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Classroom Support Strategies for Students with ADHD: Frequency of Use, Level of Effectiveness and Roadblocks to Implementation

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CLASSROOM SUPPORT STRATEGIES FOR STUDENTS WITH ADHD: FREQUENCY OF USE, LEVEL OF EFFECTIVENESS AND ROADBLOCKS TO IMPLEMENTATION

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CLASSROOM SUPPORT STRATEGIES FOR STUDENTS WITH ADHD: FREQUENCY OF USE, LEVEL OF EFFECTIVENESS AND ROADBLOCKS TO IMPLEMENTATION

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EARLY CHILHOOD EDUCATION

ABSTRACT

The purpose of this quantitative study was to examine how often specific instructional strategies that support students with ADHD are used in kindergarten through third grade classrooms, how effective these strategies are in improving student performance on formative assessments, and what interferes with their implementation. Such a study is important because there is limited information about specific strategies used and their effectiveness. Reasons why teachers do not use effective strategies provides important information for policy makers, teacher education programs and educators. These reasons need to be addressed so that the most effective strategies available can be used to support these students in the classroom. A quantitative survey design completed by 109 elementary teachers was used to examine frequency of use, effectiveness and roadblocks to implementation of strategies. Teachers rated 41 strategies for frequency of use and effectiveness. If a teacher rated a strategy as *not often or never* used, they indicated a reason.

Prompting students toward a specific behavior or tasks, praising students, proximity to teacher and encouraging active responses like talking and movement were among strategies identified to be highly effective and often used to support students with

ADHD in the classroom. Giving tallies for good behavior, putting difficult tasks at the beginning of the day, determining student preferences for learning and restructuring assignments by coloring and highlighting were strategies that had strong correlations for frequency of use and effectiveness. The most common reasons identified by teachers for not using strategies were: *not appropriate for the student, not enough time* and *need more training*. Why teachers felt that some of the research based strategies were not appropriate is an important topic for future research and investigation. The needs identified by teachers for more time and more training are important pieces of information for administrators and teacher education programs. Results from this study directly impact students with ADHD by offering specific information about how to effectively support them in the classroom.

Keywords: Attention Deficit Hyperactivity Disorder, ADHD, classroom strategies, survey design

DEDICATION

This dissertation is dedicated to my husband, Shannon Walker, who supported and encouraged me throughout this process. He consistently encouraged me to press on in the face of many challenges and never let me lose sight of this goal. It is also dedicated to my own children and all children that struggle with ADHD in classrooms around the world. It is my hope that this study will assist educators in helping these students reach their incredible potential.

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This accomplishment and all of my accomplishments are made possible through my relationship with God, and I acknowledge his grace and guidance throughout this process.

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LIST OF ABBREVIATIONS

AAD	American Academy of Pediatrics
ADHD	Attention Deficit Hyperactivity Disorder
ADHDRS-IV	Attention Deficit Hyperactivity Disorder Rating Scale-Fourth Edition
ANOVA	Analysis of Variance
ANT-I	Attention Network Test-Interaction
ARS	ADHD Rating Scale
CBCL	Clinical Behavior Checklist
CT	Combined Type
CTRS-R	Connor's Teacher Rating Scale-Revised
CWPT	Class-wide Peer Tutoring
DOF	Direct Observation Form
IRB	Institutional Review Board
IT	Inattentive Type
KADDS	Knowledge of ADHD Scale
KARE	Knowledge of ADHD Rating Evaluation
MBD	Minimal Brain Dysfunction
NIMH DISC-4	National Institute of Mental Health Diagnostic Interview Schedule for Children- Fourth Edition

PCTC	Person Centered Teacher Consultation
SEELS	Special Education Elementary Longitudinal Study
SMAC	School Modifications Assessment Checklist
SSC	School Supports Checklist
UAB	University of Alabama at Birmingham

CHAPTER 1

INTRODUCTION

Statement of the Problem

The number of children between 4 and 17 ever diagnosed with Attention Deficit Hyperactivity Disorder (ADHD) increased by 22% between 2003 and 2007 according to the National Survey of Children's Health conducted by the Centers for Disease Control and Prevention (CDC) (2007). A recent National Survey of Children's Health survey conducted by the CDC in 2011-2012 reported that approximately 9.7% children had been diagnosed with ADHD. This number is considerably higher than the 3 to 7% described by the American Psychiatric Association in the *Diagnostic and Statistical Manual of Mental Disorders* (2004). ADHD is the most common neurobehavioral disorder among children and often continues into adulthood (CDC, 2003).

Teacher knowledge about ADHD is inadequate to support their role in supporting these students in the classroom and strategies used are often inconsistent and ineffective (Lee, 2008; Nowacek & Mamlin, 2007; Sciutto, Terjesen, & Frank, 2000; Stormont & Stebbins, 2005). Teachers often focus on identifying deficits and fail to provide the strategies necessary to support students with ADHD (Barlett, Rowe & Shantell, 2010; DuPaul, Erwin, Hook, & McGoey, 1998; Mulligan, 2001; Schottelkorb & Ray, 2009).

Description of ADHD

Inattention, impulsivity and hyperactivity are the hallmark symptoms of ADHD. Students often fidget hands or feet, have difficulty remaining seated, completing tasks, following directions, sitting still, staying organized and waiting for any type of delayed gratification (U.S. Department of Education, 2006). According to the *Diagnostic and Statistical Manual of Mental Disorders-IV*(*DSM-IV*; APA, 1994), there are three subtypes of ADHD used to describe different manifestations of symptoms. The first is Predominately Inattentive subtype, in which children exhibit six or more symptoms of inattention, but less than six symptoms of hyperactivity/impulsivity. The second is Predominately Hyperactive/Impulsive subtype in which children exhibit six or more symptoms of hyperactivity/impulsivity and less than six symptoms of inattention. The third is Combined subtype, in which children exhibit six or more symptoms of both other subtypes (Chhabildas, Pennington & Willcutt, 2001).

Implications of ADHD

Implications of childhood Attention Deficit Hyperactivity Disorder (ADHD) include increased instances of graduation failure, grade retention, oppositional defiance disorder and depression (Bussing, Mason, Bell, Porter, & Garven, 2010; Mayes, 2002). Childhood ADHD triples the odds of juvenile justice involvement later in life (Bussing et al., 2010). Increased risk for emotional and behavioral problems and impairments for these students at home, school, and with peers (Gau et al.; Lee, 2008) is prevalent. Results of longitudinal studies of children with ADHD into adolescence and adulthood indicate significantly higher rates of retention, school drop-out, and placement in special education programs. These same studies also indicate significantly lower rates of college

attendance and lower levels of high school grade point averages (Barkley, Fisher, Edelbrook, & Smallish, 1990). Students with ADHD persistently struggle in the classroom and very few consistently effective classroom supports are identified (Barlett, Rowe & Shantell, 2010; DuPaul, Erwin, Hook, & McGoey, 1998; Mulligan, 2001; Schottelkorb & Ray, 2009).

Significance of the Research

Previous research has focused on the diagnosis and description of ADHD (Ivanova, Antsel, Eiraldi, & Dumenci, 2009; Kim el. al., 2005). Studies have identified effective assessments for ADHD and presented suggestions for implementation of consistent identification and diagnosis practices (Rushton, Kathryn, & Clark, 2004). Other studies have explored teachers' perceptions and knowledge about ADHD as it relates to treatment options and student behavior (Sciutto et al., 2000; Vereb & DiPerna, 2004; Wood & Benten, 2005). There are, however, few studies that have addressed how often strategies to support students with ADHD are used in the classroom and how effective these strategies are in improving student performance (Nowacek & Mamlin, 2007). Further research about how often ADHD strategies are used, how effective they are and what interferes with using these strategies was needed. This information provided a framework for developing a plan of support for students with ADHD that is consistent and effective. Research provides suggested strategies, most of which would benefit all students, but the questions of which strategies actually improve student achievement and which ones are actually being implemented needed to be addressed. Literature needed to go beyond the traditional or medical approach that exclusively focuses on ADHD

symptoms as targets for intervention. Academic skills based strategies must be developed that can be successfully implemented in the classroom (DuPaul, Volpe, Jitendra, Lutz, Lorah, & Gruber, 2004). Classroom teachers do not have the time to sift through research and manuals to find extensive strategy lists that may or may not work. Identifying which ADHD strategies are being used and how effective they are is of great benefit to educators, teacher education programs and policy makers as they seek to address the consistent academic underachievement of students with ADHD. Understanding why some of these strategies are not used informs teacher education programs and policy makers about what supports are needed for teachers to better meet the needs of students with ADHD. This information provides educators with a starting point to begin to identify what is working and what is not for these students. Research along this vein also informs policy makers and educational administrators about what specific training, materials and resources are needed to equip teachers to meet the needs of students with ADHD.

The U.S. Department of Education (2006) published a list of strategies and practices to support students with ADHD in the school setting. These suggestions are organized into three categories; academic instruction, behavioral interventions, and classroom accommodations. There are 127 strategies and practices listed to support students with ADHD. Many of these strategies are beneficial to all students in a classroom and are identified as best practice (Zemelman, Daniels, & Hyde, 2012). This list includes many effective classroom strategies, but many of the strategies are not supported by empirical research related to improved student performance for students with ADHD.

McKinley and Stormont (2008) developed a School Supports Checklist (SSC) to determine how often specific strategies were used to support students with ADHD in the classroom. This tool was based on the School Modifications Assessment Checklist (SMAC) (Zentall& Stormont-Spurgin, 1995). McKinley and Stormont revised the SMAC to include strategies based on current research, strategies used in elementary classrooms and codes for reasons why strategies were not used. Educators completed the SSC by indicating on a Likert scale from 1 to 5 how often each strategy was used to support students in the classroom with ADHD. Teachers also coded reasons they did not use the strategy. McKinley and Stormont developed this tool for use in schools to identify what strategies are being used and what barriers exist to impede use.

The focus of this study was to evaluate strategies specifically designed to support the unique challenges that face students with ADHD in the classroom and to rate how effective they are observed to be by teachers. A Likert scale from 1 to 5 was added to measure the effectiveness of each strategy. Of the strategies included in this study, 22 were included in the US State Department of Education list. Information about the implementation of these strategies and their perceived effectiveness is critical in isolating the strategies that are most beneficial for students with ADHD. What makes this study unique is that it evaluates the effectiveness of strategies as well as frequency and roadblocks to implementation. This information is very important and not included in the SSC. This research indicated that sometimes strategies used the most were not the ones identified to be most effective in supporting students with ADHD.

Purpose of the Study

The purpose of this study was to examine how often specific instructional strategies that support students with ADHD are used in kindergarten through third grade classrooms, how effective these strategies are in improving student performance on formative assessments, and what interferes with their implementation in a large rural/suburban school district in the southeast United States. A quantitative survey method was used to examine the frequency of strategy use, effectiveness of strategies and barriers to implementation.

Research Questions

The study sought to answer the following questions using data collected on the ADHD Strategy Support Survey.

1. How often are specific strategies that support students with ADHD used in kindergarten through third grade classrooms?
2. How effective are specific strategies that support students with ADHD in improving student performance on formative assessments in kindergarten through third grade classrooms?
3. What are the most common reasons for not using strategies that support students with ADHD in kindergarten through third grade classrooms?

Assumptions of the Study

The assumptions of the study were:

1. The teachers answered the survey accurately.

2. The teachers answered the survey honestly based on their observations and perceptions.
3. The analyses of quantitative data were unbiased.
4. The sample used in this study was representative of the population.
5. The strategies used in this survey were research based and valid.
6. The survey used in this study was valid and reliable.

Limitations of the Study

The limitations of the study were:

1. Only 42% of eligible teachers in the district participated in the study which may not be representative of the kindergarten through third grade teacher population in this district.
2. The population generalizability of this study is limited to kindergarten through third grade teachers employed in a large rural/suburban district or other districts with similar teacher and student populations.
3. Convenience sampling was employed as opposed to random sampling which limits the generalizability of the results of the study.
4. Although the researcher attempted to maintain objectivity, personal experiences and educational experiences with ADHD may have influenced interpretations of the data results.

Computerized Search

The databases used for this literature review were Academic Search Premier, Education Full Text, ERIC (EBSCO), PsycINFO, Google Scholar and PubMed. These sources provide a variety of full text, peer reviewed articles. Google Scholar and PubMed were especially useful in this search because ADHD is a medical diagnosis as well as an educational issue. PsychINFO provides access to studies and articles related to counseling, psychiatry and psychology. This database led to SAGE publications which included several studies about the psychological and behavioral aspects of ADHD.

The descriptors used were "Attention Deficit Hyperactivity Disorder," "ADHD," and "attention disorders" limited with the terms "school," "children" and "students." Results were often above 50 to 75 thousand before limiting terms and 27, 112 and 93 after limiting terms for the descriptor "Attention Deficit Hyperactivity Disorder." Search results were further narrowed in different searches with terms like "strategies," "teacher perceptions" and "methods."

Summary

This study focused on teacher perceptions about how effective strategies to support students with ADHD are in improving classroom performance. This study also evaluated how often strategies were used and reasons for not using strategies. This is important because there is limited literature on the effectiveness of strategy use to support students with ADHD in the classroom, especially in a study including a large number of research based strategies like this one (Nowacek & Mamlin, 2007). There is a need for the identification of proven and effective classroom support strategies for students with

ADHD (DuPaul, Volpe, Jitendra, Lutz, Lorah, & Gruber, 2004). This study provides data that will better inform educators, policy makers and teacher education programs as they seek to develop and implement these strategies.

Chapter two reviews literature related to the history, identification, deficits/disorders, and perceptions related to ADHD. Finally in chapter two, strategies to support students with ADHD in the classroom were also reviewed.

Chapter three outlines the methods used during this quantitative research study. This chapter describes quantitative research and the reasoning behind choosing a survey design. Philosophical assumptions are also addressed in this chapter. Specific information about target population, ethical concerns and the role of the researcher are also discussed.

Chapter four describes specific procedures used during research. This chapter also describes the survey instrument used and explains how it was developed. Data is reported and analyzed for each of the three research questions and results are summarized.

