication intervention on the ADHD Combined Inattentive and Hyperactive-Impulsive Presentation vignette, while the mean for this statement was 3.51 for the Medication intervention on the ADHD Inattentive Presentation vignette (see Table 9). For the Medication intervention, there was a much higher level of agreeability with the ADHD Combined Inattentive and Hyperactive-Impulsive Presentation vignette, with 59% of teachers indicating they agree or strongly agree, thus suggesting that teachers are more in favor of the use of medication as an intervention to address/support the combined inattentive and hyperactive-impulsive symptomatology of ADHD, as compared to the inattentive symptoms alone, which may be viewed as slightly less problematic/disruptive (see Table 9). Only 38% of teachers provided positive ratings for the Medication intervention in relation to the ADHD Inattentive Presentation vignette. However, these two vignettes were significantly correlated with one another for the Medication intervention ($r = 0.647, n = 51, p < .001$). No significant differences were found among interventions when looked at as a function of vignette. However, each intervention from the first vignette correlated highly with

itself on the second vignette, with all correlations being significant at the $p < .05$ level (see Table 10).

Table 9

Means, Standard Deviations, and Total N for Intervention Acceptability (Item 11) as a Function of Vignette

Intervention	Vignette	Mean	Standard Deviation	<i>n</i>
Medication				
	Combined	3.57	0.78	74
	Inattention	3.51	0.76	51
	Total	3.52	0.70	51
Positive Classroom-Based Contingency Management				
	Combined	3.87	0.73	72
	Inattention	4.02	0.53	48
	Total	3.99	0.50	48
Punishment Procedures				
	Combined	2.46	1.24	71
	Inattention	2.56	1.11	48
	Total	2.55	1.05	48
Home-Based Contingency Management Procedures				
	Combined	3.46	1.05	70
	Inattention	3.57	0.85	47
	Total	3.52	0.88	47

Table 9 cont.

Means, Standard Deviations, and Total N for Intervention Acceptability (Item 11) as a Function of Vignette

Intervention	Vignette	Mean	Standard Deviation	<i>n</i>
Self-Management Procedures				
	Combined	3.14	1.08	69
	Inattention	3.24	1.06	46
	Total	3.22	1.00	46

Table 10

Intervention Acceptability Correlations Across Vignettes

Intervention	<i>r</i>	<i>p</i>	<i>n</i>
Medication/Medication Monitoring	.647	.000	51
Positive Classroom-Based Contingency Management Procedures	.438	.002	48
Punishment Procedures	.564	.000	48
Home-Based Contingency Management Procedures	.720	.000	46
Self-Management Procedures	.820	.000	46

Chapter 5: Discussion

The purpose of this study was to examine elementary and middle school teachers' perceptions of ADHD and acceptability of various interventions commonly used in the treatment of ADHD. This study also examined the barriers that hinder the implementation of ADHD interventions, along with the teacher variables that may be related to teachers' perceptions of ADHD and acceptability ratings of interventions. A total of 81 teachers from three elementary schools and one middle school in Long Island, NY, completed an online survey examining this topic. The following sections discuss the findings of this study as they relate to the proposed research questions and relevant hypotheses.

Research Question 1

The first research question examined teachers' perceptions regarding the management of inattentive and hyperactive-impulsive symptoms of ADHD versus the inattentive symptoms alone. This study found that the majority of participants perceived the combined inattentive and hyperactive-impulsive symptoms of ADHD to be more difficult to manage in the classroom as compared to the inattentive symptoms alone, providing evidence to support Hypothesis 1. Results of the current study were consistent with previous findings and indicated that teachers perceive students with both inattentive and hyperactive-impulsive symptoms of ADHD to be more difficult to manage than students with only inattentive symptoms of ADHD. Li (1985) found that teachers typically perceive acting-out behaviors to be more problematic than withdrawn behaviors. Similarly, Stevens et al. (1998) found that the presence of oppositional and disruptive behaviors exerted a negative halo effect on

teachers' ratings of inattention and hyperactivity. These findings are likely the result of withdrawn behaviors being perceived as less disruptive to the classroom environment than overt behaviors, along with the belief that internalizing behaviors have a better prognosis than externalizing behaviors.

