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THE EFFECT OF TEACHERS BELIEF'S, PERCEIVED STRESS, AND STUDENT CHARACTERISTICS ON TEACHERS' ACCEPTANCE OF TREATMENT INTERVENTIONS FOR ATTENTION DEFICIT HYPERACTIVITY DISORDER

A Dissertation Presented to the
Faculty of the College of Education
University of Houston

In Partial Fulfillment
of the Requirements for the Degree

Doctor of Philosophy

by

Jean S. Doak

May, 2003

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Abstract

The major diagnostic criteria of ADHD include persistent patterns of inattentiveness, impulsivity, and hyperactivity and include three subtypes (predominately inattentive type, predominately hyperactive-impulsive type, and combined type) (APA, 1994). Inattentive behaviors reported by parents and teachers include an inability to listen as well as they should for their age, inability to concentrate, easily distractible, failure to complete assignments, daydreaming and changing activities more often than others (Barkley, DuPaul, & McMurray, 1990). The problems with hyperactivity-impulsivity in children with ADHD include difficulties with fidgetiness, remaining seated when required, moving around, playing disruptively, talking excessively, interrupting others' activities, and being less able than others in taking turns (Barkley, 1996).

Attentional problems among children with ADHD are most likely to be displayed in situations that require great amounts of self-application and self-discipline (Hawkins, Martin, Blanchard, & Brady, 1991), such as in the classroom. This factor is critical as it has been suggested that teachers believe that the primary abilities for success in the classroom are to follow established rules, listen to and comply with directions, listen to the comments of their peers, and use equipment appropriately (Kauffman, Lloyd, & McGee, 1989).

Because disruptive, off-task behaviors are probably the most significant problems exhibited in the classroom by ADHD children, they have been the focus of numerous

intervention studies. Treatment strategies for ADHD methods include educational, cognitive-behavioral, and pharmacological interventions. However, the success of a school-based approach to intervention depends not only on the potential efficacy of the treatment(s) being utilized but also on teachers' perceptions of the acceptability of the intervention program (Power, Hess, & Bennett, 1995).

The factors to be contemplated related to treatment interventions include perceived severity of a child's problem, nature of treatment (positive vs. negative), time demands involved in implementing a treatment strategy, and perceived effectiveness of a treatment strategy. Teacher background variables that may influence treatment implementation include teachers' efficacy, teacher perceived stress, and pupil control ideology. Teachers not only play an integral role in identifying children who may benefit from psychological services but also in the formal assessment and treatment of ADHD. As a result, teachers should have an understanding of the etiology, identification, and treatment of ADHD. Although teachers of children with ADHD are likely to view their student's inappropriate behaviors in need of an intervention strategy, previous research has suggested that teachers posses a negative view of working with children with disruptive behavioral difficulties similarly displayed by children with ADHD (Algozzine, 1980; Coleman & Gilliam, 1983). As few studies have specifically focused on teachers' acceptability and knowledge of ADHD, this study examined the effect of ADHD subtypes and teacher background variables on the acceptability and knowledge of ADHD and teachers' acceptance of treatment strategies.

Unexpectedly, the effect of ADHD symptom subtype on teachers' ratings of the acceptability of interventions for ADHD was not significant. Also, the results did not

support the expectation that teacher beliefs and perceived stress would effect teachers' acceptability ratings of interventions for ADHD. It is apparent that additional research should be conducted and studies designed to take into consideration the limitations of the current study. For example, it would be essential for future research to include in-class observations of both the teachers' student management style and use of interventions for children with significant behavioral problems.

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INTRODUCTION

The major diagnostic criteria of Attention Deficit Hyperactivity Disorder (ADHD) include persistent patterns of inattentiveness, impulsivity, and hyperactivity (APA, 1994). Inattentive characteristics include an inability to listen as well as expected, inability to concentrate, easily distracted, failure to complete assignments, daydreaming, and changing activities more often than others (Barkley et al., 1990). Hyperactive-impulsive characteristics include difficulties with fidgetiness, remaining seated when required, moving around, playing disruptively, talking excessively, interrupting others' activities, and being less able than others in taking turns (Barkley, 1996). Some children may display a pattern of behavior where one set of characteristics is more dominant than the other, while others may display a pattern of behavior comprising both inattention and hyperactivity-impulsivity. The cluster combination of characteristics constitutes three subtypes of ADHD: predominantly inattentive type, predominantly hyperactive-impulsive type, and combined type.

In addition to the primary features of ADHD, children with this disorder often have difficulties with academic development and social relationships. The symptoms of ADHD are critical in considering the school environment as the abilities for classroom success has been described as following established rules, listening to and complying with directions, listening to the comments of their peers, and using equipment appropriately (Kauffman et al., 1989). The ability to master academic tasks is impeded by these children's distractibility and inability to sustain attention. Researchers have found that children with ADHD not only perform poorly in school (Ackerman & Dykman, 1990) but that more than 50% of them had been retained at least once by the

time they reached adolescence (Marshall & Hynd, 1999). In addition, these children are often diagnosed with learning disabilities where they tend to underachieve relative to their own levels of ability as determined by intelligence and academic achievement tests (Barkley, 1996).

Distractibility and inattentiveness are factors that may also contribute to the social rejection of children with ADHD. In fact, Barkley (1990) estimated that more than half of these children are often aware of their unpopularity and are affected by their diminished self-concept. Interestingly, it appears that there are differences in social competence abilities between children with ADHD, predominantly hyperactive-impulsive type and predominantly inattentive type. For example, children with ADHD, predominantly hyperactive-impulsive type maintain appropriate social skills and engage in numerous peer interactions yet experience difficulty carrying out their intentions and are reinforced for their disruptive behaviors. Children with ADHD, predominantly inattentive type are perceived as isolated and do not possess appropriate social skills.

In addition to the difficulties of academic and social development, children with ADHD are frequently diagnosed with other behavioral and emotional disorders. As many as 60% of children with ADHD will also meet criteria for Oppositional Defiant Disorder (ODD), and up to 50% will eventually meet the criteria for Conduct Disorder (CD; Barkley, 1996). Research examining the comorbidity of ADHD with conduct disorders indicates that the coexistence of these disorders is more frequently seen in children with predominantly hyperactive-impulsive and combined subtypes (Wolraich, Hannah, Baumgaertel, Pinnock, & Feurer, 1998; Wolraich, Hannah, Pinnock, Baumgaertel, & Brown, 1996).

As the disruptive, inattentive, and off-task behaviors of children with ADHD are most significantly exhibited within the classroom, teachers are likely to view these children's behaviors as in need of intervention. Because teachers are typically responsible for implementing school-based interventions, it appears that the preliminary focus of an intervention strategy should be their understanding of the etiology, identification, and treatment of ADHD. Although previous research indicates that teachers possess a negative view of working with children with disruptive behavioral difficulties (Algozzine, 1980; Coleman & Gilliam, 1983), research has been limited in examining teachers' knowledge and acceptability of ADHD. Hawkins et al. (1991) reported that the majority of teachers (85%) have taught a student who was diagnosed with or suspected of having ADHD, yet many had not been trained to do so. While these teachers typically performed well on questions related to the etiology of ADHD, many held erroneous assumptions related to symptoms of and interventions for ADHD.

Treatment strategies for ADHD include psychosocial and pharmacological interventions. Although several treatment interventions comprise positive consequences (e.g., teacher attention; token rewards) and negative consequences (e.g., ignoring; response cost or loss of reinforcer; time out) and involve behavioral contingencies (e.g., classroom lottery; daily report card), research contends that the most common treatment for children with ADHD is psychostimulant medication (e.g., Ritalin). In fact, more children receive medication to assist in managing ADHD than any other childhood disorder (Safer & Krager, 1988). However, there has been no agreement within the literature to suggest that the behavior of children with ADHD can be appropriately treated and managed by psychostimulant medication or any other intervention exclusively

(Rapport, 1992). For an intervention to be considered successful, teachers' perceptions of the acceptability of the treatment intervention should be explored (Power et al., 1995). Research suggests that teachers' acceptability of a treatment intervention depends upon the severity of disruptive behaviors, positive versus negative interventions, amount of time involved in implementing the intervention, and effectiveness of the intervention. Given these considerations, this study will also examine teachers' acceptance of typical interventions (Daily Report Card, Response Cost Technique, Classroom Lottery, and Ritalin) for the treatment of ADHD. These issues are especially critical because teachers' ability and willingness to effectively participate in the treatment process is essential to the successful implementation of classroom-based behavioral programs.