Chapter five addresses implications for each research question analyzed in chapter four. Implications are discussed for policy makers, teacher education programs and educators. Recommendations for future research are also presented.

CHAPTER 2

LITERATURE REVIEW

In order to examine the use of instructional strategies in the classroom for students identified with ADHD, understanding some important themes related to ADHD was necessary. These themes include the history of ADHD, the identification/assessment of ADHD, and disorders and outcomes related to ADHD. Themes related to supporting children with ADHD in the school setting were also examined. These themes included knowledge and perceptions of teachers and students about ADHD and strategies used to support students with ADHD.

History of ADHD

The increase of ADHD diagnosis over the last decades has been the impetus for much research and debate. To begin to understand ADHD as it exist now, understanding knowledge of the development of this phenomenon over time is important. Jennifer Lawrence (2008) reviewed the predominately accepted rise of ADHD in an effort to better understand ADHD now. A report by British pediatrician George Still (1902) described "passionless" children lacking in "inhibitory volition." The first amphetamine prescription to treat this behavior disorder was written by Charles Bradley in 1937. The group of symptoms described by these two doctors became what we know now as ADHD. Lawrence presented two recent parallel shifts that may greatly influence our

understanding of ADHD. The first is that education is no longer confined to the classroom. The second is that ADHD is no longer a predominately childhood disorder. Lawrence proposed that changes in the way we view education and changes in life-long career expectations will all but end the need to view this group of symptoms as a disorder.

The purpose of this study by Neufeld and Fox (2006) was to examine the growth of ADHD as a diagnosis in North America. Neufeld and Fox (2006) utilized an ecological niche framework to analyze the growth of ADHD as a diagnosis according to four factors: 1. Conceptions of Disability and Self; 2. Observability; 3. Cultural Polarity; and 4. Release. Neufeld and Fox described the development of the rise in ADHD diagnosis using early described symptoms from the descriptions of Still and Bradley to the new term coined in 1957 by Maurice Lauffer, who continued the work of Charles Bradley. In 1957, the term for these behaviors previously classified as emotional disturbance or Minimal Brain Disfunction (MBD) was Hyperkinetic Disorder of Childhood. In 1961 Ritalin was indicated as treatment for these disorders and in the 1980s the term Attention Deficit Hyperactivity Disorder became prevalent, and, as they say, the rest is history.

Neufeld and Fox (2006) reviewed literature and historical benchmarks related to the development of our understanding of ADHD in North America through the lens of these four previously described interacting factors or vectors. Major findings related the growth of ADHD diagnosis to four conditions. The first was that ADHD was easily assimilated into our existing understanding of disability. Other conditions noted were that the diagnosis of ADHD became noticeable in the medical, psychological and public

domains. Finally, the diagnosis of ADHD provided a form of relief or explanation not available before in our society to the people with the diagnosis and the ones around them. Findings from this study of the historical development of ADHD as a medical diagnosis, suggests that these factors created a niche where ADHD could flourish (Neufeld & Fox, 2006).

Often the growth rate of the ADHD diagnosis is measured according to prescriptions for treatment medications like methylphenidate because narcotics like this are closely monitored and easily researched. Ilina Singh (2008) presented a socio-historical account of the development of ADHD diagnosis and methylphenidate treatment in America. She focused on the political and institutional contexts that have supported the growth of ADHD diagnosis. Schooling is considered a mediating factor in the development of ADHD. Singh discusses cultural variations related to tolerance of behaviors, educational and behavioral goals, and cultural styles of treating behaviors as factors that explain the drastic discrepancy of ADHD prevalence among different countries. Americans consume 80% of the world's methylphenidate, which is rarely prescribed for anything except ADHD. Singh argues that cultural factors and variations must be considered when attempting to explain the growth of ADHD diagnosis over the last century. She further explains that we have to build more complex theories about cross-cultural variation in diagnosis and treatment in order to completely understand this global phenomenon.

Many causes for the exponential increase in ADHD diagnosis over the last century have been presented. Linda J. Graham (2008) provided evidence from the literature over time to support her argument that schooling plays a significant role in the

diagnosis and construction of this behavior disorder in the US and Australia. These two countries have experienced substantial documented increase of this diagnosis and related medical treatments. The purpose of the review was to examine the role of schooling on the construction of ADHD. The author argued that schooling should be examined as a causal factor in the diagnosis of ADHD. Graham presented several revealing questions as she discussed the literature related to ADHD. She made the point that if research shows that medication helps behavior and not necessarily learning, then who is truly benefiting from the medication? Teacher attitude, tolerance, pedagogy, and beliefs influence whether a child will be tagged for evaluation. These same factors play a role in diagnosis because teacher checklists are used to evaluate children for ADHD. The final question discussed in the conclusion was, who decides what behaviors represent giftedness, ADHD or normal behaviors? Graham's answer was our teachers and our schools.

Assessment and Identification of ADHD

The effective identification and diagnosis of ADHD is the first step toward supporting students with ADHD in the classroom. The validity and reliability of many assessments have been studied. Kim, Park, Cheon, Kim, Cho, and Hong (2005) examined the clinical validity of the Behavior Checklist (CBCL) and the ADHD Rating Scale-IV (ARS). ADHD is one of the most common causes of behavior problems and poor school performance among students. The purpose of this study by Kim and colleagues was to examine the validity and efficiencies of the CBCL and ARS in identifying students with ADHD. The sample for this study included 1668 students in first through third grades from two elementary schools in an urban community in Korea. The CBCL and ARS were

used to collect data in this study. These instruments also include teacher and parent components that were returned at lower rates than the student administered test. To measure the discriminate powers of these assessments in diagnosing ADHD, the following areas were examined: sensitivity, specificity, positive predictive values and negative predictive value. The highest levels of specificity and positive predictive values were obtained when results from both assessments were combined. The findings from this study suggested that the combined use of the CBCL and ARS could serve as an efficient and accurate tool for identifying children with ADHD.

McConaughy, Ivanova, Antshel, Eiraldi, and Dumenci (2009) examined another combination of assessments. This study addressed the disparity between scores on parent and teacher scales assessing ADHD symptoms and the ineffectiveness of laboratory tests to accurately identify and diagnose ADHD. The purpose of this study was use the Direct Observation Form (DOF) to rate classroom behaviors for children with and without ADHD comparing the different sub types. It was hypothesized that children with ADHD would score higher on the DOF Attention Problems syndrome, the Attention Deficit Hyperactivity Problems Scale, the Inattention and Hyperactivity–Impulsivity subscales, and lower on DOF On–Task. It was further hypothesized that students with ADHD inattentive type (IN) would score higher on the DOF Attention Problems, Sluggish Cognitive Tempo syndromes, Attention Deficit Hyperactivity Problems, Inattention subscales and lower on DOF On-Task. Researchers also expected all of the ADHD students to score significantly higher than the control group on Attention Problems and Attention Deficit Hyperactivity Problems and the Hyperactivity-Impulsivity subscale. The sample included 456 six to eleven year old children recruited from schools and

mental health providers in Vermont, Pennsylvania, and New York. Instruments used for data collection were the Attention Deficit Hyperactivity Disorder rating Scale Fourth Edition (ADHDRS-IV) (Dupaul et al., 1998) completed by parents and teachers, the National Institute of Mental Health Diagnostic Interview Schedule for Children Fourth Edition (NIMH DISC-4) structured interview for parents and the DOF which is a standardized form for rating student behavior across school settings. To test mean differences on the DOF, two separate multivariate ANOVAs were performed. Researchers also performed discriminate analysis to determine which combinations of DOF scales contributed to discriminating between groups. Consistent with hypothesis, students with ADHD scored higher on many of the subscales measuring attention problems and lower on the DOF On-Task, but contrary to hypothesis, they found very little between group differences among sub types.

Limited reliability in testing methods and contradictory findings in research may be associated with differential referral practices and unexplored interactions of gender with ADHD subtypes. The purpose of this study by Bauermeister et al. (2007) was to address these issues in a study that was designed to examine whether boys and girls exhibit different risk factors and correlates for the diagnosis of ADHD. The study hypotheses were stated in expectations of the research. Researchers expected no gender differences in the risk factors for ADHD, with the possible exception of poorer school adaptations for boys. Researchers did not expect significant gender differences among ADHD types in comorbidity with disruptive disorders. Researchers did expect that gender would moderate the association between predominately inattentive type (IT) and combined type (CT), and the internalizing disorders. The sample was a probability

household sample of children ages 4-17 on the island of Puerto Rico. Data collection instruments used were the Diagnosis Interview Schedule for Children, Brief Impairment Scale, Parent Interviewer Children's Global Assessment Scale, Developmental History, Parent-Child Attachment Scale, Family Care Burden Scale, Parental Discipline Scale, Parents' Attitude About Medication Scale, and Service Assessment for Children and Adolescents. Regression analyses were specified with the correlates as outcome variables and presence of ADHD and gender as main predictors. Age and number of non-ADHD disorders were used as covariates in all regression where these factors were not the outcome of interest. In the analysis where the predictors were the three ADHD subtypes, the age and number of non-ADHD disorders were simultaneously included in the regression analysis. To test whether gender moderated the association between ADHD and each correlate, the interaction between gender and ADHD was included. The reference group in these regressions was girls with non-ADHD disorders. The results of this study indicated that ADHD was 2.3 times more common in boys, but there was little evidence that the patterns of associations of ADHD with correlates were different for boys and girls. The exception was that school suspension was more common for boys. Among those with combined type, boys were more likely to have mood disorders. For those with inattentive type, girls were more likely to have anxiety disorders.

Accurate assessment and diagnosis of ADHD is critically important because ADHD is the most common behavioral childhood disorder presented to physicians (Rushton, Fant, & Clark, 2004). In addition to the complexities in identification and diagnosis discussed previously, little research has been done on the consistency of practice guidelines for primary care and management of ADHD. Rushton, Fant, & Clark

(2004) sought to describe diagnosis and management of ADHD, to determine whether care is in accordance with American Academy of Pediatrics (AAP) guidelines, and to describe factors related to adherence. The sample included 1374 primary care physicians in Michigan. Survey data was acquired from mail surveys. Stata version 7.0 software was used to conduct all statistical analysis. Overall results showed that the majority (77.4%) of physicians were familiar with AAP guidelines regarding ADHD and many (61.1%) incorporated guidelines into their practice. There were some differences among specialty areas for physicians. Many physicians reported poor access for patients to mental health services, limited insurance coverage and their potential system barriers that interfere with proper diagnosis and management of ADHD. The inconsistency among information about assessments and diagnostic tools add to the confusion about identifying the most effective practices for assessing and diagnosing ADHD. The same is true for deficits, disorders and outcomes related to ADHD. While much information is available on these topics, findings are often contradictory and offer little guidance for educators.

Deficits, Disorders and Outcomes

Many deficits, disorders, and long term outcomes are associated with childhood ADHD. These associated anomalies range from mild to severe and impacting children in a variety of ways. ADHD symptoms are associated with significant functional impairments in the home, school and social settings. Bussing, Mason, Bell, Porter, and Garvan (2010) sought to describe outcomes of childhood ADHD in a diverse community sample. The purpose of this study was to provide information about the impact of ADHD on students over time related to psychopathology, quality of life, rates of alcohol and

substance abuse, educational outcomes, and involvement with the juvenile justice system. Neither hypotheses nor research questions are directly sited, but the results were discussed according to the areas listed in the purpose statement. The researchers chose a random sample of students in kindergarten through fifth grade from a North Florida school district. Students were administered the Self-Report of Personality of the Behavior Assessment System for Children, the Youth Quality of Life Questionnaire, and the Florida Comprehensive Achievement Test. Separate interviews with parents and adolescents were conducted by trained research assistants. Chi-square, Fisher's exact test, and analysis of variance (ANOVA) were used to examine the differences in relationship between ADHD risk group status and 35 outcome variable grouped in four domains. Bivariate group outcome comparisons showed that significantly ($p < .0001$) more youth with childhood ADHD scored positive for ADHD on instruments completed by parents (44%, n=41). Results suggested childhood ADHD increases the risk for symptom persistence, development of depression, functional impairment, lower educational achievement, and more juvenile justice involvement.

Learning problems and difficulties in school are often associated with ADHD. Kaufman and Nuerk (2008) studied the difference between two groups of students ages 9 to 12 with and without ADHD on number processing skills in mathematics such as dot enumeration, number comparisons, counting sequences, transcoding, addition, subtraction and multiplication. Math assessments including simple and complex mental calculations were administered to collect data. Data were analyzed using multivariate analysis of variance. Results indicated no significant differences between the groups on simple over-learned and explicitly taught tasks, but the without ADHD group scored

significantly higher on basic number processing. These findings indicate that this type of task may be an area of difficulty for students with ADHD even in the absence of associated learning disabilities.

Gau, Lin, Shang, Liu, Chiu, and Soong (2010) added to the discussion of deficits and outcomes by addressing the important public health implications of ADHD, Gau's group noted that children with ADHD are at an increased risk for sleep problems, speech-language problems, emotional/behavior problems, and academic struggles. The purpose of their study was to compare the emotional/behavioral problems and functional impairment between clinic and community based children with ADHD. Gau and colleagues hypothesized that the two groups with ADHD diagnosis would demonstrate more severe emotional/behavior problems and functional impairments than the control groups without significant difference in symptom severity between the two ADHD groups. The sample included 268 clinic-based children diagnosed with ADHD, 137 school-based children exhibiting ADHD symptoms, and 268 in the control group. Participants ranged in age from 6 to 15 and came from similar school districts in northern Taiwan. Psychiatric interviews and self, parent, and teacher –reported questionnaires were used to collect data. The data were analyzed using the SAS version 9.1 with the alpha level set at .05. The mean and SD were analyzed with analysis of variance (ANOVA). Both ADHD groups scored higher in parent and teacher reported ADHD symptoms, wide ranging emotional/behavior problems, and impairments in school, peer, family, and leisure than their counter parts in the control group. Clinic-based students had more physical/developmental problems, functional impairments, teacher reported symptoms, and higher family burdens than the school-based group. Findings suggested

higher maternal educational level, parent's perceptions of child's functional impairment, teacher's perceptions, hyperactivity-impulsivity, and child physical and developmental problems may be related to the psychiatric referrals of children with ADHD.