Research Question 2

The second research question examined the perceived barriers teachers experience when implementing interventions for students with ADHD. This study found that large class size and lack of support staff were viewed as barriers to intervention implementation, providing evidence to support Hypothesis 2. Lack of parental support was also viewed as a barrier by teachers. Although teachers are expected to teach students with diverse academic and behavioral needs, barriers may be present that prevent teachers from effectively dealing with students with ADHD. Understanding what teachers perceive to be problematic is helpful since several interventions can be implemented by teachers that have been demonstrated to work effectively but have low acceptability ratings because of various factors/barriers such as lack of time to implement, lack of teacher training, and large class size (Glass & Weigar, 2000; Reid et al., 1994).

Research Question 3

The third research question examined how well-trained teachers perceive themselves on the topic of ADHD. This study found that teachers felt adequately trained on the topic of ADHD, providing evidence contrary to Hypothesis 3. Jones and Chronis-Tuscano (2008) found that teachers who participated in their study reported having little prior training related to ADHD. Similarly, Martinussen et al.

(2010) found that the majority of teachers in their study reported having no or brief in-service training in ADHD. Other studies have also demonstrated that the majority of elementary school teachers in their samples had received no formal training in ADHD, with the majority indicating that they wanted more training (Bussing et al., 2002; Piccolo-Torsky & Waishwell, 1998). Consistent with these findings, the majority of teachers in the current study indicated that they would like to receive additional training on the topic of ADHD, despite feeling adequately trained. These findings are important since teachers with moderate to extensive in-service training in ADHD are likely to report greater use of recommended interventions (Martinussen et al., 2010). Furthermore, appropriate education for teachers on identifying the characteristics of ADHD should be emphasized in the educational setting so that teachers can differentiate between symptoms of ADHD and extremes of normal childhood behavior.

Research Question 4

The fourth research question examined whether teachers' perceptions of ADHD symptomatology were influenced by a student's gender. One may also speculate that these beliefs may influence clinic and school-based referral patterns. This study found that teachers do not view boys with ADHD to be more disruptive than girls with ADHD, providing evidence contrary to Hypothesis 4. The literature indicates that teacher acceptability ratings may be impacted by child characteristics such as gender and severity of behavior (Sherman et al., 2008; Wood et al., 2009). DuPaul et al. (2006) found that boys and girls with ADHD exhibit similar impairments in school functioning; however, teachers perceive boys to exhibit more

severe and disruptive ADHD symptoms than those of girls. Furthermore, boys are more likely than girls to be identified by their teacher as displaying the overt symptoms of ADHD (Sciutto et al., 2004). Contrary to the literature, the findings of the current study do not suggest that teachers' behavioral expectations of a child are a function of the child's gender.

Research Question 5

The fifth research question examined whether such teacher variables as training level influence teacher perception and confidence levels when working with students with ADHD. This study found that teachers with more training on the topic of ADHD felt more confident when working with students with the disorder, providing evidence to support Hypothesis 5. Research has demonstrated that teachers' perceptions of children with ADHD are influenced by their perceptions of their own competence (Li, 1985). Rizzo and Vispoel (1991) found that the more competent teachers felt, the more favorable their attitudes regarding teaching children with disabilities. In addition, teachers with more training and experience in the area of ADHD also expressed more confidence in modifying the behaviors of children with the disorder (Reid et al., 1994). Successfully teaching children with ADHD poses a challenge to both general education and special education teachers since many teachers consider themselves lacking pertinent information regarding ADHD and its treatment (Bussing et al., 2002). Teachers in the present study felt adequately trained on the topic of ADHD, which also appeared to influence their confidence level when working with students with ADHD. In other words, the greater their training and knowledge, the higher their confidence and comfort level teachers have

when working with students with ADHD. Confidence and comfort levels of teachers appeared to increase when training was delivered via multiple modalities (i.e., academic curricula and in-service). Interestingly, despite the adequate level of training received by teachers, a significant portion of the sample indicated that they would like to receive additional in-service training on the topic of ADHD.

