TEACHING SELF-MANAGEMENT TO CHILDREN WITH ADHD:

IMPROVING ACADEMIC SUCCESS

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ABSTRACT

Self-management procedures have been implemented in the school setting that successfully reduces problem behaviors, as well as to reinforce appropriate behaviors. This paper is a literature review of self-management strategies focused on reducing the behavioral symptoms and increasing the academic achievement of students with ADHD. The findings show a strong correlation between self-management skill development, improved behavior and academic achievement. Also, the findings argue for the nurturing of a home to school connection when teaching children with ADHD in the United States educational system.
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CHAPTER 1: INTRODUCTION

Statement of Research Question

A total of 3.8 million children who attended public school in the United States, were diagnosed with Attention Deficit Hyperactivity Disorder\(^1\) (Barry & Messer, 2003; Brown, 2007). By 2010, there is likely to be 2-3 students in every classroom diagnosed with this disorder (Brown, 2007; Dendy, Durheim, & Ellison, 2006). The success and failure these children experience in the public school system will affect their academic career, time involved in classroom management, as well as the concern of the school counselor and supporting staff. On a larger scope, this relationship has the potential to affect the lives of all children within the classroom. Bringing to attention the educator’s need to utilize effective methods designed to improve the behavior and academic success of children with ADHD and, therefore, to successfully teach all students within the classroom.

Traditional classroom methods used to effectively manage students with ADHD focus on psychostimulant medications and teacher-based strategies, such as punishment for disruptive behavior. Although these interventions demonstrated behavior changes for many students, they were not intended to be educative in nature, and therefore, should not be the only methods utilized in the management of children with this disorder. The focus of this paper will be the analysis of professional literature based on self-management skill development in relation to student academic achievement. Therefore, the question that drives this paper is: How does teaching and learning effective self-management skills, to children with ADHD, increase their academic achievement?

\(^1\) hereafter referred to as ADHD
Rationale

Essential to this paper are the defining characteristics of self-management skills that focus on student accountability. Several examples of self-management skills are: being prepared for class by having pencil, paper, and homework; keeping focused and on-task; completing assignments and participating in classroom activities (Kapalka, 2005). Without these essential skills a student is not ready to learn and must spend valuable time catching up instead of following along.

This causes a strain on the teachers’ time involved in managing the resulting students actions. According to Wolfgang (2009), 15% of problem students consume 90% of the teachers’ and school administrators’ time, as they administer discipline and or management actions. An intervention or strategy that could enable a student with ADHD to manage their own behavior or class preparation could have an impact on the amount of time a teacher spent utilizing discipline or classroom management policies within the classroom. The fact that educators are faced with the reality of having children with ADHD in their classrooms it is essential that they possess effective methods and techniques designed to improve the academic success of these students (Davies & Witte, 2000).

The behaviors associated with ADHD are: fidgeting hands or feet and squirming in their seat, a difficulty remaining seated, blurting out, a lack of follow through on directions, a lack of organization, shifting from one activity to another, failing to complete a task, failing to give attention to details, losing necessary things, difficulty listening without distractions or interrupting, and a difficulty delaying gratification (American Psychiatric Association, 1994). Self-management strategies
focus on teaching the student to evaluate their choice making process through having documented and rated themselves formally on paper, reflecting on their behavior, and having shared those results with their adult supervisor who confirms the accuracy of the students rating. With this approach, the student learned skills necessary to manage the resulting behavior and was held accountable for their own actions.

**Controversies**

Several questions that this paper will need to address are: Why are so many children diagnosed with ADHD in the US? Why are children with ADHD academically falling behind in school? Is the students behavior really the problem? How are schools responding to the management and educational needs of children with this disorder? Are the teachers meeting the needs of these children? Students with this disorder exhibit problems with impulsivity, sustained attention, and over activity. Without effective intervention, these behaviors patterns could limit their learning experiences and social relationships with the teacher and peers (Shapiro, DuPaul & Bradley-Klug, 1998; Miranda, Jarque, & Tarraga, 2006; Tabassam & Grainger, 2002; Reid & Ortiz-Lienemann, 2006). In the next chapter the questions listed above will be discussed and chapter three will analyze the professional literature that addressed these issues.