Although research has indicated that teachers' knowledge and perception of ADHD influence the acceptability and utilization of treatment interventions, few teacher variables have been explored. For example, years of teaching experience, educational setting, and training and/or experience with ADHD have been examined as a function of knowledge and acceptability of ADHD, other teacher characteristics have not. This is important as teacher's efficacy, level of stress, and pupil ideology are considered to be related to teacher effectiveness (Agne, Greenwood, & Miller, 1994). Since effective teachers may have a different perception of ADHD than teachers who are not effective, the differences between teachers' knowledge and acceptability of ADHD will be examined as a function of the specific teacher characteristics.

There is considerable discrepancy in the way different teachers respond to and perceive the behavioral difficulties and associated symptoms of ADHD. Some teachers perceive these difficulties as more problematic and respond to these behaviors less

effectively than other teachers (Greene, 1995). In fact, Kauffman et al. (1989) found that these influences on teachers may affect the interpersonal dynamic between teachers and students and what teachers feel is acceptable classroom behavior. Therefore, other important factors that will be explored are student characteristics that influence teachers' evaluations of ADHD and various treatment strategies. For example, there exists significant difference in social and behavioral functioning between children with ADHD, predominantly inattentive type and children with ADHD, predominantly hyperactive-impulsive or combined types. Students who essentially exhibit symptoms of inattention will likely be less disruptive in the classroom than students who present with symptoms of the combined or hyperactive-impulsive subtypes. As a result, teachers' opinions regarding the necessity of specific treatment strategies may differ as a function of the type of symptoms that each student exhibits. However, examining the ratings of students with ADHD exclusively as a product of the student instead of as a product of the student-teacher interaction neglects the influences of these variances in teachers' perceptions. In fact, Greene (1995) suggested that treatment outcomes are significantly affected by the characteristics of both the child and teacher. Therefore, the overall purpose of this study will be to examine the effect of student characteristics (ADHD subtype of symptoms: Inattentive, Hyperactive-Impulsive, and Combined Types) and important teacher beliefs (teacher efficacy and pupil control ideology) and perceived stress, on teachers' acceptability of empirically supported treatments for ADHD (Daily Report Card, Response Cost System, Classroom Lottery, and medication).

REVIEW OF THE LITERATURE

The prevalence of Attention Deficit Hyperactivity Disorder (ADHD) is estimated at between 3% to 5% of all school age children (Barkley, 1990). According to the Diagnostic and Statistical Manual of Mental Disorders (4th edition) (DSM-IV) (American Psychiatric Association, 1994), the major diagnostic criteria of ADHD include persistent patterns of inattentiveness, impulsivity, and hyperactivity. It has also been reported that the fundamental feature of ADHD is an enduring pattern of inattention and/or hyperactivity-impulsivity that is more frequent and severe than is typically observed in individuals at a comparable level of development (APA, 1994).

ADHD is viewed as constituting at least two major characteristics: inattention and hyperactive-impulsive behavior. The problems with inattention in children with ADHD include an inability to sustain attention or respond to tasks or play activities, disorganization, distraction, and forgetfulness (Barkley, 1996). Inattentive behaviors reported by parents and teachers include an inability to listen as well as they should for their age, inability to concentrate, easily distractible, failure to complete assignments, daydreaming and changing activities more often than others (Barkley et al., 1990). These children are often noted to respond quickly to situations without waiting for instructions to be completed and fail to consider potentially negative consequences that may be associated with specific behaviors. The problem with hyperactivity-impulsivity in children with ADHD is their excessive or developmentally inappropriate levels of activity pervasive across settings. These include difficulties with fidgetiness, remaining seated when required, moving around, playing disruptively, talking excessively,

interrupting others' activities, and being less able than others in taking turns (Barkley, 1996).

Although some children may possess characteristics where one pattern is more prevalent than the other, others may possess characteristics of both inattention and hyperactivity-impulsivity, constituting three subtypes. Subtyping approaches are clinically useful because they provide imperative differential predictors about etiologies, developmental causes, outcomes and responses to interventions between the subtypes (Barkley, 1990). The DSM-IV identifies an inattention cluster and a hyperactivity cluster, each with nine symptoms. A child must exhibit at least six of the nine behaviors in a symptom cluster to be considered significantly inattentive or hyperactive-impulsive. Symptoms must have appeared before age seven, been present for a minimum of six months, and must be exhibited in a degree that exceeds the normal developmental expectation of behavior.

Three subtypes of ADHD result from the presence of one or both of the inattention and hyperactivity-impulsivity elements. ADHD, predominantly inattentive type describes what was previously labeled "ADHD without hyperactivity". ADHD, predominantly hyperactive-impulsive type describes characteristics where hyperactivity-impulsivity is dominant. ADHD, combined type includes both inattention and hyperactive-impulsive features. Although both ADHD, predominantly inattentive type and ADHD, combined type encompass factors of inattention, they depict varying aspects of attention. ADHD, predominantly inattentive type categorizes difficulties with selective attention or focusing on a relevant stimulus, where ADHD, combined type categorizes difficulties with sustaining attention on a relevant stimulus.

In addition to the symptoms of inattention and hyperactivity-impulsivity, children with ADHD are likely to experience numerous difficulties and significant functional problems in the areas of social, behavioral, and academic development. In fact, it has been suggested that most children with ADHD exhibit decaying relationships with family members, teachers, and peers, along with reductions in academic performance and self-concept (Pelham & Bender, 1982). Peer relations are of particular concern in children's development because research suggests that negative peer relations are associated with psychiatric problems and difficulties with social adjustment (Grenell, Glass, & Katz, 1987). Therefore, the social functioning of children with ADHD causes concern due to the implication that they are perceived as negative social catalysts and evoke maladaptive behaviors from individuals (peers and teachers) around them (Whalen & Henker, 1985) and are perceived by their peers as more aggressive, disruptive, domineering, intrusive, noisy, and socially rejected than others Frederick & Olmi (1994). Other contributing factors such as classroom inattention, distractibility, and hyperactivity have lead to the estimate that as at least half of children with ADHD experience some form of social rejection from their peer group (Barkley, 1990). For example, Cunningham and Siegel (1987) examined peer interactions in various settings involving two sets of dyads of boys (one set: one boy diagnosed with ADHD and one boy not; second set: both boys diagnosed with ADHD). In free play and simulated classroom settings, the mixed dyads displayed more controlling interactions than the homogeneous dyad. This finding suggests that the presence of a child with ADHD can evoke increased controlling/commanding/demanding behaviors in children not diagnosed with ADHD. In can be speculated that maladaptive relational interactions of children with ADHD

adversely affect those with whom they are to form and maintain appropriate social relations and/or friendships.

Interestingly, children with ADHD appear to be aware of their social status. Research suggests that these children are cognizant of their unpopularity and are affected by the resulting insults to their self-esteem. King and Young (1982) administered a self-perception questionnaire to boys with ADHD, predominantly hyperactive-impulsive type, and ADHD, predominantly inattentive type, to examine the accuracy of their perceived popularity. They found that these boys (regardless of subtype) were accurate in their perceptions based on negative peer nominations. Lahey, Schaughency, Strauss, & Frame (1984) investigated this aspect of perceived popularity more specifically and found that boys with ADHD, predominantly hyperactive-impulsive type, endorsed low self-esteem stemming from popularity and behavior whereas boys with ADHD, predominantly inattentive type, endorsed low self-esteem resulting from concerns about physical appearance, anxiety, general unhappiness, and sense of isolation. It appears, therefore, children with these subtypes of ADHD experience similar difficulties in their self-esteem, but may vary in the specific areas of their concerns.