Research Question 6

The sixth research question examined acceptability ratings of various interventions for ADHD based on the presentation of ADHD symptomatology (Combined Inattentive and Hyperactive-Impulsive Presentation vs. Inattentive Presentation). This study demonstrated that the lowest acceptability ratings were assigned to punishment procedures as compared to medication and medication monitoring, positive classroom-based contingency procedures, home-based contingency procedures, and self-management procedures. These findings were in support of Hypothesis 5 and were also consistent with the literature. Power et al. (1995) found that teachers prefer behavioral interventions using positive consequences as compared to negative consequences. Consistent with these findings, teachers in the current study rated positive classroom-based contingency management interventions significantly more favorably than punishment procedures, which were rated the least acceptable intervention for students with ADHD.

Research Question 7

The seventh research question examined whether medication/ medication monitoring was viewed as a more acceptable intervention for students with inattentive and hyperactive/impulsive symptoms of ADHD (Combined Inattentive and

Hyperactive-Impulsive Presentation) as compared to inattentive symptoms alone (Inattentive Presentation). This study demonstrated that acceptability ratings for medication/medication monitoring were higher for students with a Combined Inattentive and Hyperactive-Impulsive Presentation of ADHD, providing evidence to support Hypothesis 7. Findings of the MTA Cooperative Group (1999) indicated that teachers rated pharmacological intervention as more acceptable when used in combination with positive behavioral interventions instead of when used in isolation. Similarly, the current study demonstrated that medication and positive behavioral interventions were viewed as equally favorable in the treatment of the inattentive symptoms of ADHD, although medication was rated more favorably in the treatment of the Combined Inattentive and Hyperactive-Impulsive) symptoms of ADHD. Teachers are more accepting of potentially effective interventions when students present with externalizing behaviors rather than internalizing problems (Fairbanks & Stinnett, 1997).

Implications

Children with ADHD are at risk for a multitude of academic and behavioral difficulties including decreased test and classwork performance, study skills difficulties, and disruptive classroom behavior (DuPaul & Stoner, 2003). Interventions that target these skills are critical in the treatment of ADHD; however, the effectiveness of these interventions may be compromised if they are not implemented as intended by teachers (Eckert & Hintze, 2000). High teacher acceptability may influence the fidelity with which interventions are implemented leading to the enhancement of student-managed behavior and promotion of

responsible decision making (DuPaul & Eckert, 1997). ADHD interventions have the potential to promote maintenance of treatment gains and foster generalization of behavioral change to other situations and academic subject areas.

Results of this study indicated that teachers feel more confident when they have more training on the topic of ADHD. Research has demonstrated that teachers' confidence in teaching students with ADHD will likely improve as a result of formal training from school psychologists and other ADHD experts (Bussing et al., 2002). Performance feedback and communication from ADHD experts regarding ADHD interventions and general ADHD knowledge appear to be key element to teachers' perceptions of students with ADHD and may reduce some of the negative conceptualizations of teachers with pessimistic views of students with ADHD, as well as support more effective efforts by teachers who are more willing to work with students with ADHD (Rush & Harrison, 2008). Furthermore, school psychologists should increasingly seek the perspectives of teachers in order to more effectively offer feasible classroom recommendations through ongoing teacher-school psychologist collaborative consultation. Developing positive partnerships among school professionals through collaboration and consultation can increase the likelihood of treatment success and enable teachers to feel more supported by school staff (DuPaul & Stoner, 2003).

Results of this study also demonstrated that teachers value the role of parental involvement when implementing interventions for ADHD. Parents' involvement in their children's schooling has been associated with children's school success (Grolnick, Benjet, Kurowski, & Apostoleris, 1997). The strength of the connection

between families and schools may be a function of characteristics of the school and its representatives. Teacher practices can affect parents' behaviors. When teachers make parental involvement part of their regular teaching practice, parental involvement may increase and the parents may feel more positive about their abilities to help. Although arguments have been made for the importance of parental, child, contextual, and classroom influences on parental involvement, some of these influences may not be equally important in all families, particularly those prone to such stressors as lack of access to resources, low SES, and different cultural backgrounds. School psychologists must collaborate with teachers and develop effective methods of engaging parents in intervention strategies. Productive collaboration between schools and families has been associated with higher student achievement and a decline in behavioral problems (Christenson, Rounds, & Gorney, 1992). Regular personal contact between home and school may help establish and maintain a connection between home and school and allow the parent to feel like an integral part of the child's support team.