Deficits and disorders often are related to academic underachievement for students with ADHD. The purpose of a study by Barnard-Brak, Sulak, and Fearon (2010) was to examine the relationship between these concurrent disorders and academic achievement among children with ADHD. Survey data were acquired from the Special Education Elementary Longitudinal Study (SEELS). The study included 2,844 students diagnosed with ADHD. Latent growth models were used to examine academic achievement. Results indicated an inverse relationship between coexisting disorders and academic achievement in students with ADHD. These combined studies indicated that, in addition to ADHD, alone, being an indicator of academic difficulties, ADHD with concurrent disabilities further complicated success in school for these students.

To evaluate how children with ADHD perform on different tasks compared to students without ADHD, Mullane, Corkru, Klein, McLaughlin, and Lawrence (2010) evaluated the alerting, orienting, and executive attention abilities of children with and without ADHD. The goal of this study was to test the hypothesis that children with ADHD would display alerting and executive attention deficits relative to non-ADHD peers with no difference in orienting attention. Ninety children ages 6 to 12 participated in this study. Researchers used the Attention Network Test-Interaction (ANT-I) to collect data for this study. Results indicated that children with ADHD displayed significantly lower alerting and executive attention, but did not differ from the non-ADHD group in orienting ability. No significant differences among subtypes of ADHD were found.

Knowledge and Perceptions about ADHD

In spite of the abundance of information about different aspects of ADHD, educators still have inconsistent and sometimes incorrect ideas and information about ADHD. This lack of knowledge influences how teachers support students with ADHD in the classroom. Nowacek and Mamlin (2007) reported a lack of literature addressing teachers' instructional and behavioral strategies for students with ADHD. Many children with ADHD do not qualify for special education services, so classroom teachers are expected to implement support strategies in the classroom with little formal training about ADHD strategies and supports. This study investigated four elementary teachers and two middle school teachers. Interview questions triangulated with classroom observations were the data sources used for this qualitative study. The data were coded and the following themes emerged: acceptance, team decisions and resources. Two major findings emerged from the data. One finding was that the teachers did provide some modifications for students with AHD, but the second finding was that these modifications were idiosyncratic and nonsystematic. The inconsistency of support due to a lack of or misunderstanding about ADHD continues to be a concern.

Another study examined teachers' knowledge about ADHD and whether that knowledge is related to treatment acceptability. Vereb and DiPerna (2004) reported that when teachers disagree with a recommended treatment for ADHD, they may not implement the treatment properly or fail to complete the treatment. The purpose of this study was to explore the relationship among teachers' knowledge of ADHD, knowledge of common treatments, and acceptability of common treatments. Vereb and DiPerna

hypothesized that teachers' knowledge of ADHD, knowledge of treatments, and treatment acceptability would be positively correlated and that teachers' training and experience would be moderately related to their knowledge of ADHD, knowledge of treatments, and acceptability of treatments. The sample included 47 elementary teachers primarily female (94%) and equally distributed across grades K-6. Knowledge of ADHD Rating Evaluation (KARE) was the survey instrument developed for this study. Estimates of internal consistency were acceptable for 3 out of 4 scales. Specific means of data analysis were not identified. Results indicated that teachers' knowledge of ADHD, years of teaching experience with these students, and training demonstrated positive relationships with ratings of medication acceptability. In addition, teacher participation in ADHD training positively correlated with knowledge of ADHD and acceptability of behavior management strategies.

Scuitto, Terjesen, and Frank (2000) identified lack of teacher knowledge about ADHD as one of the greatest obstacles in attending to the needs of children with ADHD. The study's purpose was to describe the parameters of teachers' knowledge of ADHD and to identify areas appropriate for educational intervention. No research questions or hypothesis were clearly stated, but the authors identified the following domains as focus areas for examining teachers' knowledge and perceptions of ADHD: symptoms/diagnosis, treatment, and general information. The sample included 149 elementary school teachers from six New York area public schools. The Knowledge of Attention Deficit Disorders Scale (KADDS) and a demographic information questionnaire were the data collection instruments used for this study. Data analysis used an alpha level of $p<.05$ and calculated effect size using Cohen's d . Because teachers

supplied scores on each of the three subscales, a repeated measures ANOVA was used. A comparison of teachers' scores on the three KADDS subscales indicated a significant difference among the three domains of knowledge, $F(2,147) = 108.74$, $p < .001$, $d = 2.43$. Post-hoc pairwise comparisons using Bonferroni correction indicated that teacher scores on the symptoms/diagnosis subscale were significantly greater than the treatment and general information subscales. Treatment and general information subscales did not differ significantly from each other. Teacher self-efficacy, prior exposure to children with ADHD, and years of teaching experience were all positively related to ADHD knowledge. The researchers concluded this information was vital in planning successful placements for students with ADHD. This study also indicated teachers know more about what ADHD looks like than they do about how to support the students with ADHD.

Lee's 2008 study specifically explored ADHD in the context of early childhood. After being surprised in a previous study with U.S. teachers' views on students with ADHD, Lee, who was a kindergarten teacher in Korea, (2008) conducted a qualitative study with 10 Southeastern early childhood teachers on their views concerning ADHD behaviors and treatments. Lee reported that teachers' views often focused on identifying deficits for these students. Research questions included: What is the problem behavior perceived by the teacher? How are teachers' views of problem behaviors connected to their perceptions about children with ADHD? What do teachers know and think about children with ADHD and medication treatment? How do teachers' views reflect and shape local and larger cultural beliefs about children and their development? In-depth interviews were conducted with participants to collect data for this study. Qualitative data analysis methods were used to identify themes and patterns from interview data. Results

from this study indicated teachers' perceptions about behaviors overlap and ADHD behaviors and other disruptive behaviors are viewed in the context of hindering the learning of others. Further results showed these teachers were inclined to accept the practice of diagnosis and treatment with medication for ADHD by focusing on the child's ability to be submissive during instructional time.

To examine the origin of teacher perceptions about ADHD and how perceptions influence their responses to students that fail, Wood and Benton (2005) selected 26 pre-service teachers at a small mid-western college to participate in their study. These researchers reported teachers are less likely to express anger or punishment if they attribute a child's failure to a characteristic outside of the student's control. Each participant responded to vignettes and five follow-up questions. Positive and negative feelings were analyzed using MANOVA. Findings indicated when a student had no disability, teachers rated a boy more likely to fail than a girl. When students had ADHD, teachers rated a girl more likely to fail. Findings also indicated teachers reported more sympathy for un-medicated students with ADHD compared to medicated students with ADHD. This research suggested teacher perceptions are forming even before they enter the classroom. The conclusions of this study support the creation of curriculum about ADHD being formally included in teacher preparation programs.

Stormont and Stebbins (2005) explored pre-school teachers' knowledge, opinions and experiences with ADHD. Researchers reported preschool teachers needed to have accurate information and training because the behaviors associated with ADHD in preschool are challenging and require tolerance and understanding. The purpose of this study was to examine preschool teachers' educational experience, knowledge and

opinions related to ADHD and to determine whether certain teacher characteristics were related to higher test scores. One hundred thirty-eight preschool teachers were given the Preschool ADHD Questionnaire to collect data for this study. An Analysis of Variance was used to analyze data. Findings indicated teachers' most common educational experiences related to ADHD were reading articles. Findings also showed teachers with some post secondary education did better on the assessment than those with high school or vocational educational experiences. In addition, preschool teachers did not report they knew very much about assessing children for ADHD in preschool. The results of this study support the argument for improved teacher preparation, even at the preschool level. The study also provided information that explored the differences among teacher perceptions and levels of knowledge, suggesting further study of the relationship between these two variables would be helpful .

Bartlett, Rowe and Shattell (2010) studied 16 college students with a history of ADHD to determine what they perceived as helpful to them when they were struggling with ADHD. Data were collected by conducting semi-structured interviews, and data were analyzed using the content analysis method. Results identified and described people most supportive in the lives of these students, and also identified characteristics of helpful and unhelpful people. This information is beneficial to parents, teachers, and friends of anyone struggling with ADHD. Participants reported a lack of recognition that ADHD was a real interference as unhelpful. Supportive relationships and active teaching strategies were identified as helpful. Presenting student perceptions of ADHD in the school setting provided useful information on the implications of teacher knowledge and perceptions discussed earlier in this section. Teacher perceptions drive actions and the

actions of teachers in supporting students with ADHD can make the difference between success and failure.

Strategies to Support Students with ADHD

Educators seek to identify the most effective strategies to use, and limited research exists about strategies proven to be effective supporting students with ADHD in the elementary classroom. Mulligan (2001) reported increasing numbers of students being diagnosed with ADHD and the majority being served in regular education classrooms. This increase has intensified the need for teachers to be more informed about strategies to support these children in the classroom. The purpose of Mulligan's study was to identify and describe useful classroom strategies for students with ADHD. The survey instrument for this study was developed by the researcher and reviewed by a group of professionals in the field. The sample included 625 general education elementary teachers from 13 school districts in northern New England. Data were analyzed using descriptive statistics and cross tabulation with chi-square analysis. Results identified enforcing routine, frequent contact, preferential seating, use of motor breaks, and teaching self-monitoring as the most frequently used and effective strategies. Qualitative analysis of teacher responses to open ended questions provided recommendations such as increased special education support, smaller class size, increased parent communication and more hand-on learning experiences as ways to improve the educational experiences for students with ADHD.

Schottelkorb and Ray (2009) examined child centered play therapy (CCPT) and person-centered teacher consultation (PCTC) as possible strategies to use

with students that have ADHD. These researchers reported without early intervention for off task behaviors, children with ADHD may experience negative long term effects such as decreased educational levels and increased instances of arrest. The authors used a single case design to investigate the effectiveness of these strategies for four elementary students with ADHD. The Direct Observation Form (DOF) and the Conners' Teacher Rating Scale–Revised (CTRS-R) were among instruments used in this study. All data were analyzed using visual analysis and the calculation of non-overlapping data statistics. Results indicated two students had a significant reduction in ADHD related behaviors, and a questionable reduction in ADHD symptoms was concluded for the other two students as a result of these strategies.

Some strategies are specifically designed to support students with ADHD in one curriculum area. Dilberto, Beattie, Flowers, and Algozzine (2009) reported The No Child Left Behind (NCLB, 2002) act has increased accountability requirements for all students regardless of disability. The purpose of their quasi-experimental study was to determine whether adding direct, explicit, and systematic syllable skills instruction would increase reading achievement with high incidence disabilities like ADHD. The sample for this study included 83 middle school students from three schools in south central North Carolina. The Woodcock-Johnson III Test of Achievement was used for pre and post testing. Data were analyzed using four repeated measures analysis of variance. Results indicated the treatment group increased greatly from pre to post test in word identification, word attack skills, reading comprehension and fluency.

Another study that focused on one curriculum area was conducted by Mautone, DuPaul and Jitendra (2005). This study examined the effects of a computer based math

program on classroom performance for students with ADHD in second through fourth grade. Students with ADHD showed improved math performance and on-task behavior during the computer activity compared to seatwork activities. This study also reported that teachers and students consider computer assisted sessions as an acceptable intervention in math for students with ADHD. All three students in this controlled study showed gains in math fluency, academic engagement and decreased off-task behavior.

A multi-component program for supporting students with ADHD in the classroom was investigated by Miranda, Presentacion and Soriano (2002). The purpose of this study was to evaluate the effectiveness of this multi-component program carried out by teachers in the classroom setting. Fifty children with ADHD participated in the study and teachers of 29 of the 50 students were trained in the use of behavior modifications, cognitive behavior strategies and instructional management strategies. Instructional management strategies included rearranging physical space, the presentation of explanations, use of directions and feedback and the teaching of organizational strategies for tasks and materials. The other 21 students made up the control group. Experimental and control groups were statistically compared in the pre and post test phase using *t* tests. Results suggested that the techniques applied by the teachers benefited student success in the classroom. Teachers participating in the training identified a reduction in hyperactive/impulsive behavior and a significant increase in self control for the students' experimental group. These same teachers also indicated a significant reduction in learning problems, inhibitions and school maladjustment for students in the experimental group. The program also increased the academic performance for students in math and science. It is important to note that academic improvement is not often observed with

other methods of treatment like mediations or behavior modifications, so these findings add important information to this area of study.

Peer tutoring is an academic strategy that can be used in any curriculum area. DuPaul, Ervin, Hook, and McGoey (1998) reported higher rates of off tasks behaviors for students with ADHD compromise their performance on independent assignments, group discussions and teacher directed activities. The purpose of this study was to investigate the effects of class-wide peer tutoring (CWPT) on the behaviors and academic performance of students with ADHD. The sample included 18 elementary students from two school districts in eastern Pennsylvania. The Behavioral Observations of Students in Schools was used to measure behaviors, and classroom pre and post tests were used to measure academic performance. Data were investigated using an ABAB reversal design in 18 classrooms over the course of two school years. Findings indicated 50% of the students with ADHD exhibited improvements in the areas of math and spelling. Teachers and students reported high levels of satisfaction with the CWPT method.

Christopher Reiber and T.F. McLaughlin (2004), propose that behavior management techniques in the classroom are essential to success in school for students with ADHD. A variety of research based classroom interventions to support students with ADHD in the classroom are reviewed. Strategies included were based on current research. Reiber, and McLaughlin noted three available treatment options for children diagnosed with ADHD: medications, behavior interventions and a combination of the two. A significant amount of research supports the combination of the two to be effective (Barkley, 1998). Educators are not directly involved in the prescription of medications, but are solely responsible for implementing classroom interventions and strategies to

support these students. Strategies or interventions found to be effective in the classroom were: Keeping curriculum interesting by varying presentation, use of color or larger font to draw attention to task, provide guided notes, utilize a peer note taker, shorten assignments, give immediate feedback, proximity control, consistent consequences, break tasks into smaller parts, take breaks from long assignments and allow students to move about to expend energy. Information from the interview also indicated that building relationships with students that have ADHD in the classroom was the key to providing effective supports.