This line of research contends that there are substantial differences in social competence between children with ADHD, predominantly hyperactive-impulsive type, and children with ADHD, predominantly inattentive type. Wheeler and Carlson (1994) surmised that even though children with ADHD, predominantly hyperactive-impulsive type, maintain appropriate social skills and engage in several peer interactions, their disruptive behavior is reinforced by the negative reactions from others. These children experience difficulty in carrying out their intentions in social situations and are perceived

to be less popular, more disliked, and more likely to be rejected by their peers. However, children with ADHD, predominantly inattentive type, do not seem to possess appropriate social skills presumably due their minimal interactions with peers that may be a result of their isolation and withdrawal.

Children with ADHD are frequently detected to have a number of other conditions and impairments associated with the disorder. Comorbidity of ADHD with other behavioral and emotional disorders is generally quite common, with up to 44% of children with ADHD having at least one other psychiatric disorder, 32 % having two other disorders, and 11% having at least three other disorders (Barkley, 1996). The most common overlapping disorders with ADHD are behavioral and oppositional disorders, and this combination appears to place these children at higher risk for adult pathological disorders than ADHD alone. As many as 60% of children with ADHD will meet criteria for oppositional-defiant disorder (ODD), and up to 50% will eventually meet the criteria for conduct disorder (CD; Barkley, 1996).

ODD includes persistent symptoms of "negativistic, defiant, disobedient, and hostile behaviors toward authority figures" (American Psychiatric Association, 1994). Frequently, children and adolescents with persisting ODD later develop symptoms of sufficient severity to meet criteria for a diagnosis of CD which possess the diagnostic criteria of "a repetitive and persistent pattern of behavior in which the basic rights of others or major age-appropriate social norms or rules are violated" (American Psychiatric Association, 1994). Longitudinal follow-up for children with conduct disorders that coexist with ADHD indicate that these children fare more poorly in adulthood relative to their peers diagnosed with ADHD alone (Ingrams, Hechtman, & Morganstern, in press).

Preliminary studies suggest that these coexisting conditions are more frequent in children with the predominantly hyperactive-impulsive and combined subtypes (Wolraich et al., 1998; Wolraich et al., 1996).

Other factors that frequently accompany ADHD symptoms include poor school achievement and learning disabilities. Marshall and Hynd (1997) reported that more than half of children with ADHD had failed one or more grades in school by the time they reached adolescence. Other investigators have observed poor school performance in children with ADHD (Ackerman & Dykman, 1990; Faraone, Biederman, Lehman, Spencer, Norman, Seidman, Kraus, Perrin, Chen, & Tsuang, 1993; Riccio, Gonzalez, & Hynd, 1994), which is intriguing when many of these children tend to score at or above average range on individually administered intelligence tests (Barkley, 1990). Barkley (1996) also contended that the vast majority of clinic-referred children with ADHD have difficulties with school performance, where they typically underachieve relative to their own levels of ability as determined by intelligence and academic achievement tests. It should be noted, however, that several researchers have found that despite their average range overall intelligence scores children with ADHD tend to have lower subtest scores on standard measures of intelligence then controls (Faraone et al., 1993; Marshall & Hynd, 1997).

While some school difficulties appear to be the direct result of the children's primary symptoms, these children are also at elevated risk for a formal learning disability (e.g., reading disabilities, speech and language difficulties, and other written language problems) (Riccio et al., 1994). Although several studies that have examined ADHD and reading disorders and did not find differences between ADHD subtypes (e.g., Ackerman

& Dykman, 1990: Riccio et al., 1994), those who examined the relation with arithmetic deficits did find differences between ADHD, predominantly hyperactive-impulsive type, and AHDD, predominantly inattentive type. There is evidence suggesting that children with ADHD, predominantly inattentive type, may be more impaired in arithmetic than those with hyperactive-impulsive type. This was first proposed by Carlson, Lahey, & Neeper (1986) who indicated that children with ADHD, predominantly inattentive type, performed poorly than the control group on a math achievement test, despite comparable IQ scores. Using the same achievement test, Hynd, Lorys, Semrund Clikeman, Nieves, Huettner, and Lahey (1991) found that children with ADHD, predominantly inattentive type, scored significantly lower than children with ADHD, predominantly hyperactive-impulsive and combined subtypes.

Attentional problems among children with ADHD are most likely to be displayed in situations that require great amounts of self-application and self-discipline (Hawkins et al., 1991). It can be reasoned, therefore, that one of the domains in which children with ADHD experience most difficulties is in the academic setting (the classroom). Specific classroom behaviors of children with ADHD have included increased movement, calling out and making noises, increased contacts with classmates, and frequent fidgeting (Whalen, Henker, Collins, Flick, & Dontemoto, 1979). Factors such as problems sustaining attention and distractibility, which contributed to social rejection, may also interfere with the ability to successfully master academic tasks. These aspects are critical as it has been suggested that teachers believe that the essential abilities for success in the classroom are to follow established rules, listen to and comply with directions, listen to the comments of their peers, and use equipment appropriately (Kauffman et al., 1989).

Teachers not only play an important part in identifying children who display these behaviors, but they are also typically responsible for implementing school-based interventions to assist in managing these behaviors. Because disruptive, off-task behaviors are probably the most significant problems exhibited in the classroom by ADHD children and contribute to their academic success, they have been the focus of numerous intervention studies. However, although there is an implication that the primary targets of intervention are children's disruptive and inattentive behaviors, it appears that the preliminary target of intervention should be teachers' knowledge and acceptability of ADHD on which few studies have specifically focused. This aspect is critical for research has indicated that teachers tend to have a poor understanding of the presentation, identification, etiology, and treatment of ADHD.

Although previous research suggests that teachers possess a negative view of working with children with disruptive behavioral difficulties similarly displayed by children with ADHD (Algozzine, 1980; Coleman & Gilliam, 1983) and believe they are in need of an intervention strategy, few studies have specifically focused on teachers' acceptability and knowledge of ADHD. Hawkins et al. (1991) reported that while 85% of the teachers they surveyed taught a child who was diagnosed with or suspected of having ADHD, the majority (61%) had not been specifically trained to do so. In a similar study, Jerome, Gordon, and Hustler (1994) reported teachers had almost no opportunity to learn about ADHD during the course of their education or even after they graduated. Even more importantly, the majority of teachers reporting to have had regular contact with children with ADHD received either no instructional information regarding ADHD, or only a surface-level mention during their educational process. Interestingly, teachers

did agree that ADHD is a legitimate special education problem and that the symptoms of ADHD are believed to be the result of biological indices.

However, while teachers typically performed well on knowledge-based questions related to the etiology of ADHD and educationally based interventions, many teachers believed that dietary interventions are effective and that symptoms of ADHD are resolved at adolescence. This research indicates that teachers generally have some fundamental knowledge of ADHD and perceive it as a significant issue for students. However, their level of perception may lead to the speculation that some of these teachers' erroneous assumptions (e.g., effectiveness of dietary concerns) appear to be related to their lack of training in and knowledge of ADHD.

Of continuing concern regarding teachers' lack of training in and knowledge of ADHD is their presumed difficulty in being able to differentiate between ADHD and other disorders that often present comorbidly with and/or present with symptoms that overlap those of ADHD (e.g., ODD and CD). Researchers found that although teachers' ratings may reliably differentiate between children with and without deficits in attention (Atkins, Pelham, & Licht, 1985; Jerome et al. 1994), teachers often do not differentiate between children with ADHD from children who present with symptoms of other disruptive disorder, such as ODD and CD. For instance, Schachar, Sandberg, and Rulter (1986) examined the relations between teachers and blind observers on measures of ADHD and ODD. Their findings indicate a negative assumption of oppositional behaviors that lead to the conclusion that children who exhibited defiant or aggressive behaviors were rated as having ADHD, regardless of their activity level.

Research related to teachers' knowledge and perception of ADHD suggest that if teachers have had no opportunity to learn about ADHD they will be unable to differentiate its symptoms from those of other disorders (e.g., ODD and CD) that may overlap or present comorbidly with ADHD. As previously mentioned, up to 60% of children with ADHD will also meet the criteria for ODD and teachers often erroneously rate a child exhibiting only oppositional behaviors as having substantial symptoms of ADHD (Stevens, Quittner, & Abikoff, 1998). This dichotomy questions the effect on teachers' perceptions of ADHD if they are utilizing and incorporating symptoms not exclusive to ADHD as a basis for their perceptions.