**Professional Literature**

The professional literature analyzed in this paper will be organized in 7 different sections: the Multiple Perceptions of ADHD, Support Programs for Teachers, Academic Achievement, Behavioral Interventions, Home-School Connection, Medication Intervention, and Self-Management Interventions. The
section Self-Management Interventions will be divided into the subgroups Full Class, Small Group and Individual. The studies will be summarized and analyzed, based on the conclusions provided. The research will be reviewed to examine how teaching and learning self-management skills could affect the academic achievement of students with ADHD.

Definitions and Limitations

According to the American Psychiatric Association (1994) Attention Deficit Hyperactivity Disorder, or ADHD is a medical disorder with core symptoms described as: inappropriate levels of hyperactivity (the inability to calm down); impulsivity (the inability to think before acting) and inattention (the inability to stay focused for a period of time determined by the students age). Students with this disorder typically experience low levels of self-management. Self-management requires the ability to recognize and monitor one’s own behavior and organizational methods. The creation of self-management skills, effectively managing one’s own supplies and the skill of maintaining on-task behaviors, is something that children with ADHD are typically lacking in (Kapalka, 2005).

Interventions, or procedures, implemented that aim to successfully alleviate the symptoms associated with this disorder, have recently promoted self-management strategies. A successful intervention for children with ADHD is likely to require the effort and collaboration of pediatric mental health specialists, parents, and school staff (Cook, 2005). For the sake of this paper, an effective intervention, which directly affects the academic achievement of the targeted students through improved
self-management skills, must be sustainable by the staff of the school, which the student attends.

One major limitation of this paper arises when one considers that most of the professional literature analyzed, did not measure the lasting affect of the applied intervention. This is concerning due to the fact that this paper explores how to meet the needs of children with ADHD as well as guiding them to manage their own behavior with the end result being improved academic success. How could an effective intervention measuring academic success be determined if follow-up statistics are not present? And lastly, after 1 year of research only 17 empirical studies were found after the date January 1998 that directly utilized self-management interventions for students with this disorder. The limitations above must be carefully navigated in the analysis of the professional literature in chapter three and revisited in the exploration of chapter four.

Summary

Statistical research has shown that almost 3.8 million children are diagnosed with ADHD in the United States educational system (Barry & Messer, 2003; Brown, 2007). With an average of 2-3 students in the public school classroom the time and management of the classroom teacher will reflect this population of students (Brown). The reality here is that educators are faced with teaching children with this disorder and need effective methods within their repertoire, designed to improve the behavior and academic success of these children.

Current methods used to manage students with ADHD focus on psychostimulant medications and traditional disciplinary measures such as negative
reinforcement, time outs and recess detention (Odom, 1996). Although these methods work for some students there is research that shows that these students are falling behind academically (DuPaul & Hoff, 1998). This paper will focus on analyzing literature that utilized self-management skill development, of students’ diagnoses with ADHD, for the purpose of increased academic achievement.

The next chapter examines the historical background that led up to the development of the issues mentioned above. These issues are the associated rise of ADHD in the US, the school of thought regarding appropriate student behaviors, the academic failure of students with this disorder, and the rising interest in professional literature regarding the use of multiple strategies to teach these students.
CHAPTER 2: HISTORICAL BACKGROUND

Introduction

Chapter one explained the scope and focus of this paper, could teaching and learning effective self-management skills to children with ADHD improve their academic achievement. The purpose of chapter two will be to examine the historical background of this disorder in the United States educational system in the following sections: Focus, Discussion, Evolution of Problem and will end with a summary based on the findings above. The focus of this chapter will be the history of this disorder and how they affect the academic success or failure that these students experience within this system today. This research is reviewed through the summarization and analysis of conclusions that were provided in professional literature.