Conclusion

This literature review examined the topic of ADHD as it relates to students in the classroom. The major themes reviewed addressed the history of ADHD, assessment of ADHD, deficits and disorders related to ADHD, perceptions and knowledge levels about ADHD and strategies to support students with ADHD. The major issues examined were inconsistencies in the literature on these topics and the lack of teacher knowledge about ADHD as it relates to supporting students in the classroom.

The major findings of this literature review were discussed according to themes. A review of literature on the history of ADHD described the development of ADHD as a construct over time and the relationship among cultural acceptance, medical diagnosis and educational impact. A review of the literature on assessments of ADHD revealed a variety of assessments that can effectively identify and diagnose students with ADHD, but these assessments are not consistently used or regulated. Studies addressing deficits, disorders and negative outcomes related to childhood ADHD examined the many related

symptoms, behaviors and consequences illustrating the urgent need for effective support for these students at an early age. The studies examining perceptions and knowledge about ADHD indicated little is known by teachers about treatments for ADHD outside of medication and that much of the knowledge they have about ADHD is erroneous. The literature about strategies used to support students with ADHD revealed many methods that were successful, but an overall lack of research in this area. Studies about strategy use were often based on dated information, magazine articles, and instructional methods developed for children without ADHD.

The majority of strategies reviewed reflect studies involving elementary school age children, especially focusing on the early childhood years from kindergarten through third grade. This current study was designed to provide teachers with specific information about strategies to use during these early years with students that have ADHD. School based intervention strategies for young children are a critical component of a comprehensive support plan for students with ADHD (DuPaul, Weyandt & Janusis, 2011). Limited research exists to address ADHD strategies during these early years of development, possibly because inattentiveness, hyperactivity and impulsivity are part of normal development during these years. The possibility of misdiagnosis of ADHD during early years is always a concern (American Psychiatric Association, 2000). When these behaviors interfere with learning, and students are not able to find success in the classroom, early intervention to support students with ADHD in the classroom could decrease the negative social, emotional and academic outcomes related to students with ADHD by providing early opportunities for success in the school setting.

The purpose of this study was to examine the use of identified research based strategies that support students with ADHD in the early childhood years of kindergarten through third grade. This study used a survey method design to examine frequency of strategy use, barriers to strategy use and effectiveness of strategies.

This study was significant because it identified how often ADHD strategies are being used by teachers, reasons why they are not being used, and how effective they are at improving student performance. Although several previous studies identified strategy lists to use with students with ADHD, no earlier studies surveyed early childhood teachers about the effectiveness of strategy use and the reasons why some strategies were not used. This information is critical in order to further define what effective support for students with ADHD looks like in the classroom. Identification of barriers to strategy use is vital in identifying resources, educational opportunities, and materials needed for teachers to be able to use these supports in the classroom. For the vast majority of students with ADHD to be successful in the classroom, teachers clearly must be willing to provide individual support for them (Bulut, 2005). Information about the use of existing strategies can be an impetus for further research in this area and the development of curriculum in this area for teacher preparation and professional development. Regular education teachers are provided with limited formal and consistent information about ADHD and what strategies best support these students. Yet teachers play the most vital role in supporting academic success in school for students with ADHD.

CHAPTER 3

METHODOLOGY

The purpose of this chapter is to provide a description of the methods used in this quantitative study. This chapter includes a description of the characteristics of quantitative research, philosophical assumptions associated with those methods and a description of the research design for this study. Target population, ethical considerations and the role of the researcher are also discussed. Specific quantitative procedures used and data analysis results are described in chapter 4.

Characteristics of Quantitative Research

A quantitative research approach was chosen to answer the posed research questions. The worldview of the researcher and the research questions determined the methods appropriate for this study (MacKenzie & Snipe, 2006). Creswell (2009) states that quantitative research is a means for examining the relationship among variables typically gathered on instruments so that numbered data can be analyzed. The final written report has a set structure including an introduction, literature and theory, methods, results and discussion. Survey research is a strategy used in quantitative research. A survey design provides a numeric description of trends, attitudes or opinions of a population by studying a sample of that population (Creswell, 2009). In this study, a survey was used to gather information from kindergarten through third grade teachers

about the use and effectiveness of strategies implemented to support students that have ADHD.

Philosophical Assumptions

The philosophical worldview proposed in this study is Postpositivism. This worldview is named such because it represents thinking after positivism. Positivism is sometimes referred to as "scientific method" or "science research" and is based on the work of scientists like Aristotle, Francis Bacon, John Locke, August Comte and Emmanuel Kant (Mackenzie & Knipe, 2006). Positivist research focused on proving or disproving hypotheseis using the scientific method, statistical analysis and generalized findings. Positivists contend that all knowledge is based on the observation and experimentation of an objective reality (Mack, 2010).

Postpositivism replaced Positivism after World War II and included the assumption that we cannot be "positive" about claims of knowledge when studying the behavior and actions of humans (Creswell, 2009). Postpositivists assume that any piece of research is influenced by a number of theories including the one being tested (MacKenzie & Snipe, 2006). This worldview is most associated with quantitative and more traditional forms of research. Postpositivists hold a deterministic viewpoint and contend that cause is directly related to effect. The intent is often to reduce ideas into small, discrete sets of data to test and/or compare. Developing numeric measures and studying the behavior of individuals are hallmarks of this paradigm (Creswell, 2009).

Key assumptions of the Postpositivist paradigm include the following ideas. First, that knowledge is conjectural, so knowledge acquired through research is never infallible.

This is why researchers do not state that they prove a hypothesis, only that they failed to reject the hypothesis. Postpositivists also contend that research is a process of change as researchers experiment, refine claims and test theories. Data, evidence and rational considerations drive research within this worldview as researchers seek to develop bodies of knowledge that explain and inform. Finally, objectivity is essential. Researchers adopting this worldview must examine methods and conclusions for bias and be vigilantly aware of objectivity in all phases of research (Creswell, 2009).

Ontology

Ontology refers to the form and nature of reality or the study of claims and assumptions about the nature of reality (Guba & Lincoln, 1994). Many constructs of reality existed in this study because it included the perceptions of all of the teachers that completed the study and the perceptions of the researcher. Teachers that worked in a school with a high level of professional support and a low student teacher ratio probably experienced different levels of success using strategies in the classroom to support students with ADHD than teachers with low levels of professional support and high student teacher ratios. Many factors influence the perceptions of the teachers participating in this study and their responses. Although the data gathered is numerical and represents measurable information, it is still collected from and influenced by the perceptions of reality of each participant. Although the postpositivist researcher strives to remain objective, the perceived reality of the researcher also influences the outcome as results are gathered and analyzed. Understanding that each individual completing the survey

viewed the items through different lenses of reality is important for understanding and applying outcomes that might add to our understanding of the social reality being studied.

Epistemology

Epistemology refers to the nature of knowledge, ultimately questioning what we do know and can know (Allison & Pomeroy, 2000) Epistemology is also considered the view of how we acquire knowledge. It refers to the relationship between the knower and what can be known (Guba & Lincoln, 1994). During this quantitative survey study, every effort was made by the researcher to remain objective. Participants completed the survey independently without direct support or guidance from the researcher. Epistemologically, Postpositivists understand that when studying humans, there are no absolute truths or neutralities, but the neutrality of the researcher is emphasized with the goal being objective detachment. This allows the researcher to view outcomes as they are, with as much objectivity as possible.

Research Design

A survey research design was chosen to describe frequency of ADHD strategy use, level of effectiveness, and identification of interferences to strategy use. The purpose of survey research is to describe attitudes, opinions, behaviors, or characteristics of a population by collecting data from a sample or from the entire population (Creswell, 2003). A survey research design was chosen for this study because of the ease of administration and limited time required for teachers to participate. A cross sectional survey was used because it best serves the purpose of measuring current practices related

to strategy use and because it provides this information in a short amount of time (Creswell, 2003). A self-administered questionnaire was chosen for data collection. This form of survey was chosen because the researcher had convenient access to respondents through the inter-district postal system. This facilitated quick data collection and was economical because no postage was required. Surveys were sent to administrators in each participating school in the district and administration placed the surveys directly into teacher mailboxes. Electronic reminders and contact information from the researcher were also forwarded to teachers in each participating school through administrators. Possible limitations to this tool include lack of personal investment causing low return levels and misinterpreted items due to the researcher not being able to explain or answer questions (Creswell, 2003). To reduce the lack of personal investment, the researcher included a cover letter for the survey explaining the importance of this information for teachers and students in the district. To increase accessibility of the researcher in case there were questions about items on the survey, email communications were forwarded by administrators in each building giving direct contact information for the researcher. This survey was also chosen because it was short enough to make completing the survey convenient for teachers. The researcher hoped the brevity of the instrument would improve participation and speed up turnaround time.

Target Population

The target population for this study was 260 kindergarten through third grade teachers in a large rural suburban school district in the southeast United States. A total of 109 surveys were completed making the return rate 42%. All fourteen schools in the

district serving kindergarten through third grade students were invited to participate, but four schools declined. The ten participating schools represented 71% of schools in the district serving kindergarten through third grade. These ten schools represented the socio-economic diversity in the district because five of the schools served a student population where 40% or more received free or reduced lunches and five served a student population where 20% or less received free or reduced lunches. Of the fourteen schools in the district, seven served low socio-economic areas and seven served higher socio-economic areas. Two of the participating schools had a high number of Hispanic students. None of the schools that chose not to participate had a high number of Hispanic students enrolled.

A non-probability, convenience sampling was used to increase sample size and reduce sampling error. A self-administered survey was sent to every member of the target population. A single stage sampling design was chosen since access was granted to all members of the target population. Access to teacher mailboxes was granted by the district central office and building principals. The survey was sent to principals using the inter-district mail system and the principal or designee placed them in the teacher mailboxes. All email reminders were sent directly to principals and they forwarded communications to kindergarten through third grade teachers in their buildings. The study was not stratified before selecting the sample. A demographic page was initially developed, but not included at the request of the Assistant Superintendent of Curriculum and Instruction for the district. She believed that teachers would have concerns about being identified by this information at the district level. The researcher removed that page from the survey packet before it was distributed.

Research Permission and Ethical Concerns

Ethical considerations were addressed prior to conducting this research and maintained throughout the process. The researcher was trained in conducting ethical research. Ethical considerations to protect participants during the quantitative survey were confidentiality and anonymity. The survey was completed independent from the researcher and no identifying data were collected.

Initially the researcher addressed ethical considerations by obtaining permission from the school board where the research was conducted. Afterwards, University of Alabama at Birmingham Institutional Review Board (UAB IRB) approval was obtained. After receiving IRB Approval, the researcher presented the study to principals during a meeting and gave them a principal's participant letter explaining each phase of the survey to solicit participation. Once permission was granted to contact teachers in each school, a survey and cover letter was sent to each school with a collection envelope. A cover letter informing participants of the purpose, benefits, risks, confidentiality and option to withdraw from the study was given to each participant. Surveys were returned to the collection envelope in the front office anonymously with no identifying data and coded numerically by the researcher as they were returned. All data collected by the researcher were stored in a safe in the researcher's home.

Role of the Researcher

The researcher is an administrator in a school that serves a high socio-economic area in the district where the research was conducted. The researcher was a classroom teacher for 8 years in a school that served the highest percentage of students from low

income families in the district and for 1 year in a school serving a high socio-economic area before becoming an administrator. While teaching in these two very different schools, the researcher consistently observed students struggling with ADHD in the classroom setting.

During the study, the researcher protected anonymity, confidentiality and objectivity by conducting the survey through the building administrators in each school. The surveys were completed independently from the researcher with no direct communication with participants except the reminder emails sent through building administrators. All teachers in each school were invited to participate and received the survey packet and all forwarded emails. Teachers in the ten participating schools that chose to complete the survey returned it to a collection envelope in the front office. The researcher collected the envelopes and coded the surveys numerically as they were collected.

Summary

Chapter 3 described the methodology, characteristics of quantitative research, philosophical assumptions, research design, target population, ethical concerns and the role of the researcher. A quantitative survey design was chosen because it most effectively answered the research questions and fit into the researcher's worldview or paradigm (MacKenzie & Snipe, 2006). A description of the instrument and the results of the quantitative data analysis are reported and analyzed in chapter 4.

CHAPTER 4

DATA ANALYSIS AND INTERPRETATION

Chapter 4 describes the results of the quantitative survey research. A description of the instrument used and specific procedures employed during research are also included in this chapter. Finally, results addressing each research question are summarized and discussed.

Introduction

The purpose of this study was to examine how often specific instructional strategies that support students with ADHD are used in kindergarten through third grade classrooms, how effective these strategies are in improving student performance on formative assessments, and what interferes with their implementation in a large rural/suburban school district in the southeast United States. A quantitative survey method was used to examine the frequency of strategy use, effectiveness of strategies and barriers to implementation. The following research questions guided data analysis:

1. How often are specific strategies that support students with ADHD used in kindergarten through third grade classrooms?
2. How effective are specific strategies that support students with ADHD in improving student performance on formative assessments in kindergarten through third grade classrooms?

3. What are the most common reasons for not using strategies that support students with ADHD in kindergarten through third grade classrooms?

Procedures

The following steps were implemented to complete the survey process.

1. The consent form, participant letter, and survey were submitted and approved by the assistant superintendent of curriculum and instruction for the district and permission was given to present this information to elementary school principals for consideration.
2. Information about the purpose of the survey and all forms involved were shared at an elementary principals' meeting. Of fourteen schools qualifying for the study, ten principals agreed to send this survey to all of the kindergarten through third grade teachers in their building.
3. One week later, the surveys, participant letters and consent forms were sent to principals at all participating schools. A collection envelope was also included for collection of completed surveys. The principals, or their designee, placed the survey packets including the participant letter, consent form and survey in each kindergarten through third grade teacher's school mailbox. An email from the researcher explaining the purpose and procedures for the research was also forwarded by the principals to all kindergarten through third grade teachers in their building.
4. Seven days later, an email thanking teachers for their participation and informing them that the survey would only be available for one more week was sent to

principals and forwarded to kindergarten through third grade teachers in their building. This email also included contact information for the researcher in case participants had questions or concerns.

5. Six days later, a final email was sent through principals to thank teachers again for taking the time to participate and informing them that the surveys had to be returned to the collection envelope in the front office within 24 hours.