Therefore, it is apparent that teachers' knowledge and perception of ADHD are imperative, not only for identifying and assessing ADHD, but also for their belief and utilization of interventions for ADHD. Treatment strategies for ADHD represent a complicated and arduous balance of a conglomeration of methods subsuming educational (classroom-based), cognitive-behavioral, and pharmacological interventions. Several studies have indicated that the most generally accepted intervention strategies for ADHD include psychosocial interventions (classroom-based) and pharmacological interventions. For instance, Ervin, DuPaul, Kern, and Friman (1998) and Barkley (1990) indicated that the most widely used and effective interventions for ADHD include classroom-based behavioral interventions, stimulant medications, or both which have also been found to reduce undesirable behaviors and enhance academic performance (DuPaul & Eckert, 1997; Fiore, Becker, & Nero, 1993). Of the many psychosocial strategies available, the types of interventions that have been considered as efficacious include classroom-based

behavioral interventions and behavioral parent-training programs (Pelham, Wheeler, & Chronis, 1998).

Within the classroom setting, teacher-administered positive and negative consequences are some of the most commonly used behavioral interventions with children with ADHD (Barkley, 1990). For appropriate classroom conduct, positive consequences consist of a variety of techniques such as positive teacher attention (e.g., praise, pat on the back) and tangible rewards (e.g., special activities/privileges, token rewards, positive note home). For inappropriate classroom behavior, negative consequences include ignoring, verbal redirection, response cost (e.g., loss of reinforcer), and time-out (e.g., time away from positive reinforcement).

Positive attention is valued by most children, including hyperactive children, and numerous studies document positive effects of such attention on appropriate classroom conduct (Barkley, 1990). In fact, Abramowitz and O'Leary (1991) specified that contingent teacher attention undoubtedly constitutes the most universally employed set of classroom management techniques. As a student displays appropriate behavior, the teacher reinforces this behavior with positive attention. As a result, the appropriate behavior increases in frequency. The contingency dictates that when this type of teacher attention is withdrawn due to inappropriate behavior (ignoring) the behavior tends to decrease. There can be instances, however, where positive attention alone is not sufficient as research has indicated that children with ADHD seem to require more frequent (Douglas, 1985) and more powerful and/or tangible reinforcement (Haenlein & Caul, 1987). These powerful rewards, which can be used to modify behavior, may include special privileges such as assisting the teacher or extra computer time.

Token rewards, reinforcement systems, have long been used to modify behaviors and have recently been shown effective with children with ADHD (Pfiffner & O'Leary, 1987). Within this system, children earn points or tokens (e.g., stickers) throughout the day contingent upon appropriate behavior and exchange what they have earned for prizes, special activities, or privileges.

Ignoring is the contingent withdrawal of positive teacher attention upon the demonstration of inappropriate behavior by the student. However the utilization of ignoring alone as an intervention is often ineffective (Barkley, 1990) and insufficient (Pfiffner & O'Leary, 1987) unless an additional negative consequence is incorporated. Barkley (1990) reported that a verbal reprimand, often referred to as a verbal redirection, is probably the most frequently utilized negative consequence within the classroom setting. It seems as if the effectiveness of a verbal redirection is mitigated upon the constructs in which is it delivered. For example, research indicates that this type of intervention is most effective when it is brief, firm, and immediate.

A response cost (e.g., loss of reinforcer) is a reductive procedure in which a specified amount of available reinforcers are contingently withdrawn following the response. Typically, these reinforcers are withdrawn from the child's reserve, as with a loss of points. Response cost has often been used to manage the disruptive and off-task behavior of children with ADHD within the context of a token economy and has been shown to be more effective than verbal reprimands (redirection) with children with ADHD (Barkley, 1990).

The time-out intervention involves the withdrawal of positive reinforcement contingent upon inappropriate behavior and is often frequently recommended for

hyperactive children who display aggressive or disruptive behaviors (Kirby & Kirby, 1994). Barkley (1990) indicates, however, that although time-out is effective in reducing aggressive and disruptive behaviors within the classroom, it may not be effective where off-task or inappropriate behavior is a result of a child's desire to avoid academic work or to be alone.

Delayed reward systems (e.g., classroom lottery) are also implemented and incorporated within the classroom setting and some utilize contingency rewards across settings, such as from the classroom setting to the home setting (e.g., daily report card). A classroom lottery is a group contingency intervention where students earn classroom rewards based on their behavior that complies with a brief list of posted class rules. At the end of the day, the names of students who followed the rules of a predetermined expectation level (e.g., four out of five scans at unannounced times) are entered into a lottery where students are eligible to choose classroom jobs (e.g., line monitor, office messenger) they want for the next day.

The daily report card is a contingency arrangement involving teachers, students, and their families, and designed to coordinate the behavioral contingencies across settings. In one setting (usually the school), the teacher marks a card contingent on the presence or absence of the target behavior and sends it each day to the other setting (usually the home). Based on the behaviors indicated on the daily report card, a reward or consequence is presented. Daily reports seem particularly suited for children with ADHD since they often benefit from more frequent feedback indicated on the card than is usually provided at school (Barkley, 1990).

In addition to the above-mentioned interventions, several classroom-based cognitive-behavioral strategies have also been utilized with children with ADHD (Pfiffner & Barkley, 1990). These techniques include self-reinforcement which involves children's monitoring and evaluating their own academic and social behavior and rewarding themselves on the basis of those evaluations (Barkley, 1990). More specifically, these techniques can involve teaching a general series of self-instructions, including questions to identify the task, answers and related plans, plus self-guidance and reinforcement. The self-instructions are shaped in a series of steps beginning with teacher modeling and behavior then gradually shifts control over to the child. Elements of this basic format have included in and combined with methods for managing hyperactivity and other behavioral problems of childhood (Abramowitz & O'Leary, 1991).

Despite the variety of techniques and strategies available, however, Barkley (1990) and Kasten, Coury, and Heron (1992) maintain that psychostimulant medication is the most common treatment for children with ADHD. More children receive medication (predominantly Ritalin) to manage ADHD than any other childhood disorder – between 1% and 2% of the school-age population (Safer & Krager, 1988). Among stimulants, Ritalin is by far the most widely prescribed medication for ADHD, representing over 90% of the stimulant medication market (Barkley, 1990). Although psychostimulant medication remains the main strategy for ADHD, of particular concern is that there has been absolute consensus that the behavior of few children with ADHD can be adequately and appropriately managed by this or any other intervention by itself (Rapport, 1992).

These contentions may also influence teachers' beliefs and utilization of interventions for ADHD. As previously mentioned, empirically supported interventions utilized within the classroom include behavior modification (e.g., daily report card, response cost), classroom lottery, pharmacological intervention (e.g., stimulant medication), or the pairing of both behavior modification and pharmacological strategies. Power et al. (1995) examined regular education teachers' acceptability of behavioral (daily report card and response cost) and pharmacological interventions as a function of their knowledge of and experience with ADHD. In their study, teachers read vignettes that described three interventions for ADHD: a daily report card (the behavioral technique where the teacher rates the child's behavior daily, and, as result for attained positive behaviors, the child earns a reward), a response cost technique (the behavioral technique where the child either earns or loses points based on appropriate or inappropriate behavior, respectively, and redeems these points at the end of the day for a reward), and stimulant medication. The results indicated that teachers viewed the intervention of daily report card as more acceptable than the strategies of a response cost or stimulant medication, however, endorsed the combination of a daily report card and stimulant medication as most acceptable. They also found no significant results when investigating intervention acceptability in relation to the teachers' knowledge of and experience with ADHD.