Limitations

Several limitations of this study are worth noting. First, results were obtained via self-report survey, which makes difficult the determination of whether participants actually responded truthfully. For instance, teachers may choose to respond in a certain manner in order to appear more favorably. Although participant anonymity was assured, complete control for response bias or social desirability bias is impossible which may inevitably impact the validity of the study results. Second, the generalizability of these results may be limited to Caucasian female elementary

and middle school teachers working in middle to upper-middle class suburban communities in the northeastern region of the United States. In addition, participants recruited were based on a sample of convenience, since the investigator is employed within the school district. Teachers in this well-funded school district are likely to be unrepresentative of other districts with fewer opportunities for professional development, which often serves to expand the knowledge of teachers on several student-based topics of interest, such as ADHD. Third, the sample size obtained in this study was relatively small ($n = 81$) as compared to larger scale studies ($n > 100$) with more participants and more statistical power. A larger sample size would have also increased the generalizability of these findings. The majority of teachers who participated in this study were elementary school teachers who taught Grades 3 through 6; therefore, these results cannot be generalized to teachers who teach Grades K through 2 or to middle school teachers, since their rate of participation was significantly lower. Not all participants completed the survey in its entirety, particularly the demographic portion, thereby leading to uneven and missing information. Lastly, the surveys used on this study (PADDS and IAS) may not demonstrate adequate internal consistency to test the hypotheses. Inadequate measurement instruments may also have reduced the statistical power of this study and comprised overall construct validity. These instruments were created for the purpose of this study and were not used in a previous pilot study to determine whether they were adequate for use.

Future Directions

Future research should aim to examine teachers' perceptions of ADHD and acceptability of ADHD interventions using a larger sample size that is demographically representative of teachers in the United States. This study can be replicated on a larger scale seeking diverse elementary, middle, and high school teacher participants from suburban, urban, and rural populations across the region. Also, more research needs to be done to examine teacher variables more closely and determine whether they are indeed related to teacher perception of ADHD and acceptability of ADHD interventions. Research can also evaluate the role of comorbid disorders that are commonly seen with ADHD and whether comorbidity influences teachers' perceptions and acceptability ratings. Furthermore, appropriate education for teachers on identifying the characteristics of ADHD should be emphasized in the educational setting so that teachers can differentiate between symptoms of ADHD and extremes of normal childhood behavior. Identifying a child as having ADHD without consideration of and evaluation for learning disabilities, emotional difficulties, or stress in the child's life does a disservice to the child and the supporting educational system (Glass & Weigar, 2000). In some cases, the child's ADHD-like symptoms may lie within the educational system, and not within the child. Teachers who believe a large number of their students suffer from ADHD should evaluate their own teaching methods and develop more flexible styles of instruction.

Teacher training in ADHD may also be a necessary area of future research since results suggest that training level influences teachers' confidence levels with

regard to implementing ADHD interventions in the classroom. This investigation can examine the level of training teachers receive on the topic of ADHD and may be useful in helping to develop additional academic curricula, workshops, and in-service trainings to strengthen a teacher's knowledge base. Finally, teachers may obtain support or information on the topic of ADHD through consultation and collaboration with a school psychologist, who may help facilitate classroom-based interventions through a problem-solving model that may serve to increase treatment integrity.

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Appendix A

Survey Packet

Dear Teachers,

I am a doctoral candidate in the school psychology program at the Philadelphia College of Osteopathic Medicine. For my dissertation, I am researching teachers' perception of Attention Deficit/Hyperactivity Disorder (ADHD) and acceptability ratings of various interventions used for students with ADHD. By identifying what teachers know about ADHD, along with what interventions they consider acceptable, school psychologists can assist teachers to better serve students with ADHD. Children spend a considerable amount of time in the classroom so teachers are a valuable source of information on this subject.

This study consists of a survey which will take approximately 20 minutes to complete. If you choose to participate, please click on the link at the bottom of the page which will direct you to the survey which you will complete on Survey Monkey. Please complete this survey no later than January 20, 2014. While completing the survey, you will not be asked for your name or any identifying information in order to ensure anonymity.

Your participation in the study is completely voluntary and confidential. There are no identifiable or foreseeable risks or discomfort involved. There will be no penalty if you choose to withdraw or not participate in this study. All of your responses will be kept anonymous as no identifying information will be provided by you. In addition, the surveys will not contain codes or numbers that will personally identify you.