Focus

The rise of ADHD within the United States educational system began more than 60 years ago (Balkwell & Halverson Jr., 1980; Stallard-Glass, 2000). The first documented case, or diagnoses, of ADHD was in 1845 and the children who displayed the symptoms of this disorder (hyperactivity, impulsivity and inattention) were commonly viewed as troublemakers, lazy or disobedient children (Stallard-Glass). It was thought at the time that all children had tendencies toward hyperactivity, impulsivity and inattentiveness, which caused an undercurrent of resistance for the label of a genuine disorder given to these children (Lloyd, Stead & Cohen, 2006). Nevertheless, the construct of this disorder became well established in the U.S. with official documentation in 1994, by the American Psychiatric
Association, of symptoms and behaviors associated with ADHD and the publication of a diagnostic standardized test the DSM-IV. The DSM-IV required direct interviews with the patient and the completion of a questionnaire by the teachers, parents, and patient in order to determine the diagnosis. Furthermore, in 2004 United States purchased 97% of the global sales of drugs used to treat ADHD (Lloyd, Stead & Cohen). This implies that the U.S. either has more children with this disorder or is less culturally accepting of these behaviors.

The history of ADHD within the United States public school system was directly linked to the symptoms of this disorder (hyperactivity, impulsivity and inattention), which interrupted the structure in the classroom along with the teacher’s ability to effectively teach students in the classroom. It has been argued that a teacher’s tolerance of behaviors associated with ADHD are influential factors in how a teacher chooses to work with students who display these characteristics (Stallard-Glass, 2000). The teacher’s expectations and use of management strategies would have the potential to affect the education of that student. Most students were expected to conform to the standard industrial model, which the educational system was built upon (Spring, 2008). This model focused on curriculum and instruction that emphasized memorization, submission, and authority within a regimented classroom (Spring). These methods were utilized in ways that discouraged freethinking and expression (Kapalka, 2005, Spring, 2008).

The symptoms of ADHD (hyperactivity, impulsivity and inattention) make compliance and conformity difficult when discipline in a group, sedentary behavior and concentration on cognitive tasks are required (Weiss & Hechtman, 1979). The
inability of students with this disorder to conform to these expectations has a direct connection to the poor academic achievement that these children are experiencing (Sharman, Rasmussen & Baydala, 2008). The consistency of poor academic achievement that these students received, resulted in the rising interest of new teaching strategies within the U.S. educational system. The American Psychiatric Association publicized in 1994 that the most effective treatment for this disorder includes several different interventions and not just medication alone.

Discussion

One theory about why this disorder became so prevalent in the schools is that most students were expected to conform to the rigid expectations of the educational system. Expectations of compliance in large groups, attentiveness, focus and concentration, and self-management are difficult for children with ADHD to maintain (Weiss & Hechtman, 1979). Research shows that children with this disorder display less activation in the brain when performing tasks that require concentration, decision making, or self-control (Dendy, Durheim & Ellison, 2006). Due to this, children with this disorder tend to act before thinking ahead to the consequences (Cook, 2005). In a classroom this could be seen as speaking out of turn, getting up and moving around at inappropriate times, or leaving an assigned task before completion. When a student is presented with a command to do something, the child experiences an immediate impulse to continue with the current activity and ignore the command, or to protest and defy; this child is often punished with repeated commands and authoritarian teaching methods due to this impulsive behavior (Kapalka, 2005).
Social implications of non-conforming to the expectations of others result in a border between the child with this disorder, their teacher, parents, and peers. A child with this disorder is perceived as having inappropriate outbursts and being annoying to others because of their impulsive and restless behaviors (Purdie, Hattie & Carroll, 2002). With this comes a stigma or status change in the social construction of the child and feelings of isolation occur (Purdie, Hattie & Carroll). Students with this disorder also perceive themselves as having lower intelligence, social relations, and self-efficacy than their peers (Tabassam & Grainger, 2002). As a result, students with this disorder often experience low self-esteem and low academic achievement within the educational system.

Evolution of Problem

The grade level failure rate of children with this disorder is 2-3 times higher than children without (Stallard-Glass, 2000). With 7.8% of children aged 4-17 in the U.S. diagnosed with ADHD, on average each classroom is likely to have a couple students with this disorder (Dendy, Durheim & Ellison, 2006). The combination of the No Child Left Behind Act of 2000 and the reauthorization of the Individuals with Disabilities Education Improvement Act of 2004, places a heavier emphasis on the demonstration that U.S. educational programs are effective with all students (Spring, 2008). Due to these factors, there is a rising interest in utilizing multiple strategies to teach students with this disorder.