Instrumentation

The survey instrument used to collect data is based on The School Supports Checklist (SSC) developed by Lori McKinley to reflect current knowledge of support needs for students with ADHD according to experts in the field and also to identify potential barriers to using these strategies (McKinley & Stormont, 2008). The SSC was developed based on the School Modifications Assessment Checklist (SMAC). Zentall and Stormont-Spurgin developed this tool in 1995 to collect data on the frequency that specific accommodations or strategies were used in the classroom. Strategies included on the checklist were identified from research reviews on interventions for students with ADHD and from clinical experiences (Zentall & Stormont-Spurgin, 1995). The original SMAC had ninety-eight items and was developed for a wide range of educators. McKinley revised the survey to reflect current knowledge of support needs of students with ADHD and to target kindergarten through second grade teachers. McKinley also added the list of potential barriers if a teacher checks *never* or *not often* beside an item.

Permission to use the SSC was received from Lori McKinley November 14, 2011. No changes were made to the list of items on the checklist, but a rating scale for

effectiveness was added. A participant letter was also sent with questionnaire explaining the research purpose and procedures.

Validity for the original SSC was established by McKinley through two levels of review. Face validity of the scale was addressed during the first level. Two educators were instructed to provide feedback and recommend items be deleted that were unclear or invalid. Eighteen items were deleted, and seventy-six remained. The next level sought to establish content validity. A panel of five nationally recognized experts in the area of ADHD reviewed the SSC items. The panel was instructed to delete any item indistinguishable from routine class strategies. No items were deleted for this reason. Another purpose was to reduce the items on the questionnaire. Thirty five items identified by the panel as unclear or redundant were omitted during this process leaving a total of forty-one. To determine reliability, McKinley ran an internal consistency analysis after teachers completed the scales and obtained an alpha of .92 (McKinley, 2008).

For the current research study, the researcher added the rating scale for effectiveness to the survey and the instrument was reviewed by twenty kindergarten through third grade teachers in the same district that the survey would be conducted. Feedback was solicited on face and content validity. Participants in the instrument review were asked to delete any unclear or redundant items and to comment on any confusion with directions and rating scales. Directions were shortened and two items reworded during this process. A numeric percentage was also added to the effectiveness scale.

The survey used in this research is comprised of forty-one items or strategies based on current research in the area of ADHD. The instrument includes a continuous scale from 1 to 5 that measures frequency of strategy use. The designation of 1 indicates

the strategy is *not often or never* used. A response of 2 indicates the strategy is used *monthly or intermittently*. Marking 3 indicates the strategy is used *weekly*, while 4 indicates the strategy is used *2 or 3 times per week* and 5 indicates the strategy is used *daily*. If the teacher chose 1, he or she was asked to include a letter identifying the reason for not using the strategy. Reasons included: a (*not enough time*), b (*need additional training*), c (*need additional resources*), d (*need additional materials*), e (*need smaller class size*), f (*student requires more support*), and g (*not appropriate for student*). An additional continuous scale was added to measure effectiveness in improving performance on formative assessments for each item or strategy. For this scale, marking 1 indicated the strategy was *not often or never* (0 to 25%) effective in improving student performance on formative assessments. A 2 indicated the strategy was *occasionally effective* (25 to 50%). A response of 3 indicated the strategy was *effective at least half of the time* (50 to 75%). A 4 indicated the strategy was *effective most of the time* (75 to 100%), and 5 indicated the strategy was always effective (100%) in improving student performance on formative assessments.

Quantitative Data Analysis

The data were analyzed using the SPSS computer software program version 21.0. Categorical variables were summarized with frequencies and percentages. Spearman's correlation was used to compare variables and discuss relationships between effectiveness and frequency of use. The Spearman rho is the correlation statistic used for nonlinear data measured on ordinal scales like the ones used in this survey to measure frequency of use and effectiveness. This correlation allowed the researcher to measure

the relationship between these two variables and to identify strategies that were often used and also often observed to be effective. The alpha level for statistical significance was set at .05, but all discussed correlations were statistically significant at .001. The researcher used the general guidelines created by Cohen and Manion (1994) to discuss the strength of association between frequency of use and effectiveness. Correlations above .65 were considered very good, representing a strong relationship between variables.

A total of 260 surveys were distributed to kindergarten through third grade teachers in ten elementary schools in a large suburban district. 109 surveys were returned producing a return rate of 42%. Ten of fourteen schools in the district participated in the study producing a school participation rate of 71%. Seven of the fourteen schools in the district served a student population where 40% or more of students were from low income families. Five of the ten participating schools served a student population of 40% or more students from low income families, making the sample statistically representative of the socio-economic diversity represented in the district. Schools not participating were an average size for the district with 600 to 800 students. There are only two small schools in the district with less than 300 students, and both participated in the study. Of schools participating, four out of ten served students in grades kindergarten through fifth grade and six served students kindergarten through third grade. Schools not participating all served kindergarten through fifth grade. This study only involved teachers in kindergarten through third grade. While grades served in the school may not have directly impacted results from the target population, it could have been a factor in school

participation since all schools not participating were kindergarten through fifth grade schools.

Research Question 1

How often are specific strategies that support students with ADHD used in kindergarten through third grade classrooms?

Seven strategies were used daily by 74% or more teachers surveyed to support students with ADHD in the classroom setting. Of the teachers surveyed, 94 of 109 (86.2%) reported using the strategy of calling students' names, touching students, using a private signal word or moving closer to students *daily*. The second most frequently used strategy reported by 89 of 109 (81.7%) teachers surveyed was using prompts for appropriate behavior. Data showed that 85 of 109 (78%) teachers used the strategy of allowing students to sit closer to the teacher. In addition, 82 of 109 (75.2%) teachers reported using the strategy of giving verbal compliments for improved work or social behavior. Of the preceding four most frequently used strategies, no teachers reported *not often or never* using these strategies. Of the teachers surveyed, 81 of 109 (74.3%) reported using the following strategies *daily*: using teaching activities that encourage active responding (talking, moving, organizing, working at the board), praising any effort in waiting for turns and ignoring minor behavioral disruptions. One teacher for each of these three strategies reported *not often or never* using the strategy. The researcher is aware that some strategies may not require daily use due to the nature of the strategy. For example, a strategy involving homework might not be used daily because homework is

not assigned daily. That being said, daily use remains a strong indicator that a strategy is easily implemented in current classrooms.

The strategies in Table 1 were reported to be used *daily* to support students with ADHD in the classroom by 50% or more of teachers surveyed.

Table 1

Most Often Used Strategies

Strategies	% of teachers used *daily*
1. Call student's name, touch student, use a private signal word or move closer to student	86%
2. Use prompts for appropriate behavior	81.7%
3. Allow student to sit closer to teacher	78%
4. Give verbal compliments for improved work or social behavior	75.2%
5. Use teaching activities that encourage active responding (talking, moving, organizing, working at the board)	74.3%
6. Praise any effort in waiting for turns	74.3%
7. Ignore minor behavioral disruptions	74.3%
8. Implement a daily behavior report card or communication sent home to parents for review and consequences	64.2%
9. Point out cause and effect of behavior	53.2%
10. Ask student to explain back to you his/her understanding of the directions and/or assignments	52.3%
11. Allow directed movement in the classroom or a change in seating that	51.4%

is not disruptive	

Several strategies had an above average number of teachers that reported *not often or never* using the strategy. Of teachers surveyed, 40% or more reported *not often or never* using six strategies to support students with ADHD in the classroom. Data showed 78 of 109 (71.6%) teachers surveyed reported *not often or never* using the strategy of having a peer note taker. Of teachers surveyed, 3 of 109 (2.8%) reported using this strategy *daily*. Data showed 54 of 109 (49.5%) teachers reported *not often or never* using the strategy of giving more projects (e.g., build models, do experiments as homework, collect rocks or shells) instead of worksheets. Of teachers surveyed, 5 of 109 (4.6%) reported using this strategy *daily*. Writing assignments on the board and making sure students copied them was reported by 48 of 109 (44%) teachers as *not often or never* used to support students with ADHD. An increase in daily use compared to others in this category, shows 37 of 109 (33.9%) teachers reported using this strategy *daily*. Making students underline or rewrite directions before beginning was reported by 46 of 109 (42.2%) teachers as *not often or never* used. Of teachers surveyed, 15 of 109 (13.8%) reported using this strategy *daily*. Data showed 46 of 109 (42.2%) teachers reported *not often or never* using the strategy of encouraging doodling or play with clay, paper clips or pipe cleaners while waiting or listening to instructions. Of teachers surveyed, 13 of 109 (11.9%) reported using this strategy *daily*. Taping prompt cards on desks, books or assignment folders was reported by 44 of 109 (40.4%) teachers as *not often or never* used in the classroom. Of teachers surveyed, 19 of 109 (17.4%) reported using this strategy *daily*.

The strategies in Table 2 were reported to be *not often or never* used to support students with ADHD in the classroom by 30% or more teachers surveyed.

Table 2

Not Often or Never Used Strategies

Strategies	% teachers *not often or never* used
1. Have a peer note taker	71.6%
2. Give more projects (e.g., build models, do experiments for homework, collect rocks or shells) instead of worksheets	49.5%
3. Write assignments on board and make sure students copy them	44%
4. Make student underline or rewrite directions before beginning	42.2%
5. Encourage doodling or play with clay, paper clips or pipe cleaners while waiting or listening to instructions	42.2%
6. Tape prompt cards on desks, books and assignment folders	40.4%
7. Make child publicly accountable to someone else across the school day for school conduct and performance goals	34.9%
8. Allow student pacing of activities, rather than teacher pacing	30.3%
9. Eliminate or reduce homework or specify an amount of time to be spent on homework rather than amount of work to be done	30.3%

Research Question 2

How effective are specific strategies that support students with ADHD in improving student performance on formative assessments in kindergarten through third grade classrooms?

Four strategies were reported by teachers surveyed to *always* (100%) be effective in supporting students with ADHD in the classroom. Of teachers surveyed, 41 of 109 (37.6%) reported the strategy of praising any effort in waiting for turns to *always* be effective. The second most effective strategy reported by 35 of 109 (32.1%) teachers was calling students' names, touching students, using private signal words, or moving closer to students. No teachers reported these two strategies to *not often or never* be effective in supporting students with ADHD in the classroom. The third most effective strategy reported to *always* be effective by 34 of 109 (31.2%) teachers was giving verbal compliments for improved work or social behavior. One teacher reported this strategy as *not often or never* being effective. Of teachers surveyed, 33 of 109 (30.3%) reported allowing students to sit closer to the teacher as being effective 100% of the time. No teachers reported this strategy to *not often or never* be effective in supporting students with ADHD in the classroom.

The strategies in Table 3 were reported by 50% or more teachers surveyed to be effective in supporting students with ADHD in the classroom more than 75% of the time. Responses for strategies being effective *most of the time* (75-100%) and *always* (100%) were combined to rank the most effective strategies reported.

Table 3

Most Effective Strategies

Strategies	% teachers reported effective
1. Call students name, touch student, use a private signal word, or move closer to student	82.6%
2. Praise any effort in waiting for turns	78%
3. Give verbal compliments for improved work or social behavior	77.1%
4. Use teaching activities that encourage active responding (talking, moving, organizing, working at the board)	74.4%
5. Allow student to sit closer to teacher	71.6%
6. Ask student to explain back to you his/her understanding of the directions and/or assignments	66%
7. Allow directed movement in the classroom or a change in seating that is not disruptive	62.4%
8. Allow standing during seatwork, especially during end of task	59.6%
9. Give child an activity reward such as running an errand, cleaning room or organizing teacher's desk	56.9%

Several strategies had an above average number of teachers that reported them to *not often or never* be effective in supporting students with ADHD in the classroom to improve performance on formative assessments. These strategies also had an above average percentage of teachers that chose not to rate the effectiveness of these strategies by responding to the survey item. Having a peer note taker was reported by 24 of 109

(22%) teachers to *not often or never* (0-25%) be effective. Of teachers surveyed, 57 of 109 (52.3%) chose not to respond to this survey item. Ignoring minor behavioral disruptions was reported by 19 of 109 teachers to *not often or never* be effective. Of teachers surveyed, 31 of 109 (28.4%) did not respond to this item. Taping prompt cards on desks, books, or assignment folders was reported by 17 of 109 (15.6%) teachers to *not often or never* be effective in supporting students with ADHD in the classroom. Of teachers surveyed, 27 of 109 (24.8%) chose not to respond to this survey item. Giving more projects like building models, doing experiments for homework or collecting rocks instead of worksheets was reported by 16 of 109 (14.7%) teachers to *not often or never* be effective. Of teachers surveyed, 35 of 109 (32.1%) chose not to respond to this item. Making students underline or rewrite directions before beginning was reported by 15 of 109 teachers (13.8%) to *not often or never* be effective. Of teachers surveyed, 31 of 109 (28.4%) did not respond to this survey item. Eliminating or reducing homework or specifying an amount of time to be spent rather than an amount of work to be done was reported by 15 of 109 (13.8%) to *not often or never* be effective in supporting students with ADHD in the classroom. Of teachers surveyed, 21 of 109 (19.3%) did not respond to this survey item.

The strategies in Table 4 were reported by 13.8% or more of teachers to *not often or never* (0-25%) be effective in supporting students with ADHD in the classroom.

Table 4

Least Effective Strategies

Strategies	% teachers *not often or never* effective
1. Have a peer note taker	22%
2. Write assignments on board and make sure students copy them	17.4%
3. Tape prompt cards on desks, books or assignment folders	15.6%
4. Give more projects (e.g., build models, do experiments as homework, collect rocks or shells) instead of worksheets	14.7%
5. Make student underline or rewrite directions before beginning	13.8%
6. Eliminate or reduce homework or specify an amount of time to be spent on homework rather than amount of work to be done	13.8%

Correlating Effectiveness and Frequency of Use

In addition to looking at frequency of use and level of effectiveness independently, the relationship between these two variables was analyzed using the Spearman correlation. This statistical procedure was chosen because it allows the researcher to identify strategies reported as both often used and highly effective. The Spearman rho is the correlation statistic used for nonlinear data measured on an ordinal scale like the ones used in this survey (Creswell, 2008). This procedure also identified strategies reported by teachers as not often used and also not observed to be effective. Using guidelines created by Cohen and Manion (1994), the researcher considered correlations higher than .62 indicative of a strong relationship between variables. An

alpha level of .05 was set for statistical significance. The correlation chart is located in appendix E.