If you have any questions or concerns regarding this study, please feel free to contact me at Bettist@pcom.edu. You may also contact my dissertation chairs, Dr. Katy Tresco at -----or Dr. George McCloskey at -----. If you have additional questions or concerns regarding the rights of research participants you can call the PCOM office of Research Compliance at -----

I realize teachers are busy and I greatly appreciate the time you have taken to assist me in my research. Thank you very much.

Sincerely,

Betti Stanco, M.A., M.S.Ed., ABSNP Doctoral Candidate	Katy Tresco, Ph.D Dissertation Chair	George McCloskey, Ph.D Dissertation Chair
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Appendix B**Perception of Attention Deficit Disorder Survey (PADDS)**

Directions: Please answer all of the following questions pertaining to Attention Deficit Hyperactivity Disorder (ADHD).

1 = Strongly Disagree

2 = Disagree

3 = Neutral

4 = Agree

5 = Strongly Agree

1. I believe ADHD is a purely behavioral disorder; not a brain-based medical Disorder. **1 2 3 4 5**
2. I believe that most children with ADHD exhibit disruptive behaviors that are difficult to manage in the classroom. **1 2 3 4 5**
3. I believe ADHD behavior is highly influenced by the surrounding environment. **1 2 3 4 5**
4. I believe that symptoms of hyperactivity and impulsivity are more difficult to manage than symptoms of inattention. **1 2 3 4 5**
5. I believe that a large class size interferes with effectively teaching students with ADHD. **1 2 3 4 5**
6. I believe that teaching children with ADHD requires extra time and effort. **1 2 3 4 5**
7. I sometimes feel pessimistic when teaching children with ADHD due to the frequency and/or intensity of their symptoms. **1 2 3 4 5**
8. I feel adequately trained to teach children with ADHD. **1 2 3 4 5**
9. I believe that children with ADHD are more likely than other children to also have other psychiatric problems such as depression and anxiety. **1 2 3 4 5**
10. I believe that children with ADHD are more likely to demonstrate social skills deficits. **1 2 3 4 5**

11. I believe that ADHD is not a life-long disorder and most children outgrow their symptoms.
1 2 3 4 5
12. I believe that lack of staff support (i.e. school psychologist) interferes with effectively teaching students with ADHD.
1 2 3 4 5
13. I believe that ADHD involves impairments in motivation and memory.
1 2 3 4 5
14. I feel confident when teaching children with ADHD.
1 2 3 4 5
15. I believe that teacher efforts and behavioral interventions are less effective than medication in the treatment of ADHD.
1 2 3 4 5
16. I believe that boys with ADHD are more disruptive than girls with ADHD.
1 2 3 4 5
17. I believe that dietary changes (i.e. less sugar and food additives) can reduce the symptoms of ADHD.
1 2 3 4 5

Appendix C

Directions: Please read the following description of a child and then complete the Intervention Acceptability Survey (IAS) on the following pages.

Vignette 1

This child has difficulty listening during classroom instruction. The child's eyes often wander the room and they have difficulty focusing. The child is loud, disruptive, and often blurts out responses during classroom discussions. The child has difficulty remaining seated and often fidgets with objects. The child's desk is messy and disorganized. The child is often unprepared, loses assignments, and rarely completes homework assignments. *This child has been diagnosed with Attention Deficit/Hyperactivity Disorder, Combined Presentation.*

Vignette 2

The child is easily distracted, has trouble focusing, fails to pay attention to details, and makes careless mistakes while completing assignments. The child is forgetful, loses things, and often appears that they are not listening when spoken to. *This child has been diagnosed with Attention Deficit/Hyperactivity Disorder, Inattentive Presentation.*

Appendix D

Intervention Acceptability Survey (IAS)

Directions: Please rate the questions below regarding the specified intervention based on the description of the child you just read about. Please answer all questions.

Intervention #1: Medication (e.g. Ritalin) and Medication Monitoring: the child is prescribed a medication such as Ritalin and the teacher keeps track of the child's daily progress in order to monitor the drug's effectiveness.