Learning theories have established that a learner must be actively involved in order to maximize their learning potential (Zull, 2002; Rogoff, 2003). Why not create a situation where students with ADHD are actively participating in their own
behavior management as a way to maximize academic achievement, instead of being punished for behaviors deemed inappropriate? The student would then have the opportunity to learn to maintain the positive effects of the intervention they participated in, and in essence, the sustainability of the intervention.

Summary

From 1845 to the present, children with ADHD were seen as troublemakers, lazy and disobedient (Stallard-Glass, 2000). These students tend to act before thinking, speak out of turn, are fidgety, distracted, and unprepared to fulfill the expectations of the classroom teacher (Dendy, Durheim & Ellison, 2006). Therefore, the behaviors associated with this disorder, as well as the expectations of conformity within the classroom, have been associated with the low academic achievement of students with this disorder.

The professional literature based on teaching strategies for students with this disorder has grown exponentially since 1994, when the American Psychiatric Association declared ADHD as a medical disorder. Educators are faced with teaching children with this disorder and need effective strategies within their repertoire, designed to improve the behavior and academic success of these children. Compared to their peers, students with this disorder are facing a 2-3 times higher rate of academic failure (Stallard-Glass, 2000).

The purpose of this research paper is to determine how teaching and learning effective self-management skills to children with ADHD would increase their academic success. The next chapter will analyze empirical research that addresses the
issues children with this disorder face in the United States School system, as well as
self-management interventions implemented within that system.
CHAPTER 3: CRITICAL REVIEW OF THE LITERATURE

Introduction

Chapter one discussed the statistical presence of ADHD within the United States educational system and how educators within this system need effective methods within their repertoire to develop the behavioral and academic success of these children. The focus of this chapter was to introduce the importance of teaching self-management skills to children with this disorder in order to increase their academic achievement. Chapter two explained the historical background of this disorder in the U.S. educational system, the perceptions of it, and how they affect the success and or failure of these students within this system.

Chapter three reviews the research about ADHD within the United States educational system. The research of this chapter is organized into 7 sections: Multiple Perceptions of ADHD, Support Programs for Teachers, Academic Achievement, Behavioral Interventions, Home-School Connection, Medication Intervention and Self-Management Interventions. The self-management section is divided into 3 sub-groups: Full-Class, Small Group and Individual. Each of the main sections are summarized and analyzed based on the findings provided in the studies researched. The purpose of this research was to examine how teaching self-management strategies to students with ADHD could improve their academic achievement.

As the research will show, the problems these children experienced in the schools closely related to how peers and teachers understood the disorder and learned to cope with it. Their view of the behavioral issues that arose, such as hyperactivity, disruptive behavior, and inattention, affected the daily experiences of many children
with ADHD. It is for these reasons that the educators in the U.S. Educational system need multiple strategies within their repertoire that positively influence these perceptions and subsequently the successful behaviors and outcomes of children with this disorder.

Multiple Perceptions of ADHD

Multiple perceptions of symptoms common to ADHD—like inattention, impulsivity and hyperactivity—strongly affect how children with this disorder are treated in school. Research reveals that children with these symptoms in the United States tend to be less popular, more depressed, perform at lower standards in school, and have higher dropout rates than their peers, due to the cultural interpretation of the behaviors experienced by these children (Shapiro, DuPaul, & Bradley-Klug, 1998; Rogevich & Perin, 2008; Gumpel, 2007). The three studies analyzed in this section focus on cultural, generational, and individual views of ADHD. Brewis, Schmidt and Meyer (2000) start the analysis because their study demonstrates that cultural views of this disorder are not the same. This is followed with Harnum, Duffy and Ferguson (2007) who show that when comparing the views of adults and children on ADHD, the result is not the same. And lastly, Tabassam and Grainger (2002) demonstrate that children with ADHD have lower self-efficacy than their peers. These studies reveal the academic implication those children with this disorder face on a daily basis. The purpose of this section is to research the cultural, generational and individual views of ADHD.
Cultural Views

Brewis, Schmidt, and Meyer (2000) conducted a quantitative study that questioned whether children with ADHD showed similar degrees of hyperactivity and inattention in diverse cultural settings. Their hypothesis stated that in Medelin, Columbia, child activity, talkativeness, and social interactions would be valued traits and therefore, more accepted than in the United States. In essence, it led the researchers to question this disorder as a culturally regulated construct.