In an earlier study, Kasten et al. (1992) examined regular and special education teachers' knowledge and attitude toward the treatment of ADHD and found that 90 % had worked with a child who was taking a stimulant medication. Of this group, 67% of the regular education teachers and 69% of the special education teachers endorsed stimulants

as an effective treatment for ADHD and more than half in each of these groups believed that the student's academic performance improved due to the medication. What was reported as a concern, however, was special education teachers' perception that stimulants were being overused. For example, 41% of these teachers believed that too many students were taking stimulants and that 35% of them believed that stimulants were prescribed too often for ADHD. Interestingly, when the regular education teachers examined the same issues, 9% believed that stimulants were overused for regular education students and 7% believed they were overused for those with ADHD. This study demonstrates the perception and acceptability of pharmacological interventions among regular and special education teachers and presents the concern of some teachers that stimulants are overused.

The success of a school-based approach to intervention depends not only on the potential efficacy of the treatment(s) being utilized but also on teachers' perceptions of the acceptability of the intervention program (Power et al., 1995). High treatment acceptability indicates a high level of willingness to implement an intervention in a specific situation (Dunson, Hughes, Jackson, 1994). This point is particularly important as it poses examination of the factors that contribute to the understanding of why certain interventions for ADHD are more acceptable by teachers than others. The factors related to the characteristics of teachers and treatments to be contemplated include perceived severity of a child's problem, nature of treatment (positive vs. negative), time demands involved in implementing a treatment strategy, and perceived effectiveness of a treatment strategy.

The severity of a child's behavior difficulties is considered to be an important mediating variable to teachers' accepting treatment strategies (Power et al., 1995). In general, research has indicated that the more austere a child's problem is, the more acceptable the potential treatment intervention is perceived to be. For example, Kazdin (1980) evaluated undergraduate students' acceptability of four treatment methods (reinforcement of incompatible behaviors, 10 minute time-out from reinforcement, stimulant intervention – Ritalin, and moderately painful contingent electric shock) to improve one of two severities of child misbehaviors. It was found that treatment methods were rated by the undergraduate students as considerably more acceptable for more severe than for less severe case descriptions. This may be particularly salient for aggressive behaviors that have been reported to be commonly displayed by children with ADHD who have considerable difficulties with hyperactivity-impulsivity. It can be speculated, therefore, that teachers may be more inclined to accept and implement a behavioral intervention for these types of behaviors.

Elliott, Witt, Galvin, and Peterson (1984) investigated the impact of the severity of problem behavior on the acceptability of complex interventions (positively and negatively oriented treatment). They specifically examined regular and special education teachers' acceptability of positive interventions (ranging from low to high complexity) for student problem behaviors (ranging from low to high severity). In a two-part study, they asked these teachers to read one of three case descriptions of a student whose problem behaviors included daydreaming (low severity), using offensive language (moderate severity), or destruction of property (severe). Then the teachers were asked to rank the acceptability of one of three positive treatments that included praise (low

complexity), home-based reinforcement (moderate complexity), or token-economy (high complexity) along with one of three negative treatments that included ignoring (low complexity), response-cost lottery (moderate complexity), or seclusion time-out (high complexity). The results indicated that the least complex positive and negative treatments (praise and ignoring) were rated most acceptable for less severe problem behavior (daydreaming), and the most complex positive and negative treatments (token economy and seclusion time-out) were rated the most acceptable for the most severe problem behavior (destroying others' property).

Researchers have also found that positive treatments (e.g., praise, token economies) are rated significantly more acceptable by teachers than negative or reductive treatments (e.g., response cost, time-out) (Elliott et al., 1984; Power et al., 1995; Witt, Elliott, & Martens, 1984). For instance, Witt, Elliot et al. (1984) and Elliott et al. (1984) assessed teachers' acceptance of six treatments, categorized into three positive (praise, home-based reinforcement, token economy) and three negative (ignoring, response cost, seclusion time-out) strategies, for changing target behaviors. Of these interventions, teachers consistently rated positive treatments more favorable than negative treatments for similar behavioral difficulties. These are considerable factors in determining appropriate and successful interventions for children with ADHD as it can be argued that a negative strategy implemented within the classroom setting may only enhance the negative perceptions children with ADHD experience with reduced self-concept and social rejection. However, as previously mentioned, despite teachers' tendency to prefer an all positive approach and are reluctant to withdraw or withhold what a child has

earned, it appears that children with ADHD will require some reductive techniques (Abramowitz & O'Leary, 1991).

Due to the time demands placed on teachers, the amount of time required to implement a treatment strategy may be an imperative variable for teachers to consider in selecting an intervention. In fact, research has indicated that efficiency is a pertinent factor in teachers' ratings of the acceptability of treatment procedures (Elliott et al., 1984; Kazdin, 1982; Power et al., 1995; Witt, Elliott et al., 1984; Witt & Martens, 1983; Witt, Martens, & Elliott, 1984). In a study conducted by Witt, Martens et al. (1984), of particular interest was a significant interaction between time and both problem severity and treatment type. While examining how time affected teachers' acceptability ratings, they noted that not only did teachers generally prefer more efficient treatments, but they also appeared to possess higher expectations about the complexity and time involved to modify problem behavior when the behavior was considered severe.

After a treatment has been implemented, the ultimate criterion for evaluating it is effectiveness (Elliott, 1988). Here, effectiveness refers to whether or not the implemented treatment strategy changes undesirable behavior to desirable behavior. Several studies (e.g., Clark & Elliott, 1987; Kazdin, 1981; Von Brock & Elliott, 1987) have been conducted to examine the connection between treatment outcome (effectiveness of a strategy) and treatment acceptability ratings. For example, Von Brock and Elliott (1987) found that information on effectiveness of a treatment strategy given to teachers influenced their ratings of acceptability when the severity of a child's problem was considered. They also found that when teachers viewed an intervention as less acceptable, they also rated it as less effective. In a related study, Clark and Elliott (1987)

examined the effects of treatment strength information (strong or weak) on teachers' acceptability ratings. The "strong" or "weak" interventions were included in a treatment narrative along with a graph depicting the problem behaviors of a child and the behavior of a "normal" peer. The findings of this study were similar to those of Von Brock and Elliott (1987) in that when interventions were described as strong and successful, teachers rated those interventions higher than interventions described as weak and unsuccessful.

Summary of this research on teachers' acceptability of interventions indicated that the utilization of treatment is contingent upon the perceived severity of a child's behaviors, positive versus negative treatment, amount of time involved in treatment implementation, and perceived treatment effectiveness. It was found that treatment methods were considered more acceptable for more severe behavior problems and that the severity of behaviors contributed to the acceptability of more complex interventions. However, despite the severity of problem behaviors, teachers rated positive treatments (e.g., praise, token economy) as more acceptable than negative treatments (e.g., ignoring, response cost). This perception is important in teachers' acceptability and utilization of effective interventions for children with ADHD, as it has been reported that these children often require some reductive treatments to assist in managing their problem behaviors (Abramowitz & O'Leary, 1991). Consistent in this literature is teachers' preference for more efficient treatments. Interestingly, teachers adjusted their preference for efficiency to accommodate increased time demands when behavior problems were considered more severe. In addition to this, there was an added expectation of effectiveness of treatment given increased time demands and complexity.

Although it has been acknowledged that teachers' knowledge and perception of ADHD contribute to the acceptability and utilization of interventions, this area of research has examined a limited number of teacher variables. For example, years of teaching experience, training and/or experience in ADHD, and educational environment have been considered as they relate to knowledge and acceptability of ADHD. However, these considerations have not encompassed more specific teaching beliefs (teacher efficacy and pupil control ideology) and teacher perceived stress, which are mediated with teacher effectiveness (Agne et al., 1994). Since effective teachers of students with behavior disorders use a variety of interventions for managing behavior, establishing discipline, and assisting in improving emotional and social difficulties (Henley, Ramsey, & Algozzine, 1999; Kauffman & Wong, 1991), it may be that they have a different perception of ADHD than teachers who are not effective.

Teacher efficacy is described as teachers' belief in their ability to impact student learning (Ashton & Webb, 1986; Gibson & Dembo, 1984). Ashton and Webb (1986) examined teacher efficacy as it relates to student achievement and found that teachers high in efficacy were more inclined than teachers low in efficacy to consider low-achieving students as teachable and deserving of their effort and attention. Within this context of effective teaching, efficacy may also influence how teachers respond to the needs, capabilities, and interests of students, particularly those with ADHD who exhibit academic difficulties. For example, teachers cannot effectively instruct students with ADHD without the knowledge and understanding of their difficulties.