The following strategies had a correlation of .70 or higher for not often used and not often effective. The correlation between frequency of use and level of effectiveness for having a peer note taker was statistically significant, $r(52) = +.88, p < .001$ indicating that the 52 teachers responding to this item did not often use this strategy or observe it to be effective often. The correlation for taping prompt cards on desks, books and assignment folders was statistically significant, $r(82) = +.78, p < .001$ meaning that the relationship for not often used and not effective among teachers responding was strong. The correlation between frequency of use and effectiveness for allowing student pacing of activities, rather than teacher pacing was statistically significant, $r(87) = +.71, p < .001$ indicating that teachers responding to this item did not often use this strategy or often observe it to be effective.

The following strategies had a correlation of .66 or higher for often used and often observed to be effective. The correlation between frequency of use and effectiveness for using written prompts or pictures for behavior or task attention was statistically significant, $r(92) = +.75, p < .001$ indicating that teachers used this strategy often and often observed it to be effective. The correlation between frequency and effectiveness for giving tallies for good conduct or work completed to trade for activity or reward was also statistically significant, $r(97) = +.76, p < .001$. The correlation between frequency and effectiveness for putting more difficult/demanding work earlier in the day was statistically significant, $r(95) = +.67, p < .001$ indicating that this strategy was reported by teachers as being often used and highly effective. The correlation for determining

student preference for working in groups, alone, with teachers, or using various learning aides was also statistically significant, $r(100) = + .66, p < .001$. Appendix E includes correlations for each item on the survey.

Research Question 3

What are the most common reasons for not using strategies that support students with ADHD in kindergarten through third grade classrooms?

For each of the 41 items or strategies on the survey that a teacher marked as *not often or never* using, the directions asked the teacher to choose a reason for not using that strategy. The reason *not appropriate for student* was indicated 420 times for different strategies by the 109 teachers completing the survey. *Not enough time* was indicated as a reason for *not often or never* using the strategies 115 times. Table 5 illustrates how many times each reason was chosen for *not often or never* using a strategy.

Table 5

Reasons for Not Using Strategies

Reason	Number of Times Given as Reason
Not appropriate for student	420
Not enough time	115
Need additional training	59
Student requires more support	37
Need additional resources	19
Need smaller class size	17

Need additional materials	9

Survey results indicate 35% or more teachers surveyed entered reason codes for the following strategies. The item with the most reason codes entered for not using that strategy was having a peer note taker. Of 109 teachers surveyed, 76 (69.7%) entered a reason code for this strategy. The majority of teachers responding indicated the reason *not appropriate for student*. Other reasons indicated for not using this strategy were *not enough time, need additional training* and *need additional resources*. This strategy was scored by 71.6% of teachers as *not often or never* used and by 22% of teachers as *not often or never* effective. The correlation between frequency of use and level of effectiveness was found to be statistically significant, $r(52) = +.55, p < .001$. According to the guidelines set forth by Cohen and Manion (1994), this is an average or typical relationship indicating that of the 52 teachers responding to this strategy, many did not use it often and also did not observe it to be effective.

Giving more projects like building models, doing experiments for homework and collecting rocks or shells instead of worksheets had the second most reason codes entered for *not often or never* using this strategy. Of teachers surveyed, 53 of 109 (48.6%) entered a reason code for this strategy. The following reasons were indicated for *not often or never* using this strategy: *not enough time, need additional training, need additional resources, need additional materials, need smaller class size, student requires more support* and *not appropriate for student*. While 49.5% of teachers surveyed scored this strategy as *not often or never* used, only 14.7% scored it as *not often or never* effective. The correlation between how often and how effective for this strategy was statistically significant, $r (74) = + .51, p <.001$ indicating many of the teachers surveyed did not

often use this strategy and also did not observe it to be effective, but this is not considered a strong relationship (Cohen and Manion, 1994).

Of teachers surveyed, 47 of 109 (43.1%) entered a reason code for *not often or never* using the strategy of writing assignments on the board and making sure students copy them. *Need additional resources*, *not appropriate for student* and *student requires more support* were indicated as reasons for *not often or never* using this strategy. Of teachers surveyed, 44% scored this strategy as *not often or never* used and 17.4% indicated that it was *not often or never* effective. The correlation between frequency of use and effectiveness for this strategy was statistically significant, $r(74) = +.51$, $p < .001$.

Encouraging doodling or play with clay, paper clips or pipe cleaners while waiting or listening to instructions received a reason code from 43 of 109 (39.4) teachers surveyed. Reasons indicated for not using this strategy were *not enough time*, *need additional training*, *need additional resources* and *not appropriate for student*. Of teachers surveyed, 42.2% scored this strategy as *not often or never* used and 11.9% scored it as *not often or never* effective. The correlation between frequency of use and effectiveness was statistically significant, $r(78) = +.64$, $p < .001$ indicating that of the teachers responding to this item, many did not use this strategy or find it very effective.

Of teachers surveyed 40 of 109 (36.6%) entered a reason code for taping prompt cards on desks, books or assignment folders. The reasons indicated for not using this strategy were: *not enough time*, *need additional training*, *need additional resources*, *need additional materials*, *need smaller class size* and *not appropriate for student*. While 40.4% of teachers scored this strategy as not often or never used, only 15.6% indicated

that it was *not often or never effective*. The correlation between frequency of use and effectiveness was statistically significant, $r(82) = +.78, p < .001$ indicating a strong relationship between the two variables and that this strategy was not often used and not viewed as effective by most of the teachers responding.

The strategies that teachers scored as most effective were not always the ones used most often. Allowing standing during seatwork, especially during end of task was indicated by 59.6% of teachers surveyed to be effective 75% of the time or more, but was only indicated by 40.4 % of teachers to be used *daily*. The correlation between how often and how effective was statistically significant, $r(102) = +.55, p < .001$. This average correlation (Creswell, 2008) indicated that although teachers did not use this strategy daily, many of the 102 teachers did use the strategy often and observe it to be effective. For teachers that did not use this strategy at all, reasons coded were *need additional training*, *need smaller class size* and *not appropriate for student*. Giving a child an activity reward such as running an errand, cleaning the room or organizing the teacher's desk was reported to be effective 75% of the time or more by 56.9% of teachers surveyed, but only 29.4% reported using the strategy daily. The correlation between frequency and effectiveness was statistically significant for this strategy, $r(104) = +.61, p < .001$, indicating an average, but not strong relationship between variables.The reasons given by teachers not using this strategy at all were *not enough time* and *not appropriate for student*.

Summary of Results

Descriptive statistics for 109 returned surveys indicated the most used strategies and the least used strategies in kindergarten through third grade classrooms to support students with ADHD. Some of the most often used strategies were calling student names, touching students, using private signal words or moving closer, using prompts for appropriate behavior and allowing students to sit closer to the teacher. A complete list of most frequently used strategies can be found on page 45 in Table 1. Survey results also provided information about the effectiveness of each strategy. Calling students names, using private signal words or moving closer to students, praising any effort in waiting for turns and giving verbal compliments for improved work or social behavior were among the most effective strategies indicated. Lists of the most and least effective strategies identified by teachers can be found in Tables 2 and 3 on pages 48 and 50. Strategies that were often used and also observed to be effective were identified using the Spearman rho correlation. Strategies that teachers reported as often used and also effective were using written prompts or pictures for behavior or task attention, giving tallies for good behavior and task completion to trade for reward, putting more difficult/demanding work earlier in the day and determining student preference for working in groups, alone, with teacher or using various learning aides. If a teacher scored a strategy as *not often or never* used, reason codes were entered. Reasons for *not often or never* using strategies were analyzed and ranked in Table 5 on page 51. *Not appropriate for student, not enough time* and *need additional resources* were among reasons most often entered for *not often or never* using strategies. Most used strategies were compared to most effective strategies the Spearman

rho correlation and possible reasons were identified for strategies that scored higher for effectiveness than for daily use.

CHAPTER 5

DISCUSSION

This study represents a quantitative investigation of strategies used by teachers to support students with ADHD in kindergarten through third grade classrooms. Approximately 9.5% or 5.4 million children have been diagnosed with attention ADHD. It is the most common neurobehavioral disorder among children (CDC, 2007). Since ADHD does not qualify for a designation under special education services, unless a child qualifies under Other Health Impaired, the responsibility for supporting students with ADHD in the classroom falls on the regular classroom teacher (Reiber & McLaughlin, 2004). Providing teachers with information about the use and effectiveness of research based strategies to support students with ADHD has the potential to greatly improve student performance in the classroom (Miranda, Precentacion & Soriano, 2002). The information about strategies use and effectiveness revealed in this study provides insight about how often research based strategies are used and how effective teachers observe them to be in supporting students with ADHD. The study also reveals information about the reasons why some strategies are not used.

Discussion of Research Question 1

The first research question asked how often strategies to support students with ADHD are being used in kindergarten through third grade classrooms? The strategies

used in this study were identified in research reviews and clinical experiences by researchers to specifically support students with ADHD (McKinley & Stormont, 2008). Of the 41 strategies listed on the teacher survey, ten strategies were identified by 50% or more teachers to be used *daily* in the classroom to support students with ADHD.

Calling a student's name, touching a student, using private signal words or moving closer to a student was the strategy reported by the highest percentage (86.2%) of teachers as being used every day in the classroom to support students with ADHD. This strategy involves the teacher using verbal, physical and visual prompts to keep a child on task or draw a child back to task. This combination is included in the document called *Teaching Children with Attention Deficit Hyperactivity Disorder* published by the U.S. Department of Education in 2006. Using visual cues, proximity control and hand gestures are strategies grouped together under Effective Behavioral Intervention Techniques in that document. Frequent contact and preferential seating were also identified as an effective combination of strategies in a study by Mulligan (2001) of 625 elementary school teachers.

Using prompts for appropriate behavior was the second most used strategy identified by 81.7% of teachers as used *daily* to support students with ADHD in the classroom. This strategy also uses a cue or prompt, but is specifically directed towards a desired behavior. Simply prompting for desired behavior is not identified in the U.S. Department of Education document, but is a component of many behavioral management techniques like Behavior Intervention Plans and Token Economy Systems (Miranda, Presentacion & Soriano, 2002). Although 81.7% of teachers surveyed used this strategy

daily, it was not among the top scoring strategies for effectiveness. Only 20.2% teachers identified this strategy as *always* effective and 37.6% rated it effective *most of the time.*

Allowing students to sit close to the teacher was identified by 78% of teachers to be used *daily*. Allowing directed movement in the classroom or a change in seating that is not disruptive was identified by 51.4% of teachers to be used *daily*. These strategies are more proactive compared to the component in the first strategy where the teacher moves close to the student. With these strategies, the student is allowed to sit in close proximity of where the teacher will be located. This would be more challenging in elementary grades where teachers move around the class frequently, but the child is able to locate herself on the rug, at tables or even in line closer to the teacher to promote on task behavior. These could be designated as self management strategies since it is the student's choice as she is "allowed" to sit closer or change seating and not required. These are the only high ranking strategies that could be initiated by the student. It could also be argued that these strategies fall under proximity control which is identified as an effective strategy as well (Mulligan, 2001).

Giving verbal compliments for improved work or social behavior was identified by 75.2% of teachers to be used daily in the classroom to support students with ADHD. Praising any efforts in waiting for turns was used daily by 74.3% of teachers. Praising positive behavior is an accepted strategy in many classrooms. It is supported in the book, Best Practice: Today's Standards for Teaching and Learning in America's Schools (Zemelman, Daniels, & Hyde, 2005) and in the U.S. Department of Education's document, *Teaching Children with ADHD* (2006). It is also cited as part of current research studies (Reiber & McLaughlin, 2004). It is important to note that all of these

sources encourage teachers to be very specific with compliments or praise and to avoid overused vague statements like, “good job” or “very nice”.

Using teaching techniques that encourage active responding like talking, moving, organizing and working at the board was recognized as being used *daily* by 74.3% of teachers. Asking students to explain back his understanding of directions and assignments was used daily by 52.3% of teachers daily. Allowing directed movement was used daily by 51.4%. Variations of these strategies that keep students actively engaged through movement and conversation are included in most current research as a component of effective instruction for children with ADHD (Reiber & McLaughlin, 2004; U.S. Department of Education, 2006). Student engagement is recognized as a critical part of implementing Common Core Standards (Zemelman, Daniels, & Hyde, 2005). This type of engagement is even more important for students that struggle with ADHD. Keeping them engaged in their learning verbally and physically could reduce the number of prompts needed because the child is better able to attend to the task for a longer period of time.

Ignoring minor behavioral disruptions is another strategy recognized in research as an effective way to support students with ADHD in the classroom (Reiber & McGlaughlin; U.S. State Department of Education, 2006). Of teachers surveyed, 74.3% reported using this strategy daily. Behavioral accommodations of this type are appropriate for students with ADHD because their best attempt at attending to task is going to look very different than a child without ADHD (Mullane, Corkru, Klein, Mclauglin, & Lawrence, 2010).

Implementing a daily behavior report card or communication sent home to parents for review and consequences was identified by 64.2% of teachers as being used *daily,* but was only reported by 21.1% to be effective *always* and by 33.9% as effective *most of the time*. Parent communication is supported in research, but the consequence part of this strategy makes it more unique (U.S. State Department of Education). For parents to give a consequence for behavior symptomatic of a child's ADHD diagnosis would be inappropriate. Research reports that parent communication is vital, but not recognizing the issues related to ADHD and expecting a child to act as everyone else is not helpful (Bartlett, Rowe & Shantell, 2010).

Pointing out cause and effect of behavior was reported by 53.2% of teachers to be used *daily*. Only 11.9% of teachers observed this strategy to *always* be effective and 29.4% reported it to be effective *most of the time*. Helping students prevent an undesired behavior by discussing natural consequences is a component of many behavioral modification techniques, classroom behavior plans and token economies (Miranda, Presentacion, & Soriano, 2002). It is important to note that this practice is recommended primarily as a preventive measure and that explaining to a child what he has caused to happen by his behaviors with no plan for prevention next time is ineffective.