One thousand two hundred and three children between the ages of 6 and 11 participated in this study. From Medelin, Columbia 103 children, and 1103 children from the United States were chosen to participate. The participants from the United States were demographically divided into 102 African American, 958 Caucasian and 43 Hispanic Americans.

The method used to assess each child’s behavior and academic and social functioning at school was the English and Spanish version of the BASC, a psychometric questionnaire that required teachers to rate the frequency and intensity of inattentive and hyperactive behaviors characteristically displayed by the child in the classroom (Brewis, Schmidt & Meyer, 2000). While questionnaires tend to be based more on opinion than on unbiased research, the use of a questionnaire meets the purpose of this study.

The results of the data showed that there was not a significant difference in the level of hyperactivity and inattention of the students with ADHD in the two populations (p < 0.10). The researchers discovered that children from both populations had typical symptoms of this disorder, with similar degree of frequency
and intensity. This implies that children from both cultures experienced similar symptoms with similar levels of deviance. Important to the purpose of this section, Columbian teachers rated children’s functioning the highest, while American teachers rated children’s functioning lower. A higher score on functioning indicated greater levels of academic success and social well-being; a lower score indicated more harmful dysfunction (Brewis, Schmidt & Meyer, 2000). Therefore, for these two populations, the level of functioning of children with this disorder was based more on cultural views (like the acceptance level of speaking out) than on differences in symptoms.

This study showed that Columbian teachers are more accepting of the behaviors typical to ADHD, while American teachers find those behaviors as dysfunctional. The cultural views shown in these findings are essential to the student’s level of success because a student’s relationship with a teacher can affect their social status as well as their academics within the classroom (Harnum, Duffy & Ferguson, 2007). As well as the teacher’s effectiveness to manage the needs of that particular student, the student’s relationship with their peers can also be affected by the type of relationship that a student has with their teacher.

**Generational Views**

A qualitative study that compared the multiple perspectives of ADHD in children, Harnum, Duffy and Ferguson (2007) found that adults and children differ in their judgments of children with either autism\(^1\) or ADHD. The authors hypothesized that both peers and adults expressed more negative attitudes toward children with ADHD, than toward other children. Concerned with the fact that children with this

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\(^1\) For the sake of this paper, only the findings related to ADHD will be discussed.
disorder have a greater chance of being faced with academic problems and low self-esteem than their peers, this study questioned whether peers or adults held more negative attitudes toward children with ADHD.

The method for this study was to have participants read one of three scenarios followed by a questionnaire with a rating scale. The three scenarios were a description of a child named Sam who had the characteristics of either an autistic child, a child with ADHD, or a child without a disorder. The questionnaire asked the participant to rate their level of agreement on a Likert style scale of 1-5 on seven different statements. The statements were: this child makes you afraid, this child is as smart as you, I would not mind this child being in my classroom, I would play with this child, I would feel comfortable being around this child, this child is different from me, and how much do you think you would like this child.

A total of 60 participants from Atlantic Canada were chosen for this study. Thirty of the participants were children between the ages of 7-12 and the remaining 30 participants were adults between the ages of 19-72. The findings of the study revealed that children were inclined to show negative feelings and avoidance tendencies while the adults perceived children with ADHD more positively. However, both populations of participants perceived children with this disorder as ‘different from me,’ but only the children marked that they would ‘dislike or avoid’ this child on the questionnaire (Harnum, Duffy & Furguson, 2007).

Therefore, the implication that the adults responded more positively toward children with this disorder on the questionnaire reflects the significance they placed on their perspective of that child. Important to this paper is the possible influence that
a teacher may have on these children. An adult that has a more positive outlook might positively influence the relationships between peers in the classroom. A child that is disliked or avoided might be more inclined to have problems with their self-confidence.