As previously mentioned, there is significant variability in the way different teachers respond to and perceive the behavioral difficulties and associated symptoms of

ADHD. Some teachers perceive these behavior problems as more troublesome, are more reactive to such behaviors, and respond to these behaviors less effectively than others (Greene, 1995). In fact, Kauffman et al. (1989) found that these influences on teachers may impact the interpersonal dynamic between teachers and students and what teachers feel is acceptable classroom conduct. Examining the ratings of students with ADHD expressly as a product of the student instead of as an indicator of the student-teacher interaction disregards the influences of these variances in teachers' perceptions.

Another important environmental factor involved in effective teaching is teachers' perception of the essence and degree of stressors within their working environment. Several factors are attributed to teacher stress, such as reduced efficiency, tardiness and absenteeism, increased irritability, lack of control, and diminished regard for others (Eskridge & Coker, 1985). In addition to these resulting effects of stress, Agne et al. (1994) indicated that other factors important to consider in working with students are decreased effectiveness and lowered achievement.

One belief system that may be related to teacher stress is pupil control ideology, which may also contribute to the student-teacher relationship contingent upon a teacher's operating ideology within the bipolar custodial/humanistic continuum used to manage behavior. At one end of the continuum is the custodial orientation where a teacher tends to be controlling, utilizing negative or positive interventions, engaging in impersonal relationships with students, possessing an attitude of mistrust, and focusing on maintaining order. These needs are sustained despite the interactional relationship between teacher and student and perhaps even more so because of the difficulties experienced by children with ADHD. At the other end of the continuum is the

humanistic orientation where a teacher tends to establish an environment encouraging of interaction and communication, engaging in personal relationships with students, maintaining respect and positive reciprocating attitudes, and allowing for flexibility of rules.

Given the consideration of these issues, it is imperative to examine how characteristics of the teacher, treatment, and student potentially impact treatment acceptability. As teachers are typically responsible for utilizing treatment interventions for children with ADHD, this study will examine teachers' knowledge and acceptability of ADHD and how this information is impacted by their experience with children who are diagnosed with or suspected of having ADHD, their training in ADHD, and their experience with classroom-based interventions and psychostimulant medication.

Teachers' knowledge and acceptability of ADHD has an especially critical effect on intervention because their ability and willingness to effectively participate in the treatment process are integral components to the successful implementation of classroom-based behavioral strategies. This study will also examine teachers' acceptance of typical interventions (classroom-behavioral interventions and stimulant medication) for the treatment of ADHD subtypes. More specifically, it will focus on teachers' beliefs about the following four interventions: (a) Daily Report Card, (b) Response Cost Technique, (c) Classroom Lottery, and (d) Ritalin. Based on previous research, it is expected that teachers will prefer the use of Daily Report Cards in comparison to other treatment methods.

Although previous research has examined the contribution of teachers' knowledge and perception to the acceptability and utilization of interventions, it has not examined

the influence of specific teacher beliefs and environmental factors as a function of student characteristics. Therefore, another purpose of this study will be to examine teacher acceptability of interventions for ADHD as a function of teacher beliefs and environmental factors (efficacy, teacher stress, and pupil control ideology) and student characteristics (ADHD, predominantly inattentive type; ADHD, predominantly hyperactive-impulsive type; and ADHD, combined type). Based on previous research, the consideration of various teacher beliefs and environmental factors will affect the assessment and intervention processes related to children with ADHD.

Because students with behavior difficulties, similar to symptoms exhibited by children diagnosed with ADHD, may exhibit more disruptive behaviors than some of their peers, they often need to be taught simple rules for self-control and conduct that their peers learn without specific intervention. Effective teachers of these students assist in implementing instructional programs and interventions to include direct instruction in skills related to improving their emotional and behavioral difficulties (Henley et al., 1999). Teachers who subscribe to a more humanistic pupil control ideology, take responsibility for the adaptive and maladaptive behavior of their students, and believe they have the ability to change important behavioral characteristics, while holding high expectations for their students, may be those who are more effective in working with students who exhibit behavioral difficulties (Kauffman et al., 1989). Greene (1995) indicated that this suggests that teachers have different tolerances for various student behaviors, and that low teacher tolerance (specifically for ADHD related symptoms, such as hyperactive-impulsive or combined subtypes) is likely to result in negative outcomes for both teacher and student. Effective teaching of students exhibiting behavioral

difficulties may require skills, attitudes, and beliefs different from those of teachers who work effectively with students who do not exhibit ADHD related symptoms.

Other critical points of consideration are factors of student characteristics that influence teachers' evaluations of ADHD and various treatment strategies. There exists considerable difference in social and behavioral functioning between children with ADHD, predominantly inattentive type and children with ADHD, predominantly hyperactive-impulsive or combined types. Children who mainly exhibit symptoms of inattention will likely be less disruptive in the classroom than children who present with symptoms of the combined or hyperactive-impulsive types (Pisecco, Huzinec, & Curtis, 2001).

Purpose of study

The overall purpose of this study was to examine the effect of student characteristics (ADHD subtype of symptoms: Inattentive, Hyperactive-Impulsive, and Combined Types) and teacher beliefs (teacher efficacy and pupil control ideology), and perceptions of stress on the acceptance of empirically supported treatment strategies (Daily Report Card, Response Cost System, Classroom Lottery, and medication). This study is exploratory in nature and will specifically focus on two research questions:

1. How do student characteristics (ADHD subtype of symptoms: Inattentive, Hyperactive-Impulsive, and Combined Types) effect teacher ratings of acceptability of interventions for the treatment of ADHD?
2. How do teacher beliefs (teacher efficacy and pupil control ideology) and teacher perceived stress effect teacher ratings of acceptability of interventions for the treatment of ADHD?

METHODOLOGY

Participants

The sample consisted of 159 elementary school teachers, who ranged in age from 25 to 64, from urban and suburban school districts in a large metropolitan area in the southwest. One hundred and forty-seven of the participants were female and 12 were male. The average participant had 11.19 years of teaching experience. The overwhelming majority (95%) considered ADHD to be a legitimate educational problem. Seventy-four (46.5%) of the teachers had received some form of previous training in ADHD, while 84 (52.5%) had not. Nearly all of the subjects (95%) thought that they could benefit from additional training. According to teachers' reports, 135 (85%) of the participants had taught a child in the past two years who they knew was diagnosed with ADHD. Ninety-three (58.1%) were involved in the implementation of a behavioral program. Likewise, 143 (90%) of the participants had at least one student who, during the previous academic year, was prescribed medication for ADHD. As a group, the teachers were knowledgeable about the disorder as illustrated by an average score of 90% on a 20-item test about ADHD.

Instruments

Demographic questionnaire. This questionnaire obtained information regarding the teachers' education, years of teaching experience, educational setting, classification (e.g., regular or special education), age, gender, ethnicity, training in ADHD, experience in teaching children with ADHD, and experience with children who require behavioral or pharmacological interventions.

ADHD knowledge questionnaire (Jerome et al., 1994). This is a 20-item true-false questionnaire regarding the etiology (e.g., ADHD can be caused by poor parenting practices), diagnostic characteristics (e.g., ADHD occurs equally as often in girls as boys), and treatment of ADHD (e.g., ADHD is a medical disorder that can only be treated with medication). The questionnaire contains items that indicate accurate findings from the literature as well as those that indicate common misconceptions.

Behavior Intervention Rating Scale (BIRS; Elliott & Von Brock Treuting, 1991). The BIRS is 24-item measure comprising three factors: intervention acceptability, perceived effectiveness, and perceived efficiency. It is divided into two broad categories (acceptability and effectiveness), and utilizes a six-point Likert type format. Coefficient alphas for each construct exhibited high reliability, with estimates of .97 (acceptability). .92 (effectiveness), and .87 (timeliness). For the purpose of this study, intervention acceptability was the only factor used.