Most of the frequently used strategies fell into the categories of prompting, praising, engaging and differentiation. These were categorized to aide in presenting information in a way that supports implementation and integration into the instructional day. Prompting verbally, physically and visually to encourage desired behaviors related to academics or social behaviors was identified as often used. Results also indicated that teachers often use the strategy of praising students for desired behaviors or improved

academic work. Encouraging students to be more engaged in their learning by close proximity to teacher, active responding, talking and moving was frequently used. Differentiated instruction calls for teachers to focus on a variety of different learning styles and tailor instruction to the diversity of their students and not the demands of the curriculum (Huebner, 2010). In this study, teachers reported often ignoring minor disruptions, creating parent communication folders and discussing cause and effect of behaviors with students that struggled with ADHD in the classroom. All of these strategies could be considered differentiated instruction to some degree, but these specifically require teachers to accommodate instruction and expectations for students with ADHD.

Discussion of Research Question 2

The second research question asked how effective specific strategies that support students with ADHD are in improving student performance on formative assessments in kindergarten through third grade classrooms. Formative assessments are classroom tests, observations and activities that provide the teacher with information about how to proceed with instruction. The researcher chose formative assessments instead of summative assessments because formative assessments are more observable as they happen daily. Summative assessments are given less frequently at the end of a unit of study to assess what students learned from that instruction.

This aspect of the research is critical because it identifies strategies that teachers observe to be most effective in supporting students with ADHD in the classroom. Of the 41 research based strategies included in the survey, 50% or more of teachers surveyed

reported nine strategies to be effective *most of the time* or *always* (75% -100%). Use of a variety of strategies has been found to be very effective in improving academic performance for students with ADHD (Miranda, Presentacion, & Soriano, 2002). Knowing which strategies are most effective can help teachers choose the best strategies to implement in the classroom.

Calling students' names, touching students, using private signal words or moving closer to students was identified by the highest percentage (82.6%) of teachers to be effective. This strategy was also identified as the most often used strategy. Unlike the group of strategies reported as most used, this is the only strategy that includes prompts.

Three of the strategies reported by teachers to be highly effective involved reinforcing desired behaviors. Praising any effort in waiting for turns was identified by 78% of teachers to be effective *most of the time* or *always*. Giving verbal compliments for improved work or social behavior was reported by 77.1% of teachers to be effective in supporting students with ADHD. Giving a child an activity reward such as running errands, cleaning or organizing was identified by 56.9% of teachers to be effective. Interestingly, this strategy was only used by 29.4% of teachers daily. Specific praise and rewards for improvements or progress are especially important for students with ADHD. They are much less likely than non ADHD peers to have multiple opportunities for success related to behavior and academics in the school setting (Lee, 2008; Barlett, Rowe, & Shattell). Giving a reward that also includes physical activity works to encourage desired behavior and expends energy to help students manage activity levels.

The other four strategies identified to be highly effective relate to engaging students during instruction. Using teaching activities that encourage active responding

like talking or moving was identified by 74.4% of teachers to be effective. Allowing students to sit closer to the teacher was reported by 71.6% as being effective in supporting students with ADHD. Asking students to explain back directions or assignments to check for understanding was reported by 66% of teachers to be effective. Allowing directed movement or a change in seating was reported by 62.4% to be effective. Allowing students to stand during seatwork was reported by 59.6% of teachers to be highly effective, but was only used daily by 40.4% of teachers. Results indicate that strategies involving opportunities for verbal and physical participation are effective ways to support students with ADHD in the classroom. Student engagement is considered a critical component of "best practice" and a vital component of instructional practices required to meet the demands of Common Core Standards (Zemelman, Daniels, & Hyde, 2005). It is evident in this research that student engagement is also a critical component for supporting students with ADHD in the classroom.

Strategies identified by teachers to be most effective fall into the categories of praising and engaging. Teachers did not always use these strategies most often, but did report them to be the most effective. Allowing physical movement and movement around the class are indicated within these strategies as effective ways to support students with ADHD. As part of encouraging engagement, allowing students to move about and stand as long as it does not disrupt the class are also indicated as effective ways to support these students.

Items were also correlated to identify strategies that were often used and also often observed to be effective. Using written prompts or pictures, giving tallies for behavior or task completion to trade for a reward, putting more difficult tasks at the

beginning of the day and determining student preferences for working in groups, alone, with the teacher or using various learning aides were all strategies with high correlations or strong associations between frequency of use and level of effectiveness. If more teachers are using these strategies and also observe them to be effective, this may indicate that these strategies are more easily implemented in the classroom.

Discussion of Research Question 3

The third research question asked, what are the most common reasons for not using strategies that support students with ADHD in kindergarten through third grade classrooms? The three reasons given most often for *not often or never* using a strategy to support students with ADHD were *not appropriate for student, not enough time* and *need additional training*. These reasons provide important information for teacher preparation programs, district and school leaders and policy makers about how to prepare teachers to better support students with ADHD in the classroom.

The reason given most often for not using a strategy was that the strategy was not appropriate for the student. Since all of the strategies included in the survey were research based, that leaves the question of why teachers felt they were inappropriate. This response could be because the strategy was not age appropriate. It could also be that a strategy focused on a specific symptom of an ADHD subtype like hyperactivity, and the child only struggled with ADHD Inattentive type. This could explain a portion of the responses, but probably not all 420.

The strategy that was rated most by teachers as *not often or never* used for this reason was having a peer note taker. This strategy is identified in research as effective in

increasing academic scores and reducing off-task behaviors, but also might not be age appropriate for younger elementary school children (DuPaul, Ervin, Hook, & McGoey, 2009; Reiber & McLaughlin, 2004). It is evident how this strategy might not be age appropriate for many students. This strategy had the highest correlation for not often used and not often observed to be effective.

Writing assignments on the board and making students copy them and making students underline or rewrite directions were other strategies that received a high number of reason codes for *not appropriate for students*. It also easy to see how these two strategies could be viewed as not appropriate for younger elementary school students.

Eliminating or reducing homework or specifying an amount of time to be spent on homework rather than an amount of work to be done was rated 31 times as *not appropriate for student.* The correlation for frequency of use and effectiveness for this strategy was statistically significant, $r(87) = + .67$, $p < .001$ indicating that the teachers responding to this item did not use this strategy often or often observe it to be effective. Students with ADHD struggle to attend to a task for long periods of time. This strategy allows them to practice or work on the material assigned for a set amount of time and then mark their stopping point to finish later or not be required to finish at all. If a student can successfully work five multiplication problems, there is no need to require ten. This can greatly reduce stress at home and keep the student from becoming frustrated. It is difficult to understand how this could be viewed as inappropriate for any child with ADHD unless homework was not assigned at all. All subtypes of ADHD have symptoms related to attention to task and task completion.

Giving more projects like building models, doing experiments for homework and collecting items instead of worksheets received the reason code for *not appropriate for student* 27 times. Research related to students with ADHD, and without, supports this strategy as very effective in engaging students in their learning and improving academic performance and behavior (Reiber & McGlaughlin; U.S. State Department of Education, 2006; Mulligan, 2001; Zemelman, Daniels, & Hyde, 2005). This strategy was identified as the second least used strategy by teachers, yet it is overwhelmingly supported by research for all ages of students. Further research needs to be done to discover why teachers feel this strategy is inappropriate.

Not enough time was the second most frequent reason given for not using strategies. Allowing student pacing of activities rather than teacher pacing, giving social time as a reward for working independently, encouraging doodling or play with clay, paperclips or pipe cleaners while waiting for turns or listening and putting more difficult/demanding work earlier in the day were the strategies that received the most reason codes for *not enough time*. All of these strategies are supported in research and work toward helping students stay engaged in their learning, but it is evident how these strategies would require a more flexible schedule and individualized pace. The time requirements set at the state level may impede strategies of this nature because of mandates to segment the day. This does not allow for student pacing, extra time to implement accommodations or flexible movement of subject areas. The negative impact of these time requirements on instructional strategies and student learning is an important topic for future research.

The third most frequently reported reason for not using strategies was that teachers *need additional training* to implement strategies. It is important to note that this reason was given 59 times for not using strategies. Taping prompt cards on desks, books or assignment folders, encouraging doodling or play with clay, paper clips or pipe cleaners while waiting or listening and giving tallies for good conduct or work completed to trade for activity or reward were the strategies that received the most reason codes for needing additional training. These are very detailed and specific strategies that might be used as a component of a behavior plan. The similarity of these three strategies would suggest that further training is needed related to creating and implementing behavior plans to support students with ADHD in the classroom. The fact that this reason code was given 59 times in response to many strategies indicates that more training and education is needed in the area of implementing strategies to support students in the classroom.

Implications

Implications for Policy Makers

This research includes important information for policy makers related to supporting students with ADHD. Documents, like the one published by the U.S. Department of Education in 2006, outlining instructional strategies and practices to support students with ADHD should be updated to include recent research and specific information about strategies like level of effectiveness and frequency of use. It would also be helpful to list strategies for different developmental/age levels so that teachers know which strategies are better for different ages of students. This study indicated that

many teachers view several research based strategies as inappropriate for their students. This could be because strategies like peer note taking, writing assignments on the board for students to copy and taping prompt cards on the desk would not be appropriate for young elementary students. Grouping strategies by grades or age ranges would be very helpful to teachers as they seek to identify appropriate strategies to support students with ADHD in the classroom. Information about how often strategies are used and how strategy use correlates with effectiveness offers important information for educators about plausibility of implementation. Strategies identified in research as being not often used and not often effective should be removed from lists like this to prevent teachers and students from becoming frustrated.

In addition, results indicated that teachers often do not use some of the strategies they observe to be effective because they need more time. Set time requirements for subject areas have been impacted by policy changes over time. A report from the U.S Department of Education on time spent teaching the core subjects contended that the proportion of time spent on core subjects reflected the emphasis placed on success in these areas. This report further discussed concerns about inconsistencies among schools related to time spent teaching core subjects and called for policy changes aimed at increasing time on core subjects and making these times consistent (Perie, Baker, & Bobbitt, 1997). No Child Left Behind (NCLB) requirements for accountability in testing called for more time spent on reading and math instruction since these were the subjects tested. Research by the Center on Education Policy reports that 71% of districts reduced time spent on other subjects to provide more time for reading and math in elementary schools with 60% of school requiring a set block of time for reading (Jennings &

Rentner, 2006). Policy makers often make decisions about time requirements and curriculum without researching the impact of these decisions. Implementing superficial changes in structure like instructional time per subject can result in consequences that were not intended (Griffith & Scharmann, 2007). Stringent time requirements related to these changes in policy may impede teachers from implementing several of the strategies that they observe to be effective because they feel pushed to cover subjects in set amounts of time and refrain from implementing individual strategies that would take extra time. A panel of educators, including elementary classroom teachers, should be convened to reevaluate the developmentally appropriateness of the current time requirements for elementary students. Especially now that Common Core Standards and Best Practice call for integration, thematic units and project based learning (Zemelman, Daniels, & Hyde, 2005).

Another frequently reported reason for not using some strategies reported to be effective was the need for additional training. Funding cuts in elementary education directly impact professional development opportunities for teachers. Professional development funding for teachers should be primary in budget considerations to provide teachers with the ongoing training they need to stay current on effective strategies and interventions.

Implications for Teacher Education Programs

Teachers indicate that they need additional training to use many of these strategies. ADHD is the most common neurobehavioral disorder among children with a 22% increase in diagnosis from 2003 to 2007 and 5.4 million children diagnosed (CDC,

2007; DSM-IV, 2004) but most teacher education programs only address ADHD as a component of one class designed to support students with special needs. This class is usually called a Survey of Special Education and covers the spectrum of special needs that might be encountered in the classroom with support from a special education teacher or paraprofessional. Since most students with ADHD do not qualify for special education, support for these students would be more appropriately addressed in a class designed to teach classroom management strategies or differentiated instruction techniques. More time should also be devoted to recognizing, understanding and supporting students with ADHD because it is such a prevalent childhood diagnosis. Teacher education programs need to equip teachers with current information about the implementation and effectiveness of research based strategies that will be effective in preparing them to understand and meet the specific needs of students with ADHD in the classroom (Vereb & DiPerna, 2004). Instruction about ADHD for teachers should include current research about the effectiveness and use of strategies and classroom observations dealing specifically with the implementation of strategies to support students with ADHD.

Implications for Educators

This research shows that teachers identify many reasons for not using some of these research based strategies. Educators must work to remove roadblocks that impede use of the most effective strategies for students with ADHD. Educators need to seek out professional development opportunities and recent research to be sure they are using the most current information available to support these students in the classroom. Educators need to be sure the strategies that are using are proven to be effective through research

related specifically to students with ADHD. Since *not appropriate for student*, was indicated 420 times as a reason for not using strategies, it is possible that teachers need more education about appropriate supports for students with ADHD. Many of the responses for *need more training* related to detailed strategies that might be included in behavior plans. Professional development in this area was identified as a need in this study as well. Time restrictions and limited training are real challenges identified in this survey. This survey provides information about strategies that are often used and also effective. This indicates that these strategies are more easily implemented and might require less time. Educators can also request flexibility in their scheduling at the school level to create time for strategy implementation. Referring a child that is struggling with ADHD in the classroom to a school based support team can also provide information and support for strategy use. Collaboration between classroom teachers and special education teachers is an effective way for classroom teachers to learn more about ADHD. This allows classroom teachers to benefit from the more extensive training that special education teachers receive related to ADHD. Requesting professional development on the topic of ADHD at the district and school level is another way to get the information needed to help these students be successful. Advocating for these students is critical.

Recommendations for Future Research

The results of this study provided insight about the use of strategies to support students with ADHD in the classroom, but it also left many questions that need to be addressed through further research. The reason given the most times for not using strategies was *not appropriate for student*. While a percentage of these responses could

be related to age appropriateness or targeted behaviors being addressed, further research needs to be conducted to investigate why teachers felt that many of these research based strategies were not appropriate. This question needs to be answered to ensure the implementation of the most effective strategies available to support students with ADHD.