*Individual Views*

Concerned about the low self-confidence level that is typical to children with ADHD, Tabassam and Grainger (2002) conducted a qualitative study that questioned if there was a difference between the self-confidence of typically achieving peers and students with learning disabilities or combined LD/ADHD. Participants chosen for this study were elementary school students in grades 3-6 from Sydney, Australia. Of those, 44 had a learning disability, 42 were diagnosed with LD/ADHD, and 86 were typically achieving students. During the selection criteria, the researchers discovered that the student’s with LD and LD/ADHD were performing almost 2 years behind their grade and expected ability levels (2002).

The method for this study utilized a Self-Description Questionnaire to assess the overall measure of self-concept of all participants, The Academic Attributional Style Questionnaire was used to assess the participant’s explanation of the causes of ‘bad’ or ‘good’ academic events and the Academic Self-Efficacy Beliefs Scale was used to assess the participant’s academic self-concept.

The data showed that both LD and LD/ADHD groups experienced lower self-confidence scores than their peers in academic achievement and social skills. Important to this paper is the correlation between the self-confidence and academic

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2 LD/ADHD refers to students who are diagnosed with ADHD in addition to another learning disability.
achievement that the students with ADHD experience. If the child does not expect success in academic achievement, then it is not likely to be realized.

Summary

In analyzing the three studies of this section: Brewis, Schmidt and Meyer (2000) generalized that United States teachers viewed the behaviors associated with ADHD in a more negative light than Columbia; Harnum, Duffy, and Ferguson (2007) discovered that children with this disorder were viewed in a more positive light by adults than their peers; and Tabassam and Grainger (2002) reported that these children had low levels of confidence in their academic abilities. With the No Child Left Behind Act of 2001 and the assessment measures that followed, the achievement levels of all students have been closely monitored with additional pressure being placed on the school districts obtain success through test scores (Spring, 2005). The results from the studies in this section reflect a need for a structure that assists the school districts in supporting these children. The following section will describe literature that focuses on the present support programs for teachers in meeting the needs of these children.

Support Programs for Teachers

A structure that supports teachers within the educational system reflects the multiple perspectives of that society. The last section analyzed the multiple perspectives of ADHD. This section will critically analyze two studies that focus on the different support structures available for teachers within the educational system.

In the first study, Kataoka, Van Kraayenoord and Elkins (2004) investigated the educator’s emergent need for knowledge about learning disorders of their
students. In the second study, Stallard-Glass (2000) analyzed the factors that influence teaching strategies. An absence of educational support for teachers is a major roadblock in the instruction of children with ADHD. Research has found that a child’s teacher is often the first to suspect that a child might have this disorder (Sharman, Rasmussen & Baydala, 2008). This data is disconcerting, because unless teachers are educated about the different behavioral disabilities and the strategies that are successful with this disorder, the number of parents seeking guidance from their health care providers may be high.

Need for Information

Kataoka, Van Kraayenoord and Elkins (2004) found through qualitative research methods that if children with learning disabilities, such as ADHD, are to receive the support they need, principals and teachers need further education about those learning disabilities. Guiding the study was the question: what were the principals and teachers’ perceptions of learning disabilities, no matter the level of support they received within the Japanese school system. Four years since prior to the implementation of this study, Japan developed it’s first definition of learning disabilities.

By completing a survey that was bulk mailed to all principals and teachers in Nara Prefecture, Japan, based on the perceptions and support of students with learning disabilities, 128 principals and 123 teachers from public and private elementary schools participated in this study. This survey asked questions that were based on the perceptions and support of students with learning disabilities in the Japanese school system. The survey asked questions about: curriculum and academic
issues, teacher’s abilities and school support, family and lifestyle issues, government control of the education system (how curriculum supported different learning styles), social issues, students concerns including their lifestyles, and whether teachers felt there was a lack of understanding from the management.

A limitation to this study was that completing the survey and returning it was voluntary, so might not be an accurate representation of the population chosen. Also the fact that there were more principals than teachers that responded to the survey is concerning because the teachers were the ones that had daily contact with the students. It seems reasonable that their participation could have a stronger impact on the findings of this study.

The data analysis showed that the administration had insufficient knowledge of and educational support for teachers, regarding the learning disabilities of the students. Therefore, the decision making people in Japan had insufficient knowledge regarding the special needs of children. Also, teachers and principals both agreed that teachers generally lack the knowledge of teaching methods best suited for students with learning disabilities. Important to this paper, is the fact that teachers and administrators reported a lack of knowledge and support for meeting the needs of children with ADHD. This is disconcerting, because a lack of knowledge implies that teaching strategies effective for the students with learning disabilities, may or may not, be used within the classroom.