The Teacher Efficacy Scale (TES; Gibson, 1983). This is a measure comprising 30 items, utilizing a six-point Likert response format. It produces a total score consisting of two factor scores: 1) Personal Efficacy and 2) Teacher Efficacy. Personal efficacy is the belief that a teacher has the skills and abilities to bring about student learning; whereas teacher efficacy is the belief that any teacher's ability to bring about change is significantly limited by external factors (Gibson & Denbo, 1984). The TES has demonstrated good internal consistency (.75 to .79) and convergent validity (Gibson & Denbo, 1984). For the purpose of this study, personal efficacy was the only factor used.

The Pupil Control Ideology (PCI; Willower & Jones, 1963). The PCI is a 20-item measure that utilizes a five-point Likert type format with scores from five, strongly agree

to one, strongly disagree, with scoring reversed on two items. This measure focuses on teacher beliefs regarding pupil control based on a bipolar continuum from humanistic to custodial. As previously mentioned, a humanistic orientation establishes an environment of acceptance of and respect for the student. A custodial orientation emphasizes maintaining order and impersonal relationships with students. It has been found to have good split-half reliability (.91) and has been found to discriminate between humanistic and custodial oriented teachers (Willower, Eidell, & Hoy, 1973).

The Wilson Stress Profile for Teachers (WSPT; Wilson, 1979). The WSPT is a measure comprising 36 items with nine categories, utilizing a five-point Likert format. The nine categories of stress include student behavior, teacher/teacher relations, employee/administrator relations, teacher/parent relations, time management, intrapersonal conflicts, psychological/emotional symptoms of stress, physical symptoms of stress, and stress management techniques. For the purpose of this study, a total score was used. The resulting score ranges from low stress to high stress. The WSPT has been found to have good internal consistency (.92) and concurrent validity (Luh, Olejnik, Greenwood, & Parkay, 1989).

Procedure

Each teacher completed the demographic questionnaire, ADHD knowledge questionnaire, TES, PCI, and WSPT. They were then randomly assigned to one of six conditions and read a vignette of a child with ADHD. The symptoms exhibited by the child in the vignette were based on criteria for ADHD as indicated in the DSM-IV. Vignettes varied by the type of symptoms exhibited by the child (predominantly inattentive type, hyperactive-impulsive type, or combined type) and the child's gender

(Jane or Jonathan). For the purpose of this study, only subtype of symptoms was examined. For a description of each vignette, see Appendix A.

After reading a vignette, each teacher read the description of four empirically supported interventions for the treatment of ADHD (Daily Report Card, Response Cost, Classroom Lottery, and Medication). For a detailed description of each intervention, see Appendix B.

After reading each intervention description, the teachers then rated their level of agreement or disagreement to the items of the BIRS for each intervention. The order of the measures and presentation of intervention materials were counterbalanced across subjects.

Variables of study

Identification of ADHD variables

Gender was a focus in the original study (Pisecco et al., 2001) and is not included in the examination of student characteristics for the current project; only symptom subtype vignettes were examined, which included three subtype variations (predominantly inattentive, hyperactive-impulsive, and combined types).

Identification of teacher variables

Frequencies were run on the variables and groups were created based upon scores below the 33$^{rd\%}$ tile (low), between 33$^{rd\%}$ tile and 66$^{th\%}$ tile (average), and higher than the 66$^{th\%}$ tile (high). As a result, teacher beliefs and environmental factors were categorized as teacher efficacy (low, average, and high), teacher perceived stress (low, average, and high), and pupil control ideology (low, average, and high).

Analysis

As previously mentioned, the purpose of this study was to explore the impact of student characteristics (ADHD subtype of symptoms: Inattentive, Hyperactive-Impulsive, and Combined Types) and teacher beliefs and environmental factors (teacher efficacy, teacher perceived stress, and pupil control ideology) on teacher ratings of acceptability of interventions (Daily Report Card, Response Cost, Classroom Lottery, and medication) for ADHD. The first research question examined the effect student characteristics have on teachers' ratings of acceptability of interventions. The independent variable is ADHD symptom subtypes (predominantly inattentive, hyperactive-impulsive, and combined types), and the dependent variables are teachers' ratings of treatment acceptability (Daily Report Card, Response Cost, Classroom Lottery, and medication). The second research question examined the effect teacher characteristics have on teachers' ratings of acceptability of interventions. The independent variables are teacher efficacy, teacher perceived stress, and pupil control ideology transformed into group variables (e.g., low, average, and high), and the dependent variables are teachers' ratings of treatment acceptability (Daily Report Card, Response Cost, Classroom Lottery, and medication). For each of the research questions, the statistical technique used for assessing differences across the dependent variables (teachers' ratings of treatment acceptability), based on sets of categorical variables acting as independent variables (student characteristics and teacher beliefs and environmental factors) will be a series of repeated measures MANOVAs.

RESULTS

Data was analyzed using a series of Repeated Measures (teachers' ratings of treatment acceptability) MANOVAs. Results of the analysis indicated that the effect of ADHD symptom subtype on teachers' ratings of treatment acceptability was not significant (Wilks $\lambda = .91$, $F(6, 182) = 1.40$, $p > .05$). This indicated that teachers' ratings of acceptable interventions were not effected by ADHD symptom subtype. Results also indicated that the effects for teacher efficacy (Wilks $\lambda = .96$, $F(6, 182) = .59$, $p > .05$), pupil control ideology (Wilks $\lambda = .93$, $F(6, 182) = 1.19$, $p > .05$), and teachers' perceived stress (Wilks $\lambda = .97$, $F(6, 182) = .47$, $p > .05$) were not significant. These results indicated that teachers' ratings of acceptable interventions were not effected by teacher efficacy, teacher perceived stress, or pupil control ideology. Tables 1-4 contain the means and standard deviations for teachers' ratings of treatment acceptability by subtype of symptom, teacher efficacy, perceived stress, and pupil control ideology.

Table 1. Means, Standard Deviations, and Frequencies of ADHD Subtype of Symptoms for Teachers' Ratings of Treatment Acceptability.

INTERVENTION ACCEPTABILITY								
ADHD SUBTYPE	**DRC**		**RCT**		**MED**		**CL**	
	M	SD	M	SD	M	SD	M	SD
Inattentive	29.17	13.99	40.58	20.56	49.89	21.81	47.70	22.71
Hyperactive-Impulsive	28.98	14.93	36.62	19.71	45.31	19.37	50.00	24.10
Combined	31.07	15.69	40.98	18.62	43.20	17.95	55.05	19.20

Table 2. Means, Standard Deviations, and Frequencies of Teacher Efficacy (Low, Average, High) for Teachers' Ratings of Intervention Acceptability.

INTERVENTION ACCEPTABILITY								
EFFICACY	**DRC**		**RCT**		**MED**		**CL**	
	M	SD	M	SD	M	SD	M	SD
Low	33.23	16.28	42.48	20.39	49.82	19.89	45.43	21.13
Average	29.76	14.07	39.18	19.49	46.27	20.73	52.82	22.95
High	26.84	14.66	37.50	19.71	41.84	18.61	54.43	21.36

Table 3. Means, Standard Deviations, and Frequencies of Teacher Perceived Stress (Low, Average, High) for Teachers' Ratings of Intervention Acceptability.

INTERVENTION ACCEPTABILITY								
PERCEIVED STRESS	**DRC**		**RCT**		**MED**		**CL**	
	M	SD	M	SD	M	SD	M	SD
Low	29.92	15.35	43.18	20.08	44.14	20.27	53.65	24.19
Average	29.63	15.24	38.88	20.14	47.86	19.80	50.82	22.67
High	28.80	12.36	36.82	16.27	45.92	19.91	48.49	18.96

Table 4. Means, Standard Deviations, and Frequencies of Pupil Control Ideology (Low, Average, High) for Teachers' Ratings of Intervention Acceptability.