Another reason identified by teachers for not using effective strategies was *not enough time*. The rigid time requirements set by policy makers need to be reviewed and researched. A survey of teachers should be conducted to investigate the impact of these time requirements on quality of instruction.

Teachers also identified a need for more training as a reason for not using strategies. This research identified that they especially needed more training with detailed strategies that are often a component of a behavior plan. A study should be conducted to survey teachers about the type of training they feel they need to better meet the needs of these students. It should also include specific items dealing with knowledge of behavior plans.

Since this survey only included the teachers' perspectives about the effectiveness of these strategies, it would be important to expand on that by conducting similar survey to measure the attitudes and perspectives of students regarding these strategies.

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APPENDIX A

INSTITUTIONAL REVIEW BOARD APPROVAL

UAB THE UNIVERSITY OF ALABAMA AT BIRMINGHAM

Institutional Review Board for Human Use

Form 4: IRB Approval Form
Identification and Certification of Research
Projects Involving Human Subjects

UAB's Institutional Review Boards for Human Use (IRBs) have an approved Federalwide Assurance with the Office for Human Research Protections (OHRP). The Assurance number is FWA00005960 and it expires on January 24, 2017. The UAB IRBs are also in compliance with 21 CFR Parts 50 and 56.

Principal Investigator: WALKER, ANGELA D

Co-Investigator(s):

Protocol Number: **E120513008**

Protocol Title: *Classroom Support Strategies for Students with ADHD: Frequency of Use, Level of Effectiveness and Roadblocks to Implementation*

The above project was reviewed on 8/10/12. The review was conducted in accordance with UAB's Assurance of Compliance approved by the Department of Health and Human Services. This project qualifies as an exemption as defined in 45CF46.101, paragraph 2.

This project received EXEMPT review.

IRB Approval Date: 8/10/12

Date IRB Approval Issued: 8/10/12

C. Oliver

Cari Oliver
Assistant Director, Office of the
Institutional Review Board for Human
Use (IRB)

Investigators please note:

IRB approval is given for one year unless otherwise noted. For projects subject to annual review research activities may not continue past the one year anniversary of the IRB approval date.

Any modifications in the study methodology, protocol and/or consent form must be submitted for review and approval to the IRB prior to implementation.

Adverse Events and/or unanticipated risks to subjects or others at UAB or other participating institutions must be reported promptly to the IRB.

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APPENDIX B

ADHD STRATEGY SUPPORT SURVEY

ADHD Strategy Support Survey

The first purpose of this survey is to determine how often you have used specific support strategies with students diagnosed with Attention Deficit Hyperactivity Disorder (ADHD). The second purpose of this survey is to identify barriers to using specific strategies. For items rated "not often or never used," please indicate the reason using the list provided. The third purpose of this survey is to determine the effectiveness of specific support strategies in improving student performance on formative assessments like teacher observations, common formative assessments, quizzes and classroom activities (not standardized tests). The survey can be used to assess strategies used in the past or present with students diagnosed with ADHD. If you have never had a student in your class with ADHD, please do not complete the checklist.

How Often Used	**Reasons Not Used or Never Used**	**How Effective**
1= Not often used or never used (indicate reason) 2= Monthly or occasionally 3= Weekly 4= 2 or 3 times per week 5= Daily	a. Not enough time b. Need additional training c. Need additional resources d. Need additional materials e. Need smaller class size f. Student requires more support g. Not appropriate for student	1= Not often or never effective (0-25%) 2= Occasionally effective (25-50%) 3= Effective at least half of the time (50-75%) 4= Effective most of the time (75-100%) 5= Always effective (100%)

Item	**How Often Used**	**Reason Code "Not Often or Never Used"**	**How Effective**
1. Allow reduced standards for acceptable handwriting.	1 2 3 4 5		1 2 3 4 5
2. Give fewer math problems at one time if rote material	1 2 3 4 5		1 2 3 4 5
3. Allow several shorter assignments in same time as other students are completing one longer task.	1 2 3 4 5		1 2 3 4 5
4. Give more projects (e.g., build models, do experiments as homework, collect rocks or shells) instead of worksheets	1 2 3 4 5		1 2 3 4 5
5. Make child publicly accountable to someone else across the school day for school conduct and performance goals	1 2 3 4 5		1 2 3 4 5
6. Point out cause and effect of behavior	1 2 3 4 5		1 2 3 4 5
7. Write assignments on board and make sure students copy them.	1 2 3 4 5		1 2 3 4 5
8. Alternate low and high interest tasks.	1 2 3 4 5		1 2 3 4 5
9. Use games to encourage attention and over-learn rote material.	1 2 3 4 5		1 2 3 4 5
10. Use prompts for appropriate behavior.	1 2 3 4 5		1 2 3 4 5
11. Instruct student on how to continue on easier parts of the task (or do substitute task) while waiting for teacher help.	1 2 3 4 5		1 2 3 4 5
12. Have a peer note taker.	1 2 3 4 5		1 2 3 4 5
13. Ask student to explain back to you his/her	1 2 3 4 5		1 2 3 4 5

understanding of the directions and/or assignments.			
14. Make student underline or rewrite direction before beginning.	1 2 3 4 5		1 2 3 4 5
15. Use teaching activities that encourage active responding (talking, moving, organizing, working at the board).	1 2 3 4 5		1 2 3 4 5
Item	**How Often Used**	**Reason Code "Not Often or Never Used"**	**How Effective**
16. Allow directed movement in the classroom or a change in seating that is not disruptive.	1 2 3 4 5		1 2 3 4 5
17. Allow standing during seatwork, especially during end of task.	1 2 3 4 5		1 2 3 4 5
18. Allow student-pacing of activities, rather than teacher pacing.	1 2 3 4 5		1 2 3 4 5
19. Encourage doodling or play with clay, paper clips or pipe cleaners while waiting or listening to instructions.	1 2 3 4 5		1 2 3 4 5
20. Determine student preference for working in groups, alone, with teachers, or using various learning aides.	1 2 3 4 5		1 2 3 4 5
21. Teach organization skills and/or provide organizers.	1 2 3 4 5		1 2 3 4 5
22. Allow individual work to be completed with partners.	1 2 3 4 5		1 2 3 4 5
23. Allow student to sit closer to teacher.	1 2 3 4 5		1 2 3 4 5
24. Call student's name, touch student, use a private signal word, or move closer to student.	1 2 3 4 5		1 2 3 4 5
25. Use written prompts or pictures for behavior or task attention.	1 2 3 4 5		1 2 3 4 5
26. Cue student about upcoming difficult times or tasks where extra control will be needed.	1 2 3 4 5		1 2 3 4 5
27. Restructure assignments by coloring, circling, or underlining directions or parts of directions.	1 2 3 4 5		1 2 3 4 5
28. Tape prompt cards on desks, on books, or on assignment folders.	1 2 3 4 5		1 2 3 4 5
29. Use fewer words in explain tasks (concise verbage).	1 2 3 4 5		1 2 3 4 5
30. Praise any effort in waiting for turns.	1 2 3 4 5		1 2 3 4 5
31. Ignore minor behavioral disruptions.	1 2 3 4 5		1 2 3 4 5
32. Give verbal compliments for improved work or social behavior.	1 2 3 4 5		1 2 3 4 5
33. Give social time as reward for working independently.	1 2 3 4 5		1 2 3 4 5
34. Do not take away recess or gym time as punishment.	1 2 3 4 5		1 2 3 4 5
35. Give tallies for good conduct or work completed	1 2 3 4 5		1 2 3 4 5

(and take them away for incomplete work or poor behavior) to trade for activity or reward (e.g., behavior contracts)			
36. Give child an activity reward such as running an errand, cleaning room or organizing teacher's desk.	1 2 3 4 5		1 2 3 4 5
37. More conferences with parents.	1 2 3 4 5		1 2 3 4 5
38. Eliminate or reduce homework or specify an amount of time to be spent on homework rather than amount of work to be done.	1 2 3 4 5		1 2 3 4 5
39. Put more difficult/demanding work earlier in the day.	1 2 3 4 5		1 2 3 4 5
40. Implement a daily behavior report card or communication sent home to parents for review and consequences.	1 2 3 4 5		1 2 3 4 5
41. Return notes or behavior ratings to family doctors about behavioral responses to medications.	1 2 3 4 5		1 2 3 4 5

APPENDIX C

PRINCIPAL PERMISSION LETTER

Angela Walker
Mt Laurel Elementary School
1 Jefferson Place
Birmingham, Alabama 35242

Dear Principals,

During the next few months, I will be conducting a quantitative research project to complete my dissertation for doctoral studies in Early Childhood Education at the University of Alabama, Birmingham. The title of my project is Classroom Support Strategies for Students with ADHD: Frequency of Use, Level of Effectiveness and Roadblocks to Implementation. This research study will involve every elementary school in Shelby County willing to participate. All certificated kindergarten through third grade classroom teachers in each building will be invited to participate in the study. No special area teachers, special education teachers or substitute teachers will be involved. Kindergarten through third grade classroom teachers will be asked to complete a survey rating strategies to support students with Attention Deficit Hyperactivity Disorder (ADHD) in the classroom.

The surveys will be sent to you for distribution in the teachers' mailboxes. I will also provide an envelope to be placed in the front office for collection. Instructions for completing the survey and returning it to the envelope in the front office are included on the front page of the survey. The survey will take approximately 25 to 30 minutes to complete. I will ask you to place it in teachers' mailboxes on a Monday, forward three reminder emails and collect the envelope for me to pick up or use the inter-district mail system to return it to me the following Monday. There is no cost associated with participating in this study. The possible benefit is that we will have this data from our district related to supporting students with ADHD in the classroom. I am also willing to present this data to the faculty of each participating school after the research project is complete. The data collection process will last for approximately one week in each school. Participants will be free to withdraw at any time during this project. Participant identities will be kept confidential and no individual data will be shared.

This research study has been approved by the IRB (Institutional Review Board for Human Use), UAB School of Education and our central office.

I am asking for your permission to access your school and faculty for this research study. If you have any questions, please contact me at a3walker@shelbyed.k12.al.us
I am attaching a copy of the survey for you to review.

Thank you for your consideration and your time. Please respond to this email and let me know if you are willing to participate. That will serve as your letter of permission and support for the purpose of gaining access to your school.

Sincerely,
Angela Walker

APPENDIX D

PARTICIPANT LETTER

Participant Letter

TITLE OF RESEARCH: Classroom Support Strategies for Students with ADHD: Frequency of Use, Level of Effectiveness and Roadblocks to Implementation

.

I am asking you to take part in a research study that will provide information about ADHD strategies used by teachers in the Shelby County school district to support students with ADHD in the classroom. The purpose of this study is to examine how often strategies that help students with ADHD are used in kindergarten through third grade classrooms, how effective these strategies are in improving student performance on tests and what interferes with them being used in the classroom.

Your participation in this study is entirely voluntary. The survey attached should only take 25 to 30 minutes to complete. If you choose to participate in this study, you will complete this survey about strategies that you have used in your classroom to support students with ADHD. The survey is attached to this letter and was placed in your mailbox by your principal or his/her designee. If you choose to participate, you will return this survey to an envelope in the front office of your school within seven days. Approximately 300 teachers in your school district will be invited to participate in this study by completing the survey.

The principal of your school and the district central office has given permission for you to participate in this study. All surveys will be collected from the front office by the investigator and no individual information collected in this study will be shared with anyone at the district or local level.

Please consider investing this short amount of time to help us collect data that will provide much needed information about strategies to support students with ADHD in the classroom.

If you have any questions about the research, please contact me by phone or email. I will be glad to answer any questions that you may have. I appreciate your time and consideration.

Angela Walker
Principal Investigator
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If you have questions about your rights as a research participant, or concerns or complaints about the research, you may contact the Office of the Institutional Review Board for Human Use (OIRB) at (205) 934-3789 or 1-800-822-8816. If calling the toll - free number, press the option for “all other calls” or for an operator/attendant and ask for extension 4-3789. Regular hours for the Office of the IRB are 8:00 a.m. to 5:00 p.m. CT, Monday through Friday. You may also call this number in the event the research staff cannot be reached or you wish to talk to someone else.

APPENDIX E

CORRELATION CHART

Correlation Chart

Variables	Correlation	Significance	Participants
Ho1 He1	0.46	<.001	100
Ho2 He2	0.38	<.001	96
Ho3 He3	0.42	<.001	96
Ho4 He4	0.51	<.001	74
Ho5 He5	0.5	<.001	81
Ho6 He6	0.26	0.007	104
Ho7 He7	0.54	<.001	78
Ho8 He8	0.52	<.001	102
Ho9 He9	0.44	<.001	106
Ho10 He10	0.3	0.002	107
Ho11 He11	0.57	<.001	101
Ho12 He12	0.88	<.001	52
He13 He13	0.37	<.001	107
Ho14 He14	0.61	<.001	78
Ho15 He15	0.34	<.001	107
Ho16 He16	0.61	<.001	106
Ho17 He17	0.55	<.001	101
Ho18 He18	0.71	<.001	87
Ho19 He19	0.64	<.001	78
Ho20 He20	0.66	<.001	100
Ho21 He21	0.48	<.001	105
Ho22 He22	0.49	<.001	98
Ho23 He23	0.23	0.018	105
Ho24 He24	0.26	0.007	108
Ho25 He25	0.75	<.001	92
Ho26 He26	0.41	<.001	104
Ho27 He27	0.62	<.001	93
Ho28 He28	0.78	<.001	82
Ho29 He29	0.49	<.001	102
Ho30 He30	0.48	<.001	108
Ho31 He31	0.26	0.008	107
Ho32 He32	0.4	<.001	109
Ho33 He33	0.7	<.001	88
Ho34 He34	0.59	<.001	90
Ho35 He35	0.67	<.001	97
Ho36 Ho36	0.61	<.001	103
Ho37 He37	0.39	<.001	104
Ho38 He38	0.67	<.001	87
Ho39 He39	0.67	<.001	95
Ho40 He40	0.32	0.001	105
Ho41 He41	0.49	<.001	95