*Experience and Education of Teachers*

Educating teachers about effective strategies for teaching children with ADHD is necessary for the educational success of those students. In a qualitative
study that focused on the use of multiple teaching strategies within the classroom, Stallard-Glass (2000) questioned the factors that would influence a teacher’s educational strategy. A survey, created for this study, was designed to determine the types of different strategies that teachers used. The questions focused on: how often a teacher used positive, educational strategies like reward systems, oral testing, modification of work time, hands on activities, and other accommodations. The variables used to analyze the survey were: age of teacher, years of teaching and receipt of information about ADHD from school administrators.

Four hundred surveys were distributed to 14 public schools and 5 private schools in South-eastern Virginia during 1998-1999. Of those, 225 complete surveys were returned for data analysis. The results showed that a full 20% of teachers over the age of 50, employed frequent to consistent use of positive teaching strategies, as opposed to only 3% of teachers between the ages of 21-30-years. Similarly, 14% of the teachers with more than 20 years experience frequently utilized positive teaching strategies, in comparison to 0% of the teachers with 5 or less years of experience. Stallard-Glass (2000) concluded that the least experienced teachers were less likely to utilize positive teaching strategies, while the more experienced teachers were more flexible in using positive teaching strategies. Important to this paper is the emphasis of this study, that multiple teaching strategies are a necessary ingredient to meet the needs of children with ADHD. The research indicated that teachers with more experience and education with this disorder were more likely to utilize multiple strategies within the classroom.
Summary

The studies in this section tell us several interesting things. Katoaka, Van Kraayenoord, and Elkins (2004) reported that if children with learning disabilities such as ADHD are to receive the support they need, principals and teachers must obtain more information about those disabilities. The findings from Stallard-Glass (2000) also support this idea. She writes, “The educational institution as a whole needs to recognize that children learn in many different ways—not just through rote memorization, individual assignments and a rigid curriculum” (Stallard-Glass, 2000, p. 78). Important to this paper, is that principals and teachers must be educated about learning disabilities like ADHD and that children learn in different ways. Therefore, the research in this section implies that educators must have multiple strategies within their repertoire to meet the needs of all learners in a classroom. The next section of this chapter will review the academic achievement trends of students with ADHD to determine the relevance of these issues.

Academic Achievement

Research has found that one of the serious difficulties faced by youth who meet the criteria for ADHD is poor academic achievement in comparison to their peers (Sharman, Rasmussen & Baydala, 2008; Odom, 1996; DuPaul & Hoff, 1998; Miranda, Presentacion & Soriano, 2002). With the No Child Left Behind Act of 2001 increased pressure has placed children with learning disorders like ADHD within the spotlight (Spring, 2008). The impact of this act has led research and the educational system to search out strategies that could affect the academic achievement of all children starting with the first schooling experience.
The previous sections of this chapter described the need for the United States educational system to focus on meeting the needs of children with this disorder and to educate the staff in this system in how this can be done. The 4 studies in this section review the academic trends that focus on the academic outcomes of these children. Meich, Essex and Goldsmith (2001) start the analysis of self-regulation of kindergarten children, or the ability of a kindergarten child to manage their own behaviors, and how that relates to their ability to adjust to the school system. The second study, researched by Massetti, Lahey, Pelham, Loney, Ehrhardt, Lee and Kipp (2007), studied the academic outcomes of children with ADHD over an 8-year period. Hoza, Waschbusch, Pelham, Molina and Milich (2000) researched the effects of a success versus failure intervention including children with and without this disorder. Finally, Ellis and Nigg (2009) determined the relationship between the symptoms of ADHD and parenting practices. This last study was chosen because it shows the connection between the management of these children and their academic achievement.