INTERVENTION ACCEPTABILITY								
PUPIL CONTROL IDEOLOGY	**DRC**		**RCT**		**MED**		**CL**	
	M	SD	M	SD	M	SD	M	SD
Low	30.65	18.47	43.31	21.50	42.88	19.58	59.62	25.94
Average	28.26	11.76	37.66	20.82	46.28	19.81	49.68	20.38
High	31.29	14.55	38.13	19.19	51.32	21.10	45.32	21.59

DISCUSSION

The purpose of this study was to examine the effect of student characteristics, teacher beliefs, and perceived levels of stress on teachers' acceptability of empirically supported treatment strategies (Classroom based behavioral interventions, and Medication) for ADHD. It is important to note that teachers fulfill an integral role in identifying children who display symptoms consistent with ADHD and are typically responsible for implementing school-based interventions. In considering this specific role within the classroom, previous research has examined teachers' knowledge and acceptability of ADHD, but it has not examined student and teacher characteristics effect on teachers' acceptability ratings of interventions for ADHD. In particular, we were interested in two specific research questions: 1) How do student characteristics (subtype of symptoms) effect teachers' ratings of treatment acceptability for ADHD; 2) How do teacher beliefs and perceived stress levels (teacher efficacy, teacher perceived stress, and pupil control ideology) effect teacher ratings of treatment acceptability for ADHD.

While researchers have not previously examined the impact of symptom subtype on teachers' ratings of treatment acceptability, it has been reported that teachers tend to consider more complex interventions as more acceptable for more severe behavioral problems. Research has also indicated that teachers' acceptability of interventions is effected by not only the perceived severity of a students' behavior, but also by the perceived positive versus negative aspects of the treatment, amount of time involved in treatment implementation, and perceived treatment effectiveness (Elliott et al., 1984). Unexpectedly, the effect of ADHD symptom subtype on teachers' ratings of the acceptability of interventions for ADHD was not significant.

Although the study was exploratory, it was expected as has been suggested by others (Pelham, et al., 1998) that teacher characteristics would effect teachers' ratings of intervention acceptability for ADHD. Indeed, it has been reported that there is considerable variability in the manner in which teachers perceive and respond to behavioral problems and associated symptoms of ADHD (Kauffman et al., 1989; Greene, 1995). Therefore, teachers' perceptions of the student's behavior, experiences, and beliefs may influence the interpersonal dynamic between teachers and students. Again, the results did not support the expectation that teacher beliefs and perceived stress would effect teachers' acceptability ratings of interventions for ADHD.

There are several factors that may have influenced the results of the current study. Foremost is the fact that the teachers' ratings were based on self-report data. One could surmise that the fundamental aspect of self-report evaluative procedures contributes to and, perhaps, facilitates the notion of social desirability. More specifically, it could be that in order for teachers to present themselves in a more positive manner, they endorsed items that they speculated were the researchers' expected choices or that they felt some incongruity between their internal desired responses and the normative expected responses.

Another limitation of the study could be that the instrument used to evaluate the teachers' pupil control ideology was inadequate. For instance, the measure describes beliefs about pupil control that represents a humanistic or authoritarian approach. In fact, some teachers possess beliefs about pupil control that represent other belief patterns. For example, teachers may adopt aspects of both bipolar extremes dependent upon specific environmental stressors or interactions with particular students. As a result, this

instrument may not be a true representation of the ideology practiced by teachers within their classroom.

Another limitation of the current study is the use of an analog design. An advantage of an analog design is that it is possible for researchers to have more experimental control than with a study conducted in a naturalistic setting. However, a significant limitation of the analog design is the artificial aspect of the methodology. As a result, in this study teachers' reports of what they actually do in the classroom or their ratings of treatment acceptability may not actually represent their actual beliefs and/or behaviors within real world settings.

A final possibility, although unlikely given the aforementioned limitations, is that the results of the current study may actually represent the true impact of teachers' beliefs and symptom subtype on teachers' ratings of treatment acceptability. More specifically, neither symptom subtype nor teacher beliefs/experiences effect teachers' actual acceptability of treatment interventions for students with ADHD.

Regardless, it is clear that additional research should be conducted and studies designed to take into consideration the previous points. In particular, it is likely important that future researchers move beyond analog studies to research that is conducted in real-world settings. Rather than collecting data about perceived acceptability of various interventions, such studies would yield data that provided a clearer understanding of teachers' actual practices and preferred classroom management styles.

In addition, researchers should consider broadening their focus from student and teacher influences to more systemic variables such as administrative management styles.

Indeed, it is likely that certain management styles may dictate that teachers develop and/or implement specific interventions for students with problematic behaviors within their classroom.

In closing, the overall results of this study would seem to suggest that teachers' acceptance of empirically support treatment interventions for ADHD are not influenced by specific student or teacher characteristics. However, it is likely that the generalizability of this study was limited by the analog design. Consequently, the field would most likely benefit from research conducted in real-world settings.

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APPENDIX A

ADHD VIGNETTES

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ADHD-Combined Type: Jonathan or Jane is a 9-year-old student who has a long history of being easily distracted by extraneous stimuli, has problems keeping his or her attention focused, fails to pay attention to details, and makes careless mistakes in his or her school work. In addition to being easily distracted, Jonathan or Jane has a tendency to blurt out answers before questions have been completed, has a difficult time waiting his or her turn, and often interrupts others. Compounding these problems is the fact that Jonathan or Jane often forgets to complete daily activities and loses things necessary for various assignments (e.g., pencils, books, homework, etc.). Also problematic is his or her tendency to disrupt the class by leaving his or her seat at inappropriate times. In one-to-one situations, Jonathan or Jane can be frustrating to work with because he or she often does not seem to listen when spoken to directly and has a difficult time organizing himself or herself in tasks and activities. Jonathan or Jane also seems to always be "on the go", frequently fidgets, and talks excessively. After discussing these problems with his or her mother, you discover that Jonathan or Jane also has these problems at home and has been like this since before he or she started school.

ADHD-Predominantly Hyperactive-Impulsive Type: Jonathan or Jane is a 9-year-old student who always seems to be "on the go", frequently fidgets, and talks excessively. In addition, Jonathan or Jane has a tendency to blurt out answers before questions have been completed, has a difficult time waiting his or her turn, and often interrupts others. Jonathan or Jane also disrupts the class by leaving his or her seat at inappropriate times. All of these behaviors seem to contribute to the difficulties that he

or she has been experiencing at school. After discussing these problems with his or her mother, you discover that Jonathan or Jane also has these problems at home and has been like this since before he or she started school.

ADHD-Predominantly Inattentive Type: Jonathan or Jane is a 9-year old student who has a long history of being easily distracted by extraneous stimuli, has problems keeping his or her attention focused, fails to pay attention to details, and makes careless mistakes in his or her school work. In addition to being easily distracted, Jonathan or Jane often forgets to complete daily activities and loses things necessary for various assignments (e.g., pencils, books, homework, etc.). Jonathan or Jane can also be frustrating to work with in one-to-one situations because he or she often does not seem to listen when spoken to directly. It is believed that all of these characteristics contribute to his or her difficulties in organizing tasks and activities. After discussing these problems with his or her mother, you discover that Jonathan or Jane also has these problems at home and has been like this since before he or she started school.

APPENDIX B

DESCRIPTIONS OF FOUR INTERVENTIONS FOR THE TREATMENT OF ADHD

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Daily Report Card (DRC): The DRC is a contingency arrangement involving teachers, students, and their families, and designed to coordinate the behavioral contingencies across settings. In one setting (usually the school), the teacher marks a card contingent on the presence or absence of the target behavior and sends it each day to the other setting (usually the home). Based on the behavioral goals met as indicated on the daily report card, the child earns a reward.

Response Cost Technique (RTC): A RTC is a reductive procedure in which a child may earn points for demonstrating appropriate behaviors and lose points for demonstrating inappropriate behaviors. At a specified time, the child may redeem his points for rewards.

Classroom Lottery (CL): A classroom lottery is a group contingency intervention where students earn classroom rewards based on their behavior that complies with a brief list of posted class rules. At the end of the day, the names of students who followed the rules of a predetermined expectation level (e.g., four out of five scans at unannounced times) are entered into a lottery where students are eligible to choose classroom jobs (e.g., line monitor, office messenger) they want for the next day.

Stimulant Medication (Ritalin): Ritalin is an intervention that is usually taken twice daily and is intended to decrease a child's behavioral problems.