1=Strongly Disagree 2=Disagree 3=Neutral 4=Agree 5=Strongly Agree

- | | |
|--|-----------|
| 1. This is an effective intervention for the child's behavior. | 1 2 3 4 5 |
| 2. This intervention is appropriate for use in my classroom. | 1 2 3 4 5 |
| 3. A smaller class size would make this intervention easier to implement. | 12345 |
| 4. This intervention is easy to implement. | 1 2 3 4 5 |
| 5. This intervention is time-consuming and not practical. | 1 2 3 4 5 |
| 6. I feel confident in my ability to implement this intervention. | 1 2 3 4 5 |
| 7. This intervention will benefit the child. | 1 2 3 4 5 |
| 8. I believe this intervention will not cause negative side effects. | 1 2 3 4 5 |
| 9. I have the classroom resources needed to implement this intervention. | 12345 |
| 10. I feel I am adequately trained to implement this intervention. | 1 2 3 4 5 |
| 11. Overall, I consider this to be an acceptable intervention. | 1 2 3 4 5 |
| 12. This intervention could be implemented effectively without parent support. | 1 2 3 4 5 |

Intervention Acceptability Survey (IAS)

Directions: Please rate the questions below regarding the specified intervention based on the description of the child you just read about. Please answer all questions.

Intervention #2: Positive Classroom-Based Contingency Management Procedures (Token Reinforcement, Contingency Contracting): behavioral expectations are explained to child and the child receives positive reinforcement or rewards from his/her teacher for displaying appropriate behavior.

1=Strongly Disagree 2=Disagree 3=Neutral 4=Agree 5=Strongly Agree

- | | | | | | |
|--|---|---|---|---|---|
| 1. This is an effective intervention for the child's behavior. | 1 | 2 | 3 | 4 | 5 |
| 2. This intervention is appropriate for use in my classroom. | 1 | 2 | 3 | 4 | 5 |
| 3. A smaller class size would make this intervention easier to implement. | 1 | 2 | 3 | 4 | 5 |
| 4. This intervention is easy to implement. | 1 | 2 | 3 | 4 | 5 |
| 5. This intervention is time-consuming and not practical. | 1 | 2 | 3 | 4 | 5 |
| 6. I feel confident in my ability to implement this intervention. | 1 | 2 | 3 | 4 | 5 |
| 7. This intervention will benefit the child. | 1 | 2 | 3 | 4 | 5 |
| 8. I believe this intervention will not cause negative side effects. | 1 | 2 | 3 | 4 | 5 |
| 9. I have the classroom resources needed to implement this intervention. | 1 | 2 | 3 | 4 | 5 |
| 10. I feel I am adequately trained to implement this intervention. | 1 | 2 | 3 | 4 | 5 |
| 11. Overall, I consider this to be an acceptable intervention. | 1 | 2 | 3 | 4 | 5 |
| 12. This intervention could be implemented effectively without parent support. | 1 | 2 | 3 | 4 | 5 |

Intervention Acceptability Survey (IAS)

Directions: Please rate the questions below regarding the specified intervention based on the description of the child you just read about. Please answer all questions.

Intervention #3: Punishment Procedures (Response Cost, Time Out): the child loses a reinforcer (privilege, activity) contingent upon inappropriate behavior.

1=Strongly Disagree 2=Disagree 3=Neutral 4=Agree 5=Strongly Agree

- | | | | | | |
|--|---|---|---|---|---|
| 1. This is an effective intervention for the child's behavior. | 1 | 2 | 3 | 4 | 5 |
| 2. This intervention is appropriate for use in my classroom. | 1 | 2 | 3 | 4 | 5 |
| 3. A smaller class size would make this intervention easier to implement. | 1 | 2 | 3 | 4 | 5 |
| 4. This intervention is easy to implement. | 1 | 2 | 3 | 4 | 5 |
| 5. This intervention is time-consuming and not practical. | 1 | 2 | 3 | 4 | 5 |
| 6. I feel confident in my ability to implement this intervention. | 1 | 2 | 3 | 4 | 5 |
| 7. This intervention will benefit the child. | 1 | 2 | 3 | 4 | 5 |
| 8. I believe this intervention will not cause negative side effects. | 1 | 2 | 3 | 4 | 5 |
| 9. I have the classroom resources needed to implement this intervention. | 1 | 2 | 3 | 4 | 5 |
| 10. I feel I am adequately trained to implement this intervention. | 1 | 2 | 3 | 4 | 5 |
| 11. Overall, I consider this to be an acceptable intervention. | 1 | 2 | 3 | 4 | 5 |
| 12. This intervention could be implemented effectively without parent support. | 1 | 2 | 3 | 4 | 5 |

Intervention Acceptability Survey (IAS)

Directions: Please rate the questions below regarding the specified intervention based on the description of the child you just read about. Please answer all questions.

Intervention #4: Home-Based Contingency Management Procedures (Daily Report Cards): parents provide contingencies to the child in the home based on the teacher's daily feedback regarding the child's behavior and performance in school.

1=Strongly Disagree 2=Disagree 3=Neutral 4=Agree 5=Strongly Agree

- | | | | | | |
|--|---|---|---|---|---|
| 1. This is an effective intervention for the child's behavior. | 1 | 2 | 3 | 4 | 5 |
| 2. This intervention is appropriate for use in my classroom. | 1 | 2 | 3 | 4 | 5 |
| 3. A smaller class size would make this intervention easier to implement. | 1 | 2 | 3 | 4 | 5 |
| 4. This intervention is easy to implement. | 1 | 2 | 3 | 4 | 5 |
| 5. This intervention is time-consuming and not practical. | 1 | 2 | 3 | 4 | 5 |
| 6. I feel confident in my ability to implement this intervention. | 1 | 2 | 3 | 4 | 5 |
| 7. This intervention will benefit the child. | 1 | 2 | 3 | 4 | 5 |
| 8. I believe this intervention will not cause negative side effects. | 1 | 2 | 3 | 4 | 5 |
| 9. I have the classroom resources needed to implement this intervention. | 1 | 2 | 3 | 4 | 5 |
| 10. I feel I am adequately trained to implement this intervention. | 1 | 2 | 3 | 4 | 5 |
| 11. Overall, I consider this to be an acceptable intervention. | 1 | 2 | 3 | 4 | 5 |
| 12. This intervention could be implemented effectively without parent support. | 1 | 2 | 3 | 4 | 5 |

Intervention Acceptability Survey (IAS)

Directions: Please rate the questions below regarding the specified intervention based on the description of the child you just read about. Please answer all questions.

Intervention #5: Self-Management Procedures (Self-Monitoring): child is taught to observe and record the occurrence of their own behavior (i.e. child records whether he or she was on-task on a chart taped to his or her desk).

1=Strongly Disagree 2=Disagree 3=Neutral 4=Agree 5=Strongly Agree

- | | | | | | |
|--|---|---|---|---|---|
| 1. This is an effective intervention for the child's behavior. | 1 | 2 | 3 | 4 | 5 |
| 2. This intervention is appropriate for use in my classroom. | 1 | 2 | 3 | 4 | 5 |
| 3. A smaller class size would make this intervention easier to implement. | 1 | 2 | 3 | 4 | 5 |
| 4. This intervention is easy to implement. | 1 | 2 | 3 | 4 | 5 |
| 5. This intervention is time-consuming and not practical. | 1 | 2 | 3 | 4 | 5 |
| 6. I feel confident in my ability to implement this intervention. | 1 | 2 | 3 | 4 | 5 |
| 7. This intervention will benefit the child. | 1 | 2 | 3 | 4 | 5 |
| 8. I believe this intervention will not cause negative side effects. | 1 | 2 | 3 | 4 | 5 |
| 9. I have the classroom resources needed to implement this intervention. | 1 | 2 | 3 | 4 | 5 |
| 10. I feel I am adequately trained to implement this intervention. | 1 | 2 | 3 | 4 | 5 |
| 11. Overall, I consider this to be an acceptable intervention. | 1 | 2 | 3 | 4 | 5 |
| 12. This intervention could be implemented effectively without parent support. | 1 | 2 | 3 | 4 | 5 |

Appendix E**Demographic Questionnaire**

Directions: Please answer ALL of the following questions.

- 1.) Gender: _____
- 2.) Age: _____
- 3.) Highest Degree Completed: _____
- 4.) Total Number of Years Teaching Experience: _____
- 5.) Grade level(s) you currently teach: _____
- 6.) Type of teacher: General Education/Special Education
- 7.) Type of ADHD training received (circle all that apply):
None / Courses / Workshops /In-Service Training /Books / Internet
- 8.) Would you like to receive more in-service training about working with
students with ADHD? Yes/No