Self-Regulation and Adjustment

Hypothesizing that low self-regulation elicits negative reactions from the social environment; Miech, Essex and Goldsmith (2001) studied the transition period between home and school of 451 kindergarten students from Milwaukee and Madison, Wisconsin. In a qualitative, longitudinal study they questioned the role of self-regulation in the relationship between socioeconomic status (SES) and school adjustment outcomes. In this study, school adjustment outcomes were defined as the teacher’s assessment of present and future scholastic aptitude of the child. Self-
regulation was defined as the process of maintaining attention on a task while restraining inappropriate behavior. The mother and teacher had completed an assessment of the child’s self-regulation when the child was 4 ½ years of age with a shortened version of the Children’s Behavior Questionnaire. The questionnaire described a series of children’s characteristics—e.g. When practicing an activity child has a hard time keeping her/his mind on it, or usually rushes into an activity without thinking about it—that parents ranked on a 7 point scale (p. 106). The teacher’s assessment of the child’s scholastic ability was documented in a mock report card that asked them to rate the students mathematics related and reading related skills as well as whether they thought the student would be at grade level in those skills by the end of the third grade.

Limitations to this study were that a teacher’s assessment of a student’s future academic aptitude is not a concrete measure of the student’s ability. However, it does tell us what the teacher’s expectations were for that child.

The data analysis showed that self-regulation served as a mediator in the association between children’s SES, school adjustment outcomes, and teacher’s expectations. As expected, the teachers considered the children with lower-SES backgrounds to be significantly more likely, than their peers, to be hyperactive attention deficient. For children with high self-regulation, children’s SES is a stronger predictor of teacher reports to parents and school counselor, of hyperactivity attention deficiency.

Relevant to this paper is that children were considered likely to have symptoms of ADHD if they had low self-regulation, but they were more likely to be
reported as having hyperactivity attention deficiency, if they were from higher-SES backgrounds. Reported by the teacher meant that the teacher searched out the school counselor and parents to determine strategies to help the child regulate difficult situations like maintaining on task and limiting inappropriate behaviors. Research has found that children with ADHD inherently experience low self-regulation, so they may need intervention to learn those skills. (Harris, Friedlander, Saddler, Frizzle & Graham, 2005).

The data analysis also showed that teacher’s assessments of children’s present and future scholastic aptitude were lower for children from lower-SES backgrounds who had low self-regulation skills. This result is very disconcerting because it shows a documented difference in views of socio-economic status, which could have an affect on the number of children receiving assistance. Relevant to the purpose of this paper is that children with this disorder have low self-regulation skills, so if the expectations for their academic outcomes are lower than their peers from the age of 4½, it is not likely that they will be as challenged by the teacher to succeed when compared to a child that was expected to succeed.

*Expecting Failure*

In a quantitative longitudinal study that assessed the academic achievement of 255 children between the ages of 3-7 years, Massetti, et. al. (2007) hypothesized that children with ADHD would have lower academic achievement in both reading and mathematics than comparison children at 4-6 years of age. The research questioned the predictive validity of young children’s academic achievement. Seven yearly diagnostic assessments were conducted over an 8-year period (no assessment
was conducted in year 5). The two methods of assessment were the DSM-IV, which measured the presence or diagnosis of ADHD symptoms, and the Stanford Binet Intelligence Scale 4th ed. that measured cognitive ability and academic achievement in mathematics and reading—by using letter-word identification, applied problems, and dictation (Massetti et. al.).

The data analysis showed that these children consistently performed the lowest in mathematics and reading when compared with their peers, with 20-50% of the children receiving special education services (Massetti et. al., 2007). Strengths of this study were the use of the DSM-IV, which is a tool that is used by psychiatrists in diagnosing ADHD and the fact that it was implemented over an 8-year period. One weakness is the fact that during the initial recruitment children were selected that spanned differences in ages of 4 years, but the fact that they were compared to their typically achieving peers instead of each other is reassuring.

The results of this study show that the academic achievement of students with ADHD does have a predictive validity. Important to the purpose of this paper is the idea that children with early symptoms of this disorder have been shown to consistently experience low academic achievement. The findings suggest the importance of combining treatment with targeted academic interventions for those who show skills deficits in the general education mainstream. These children may come to expect failure rather than success when their scores are consistently lower than their peers if targeted academic intervention does not occur.
Social Efficacy and Failure

Children with ADHD are more likely than those without to expect failure when faced with challenges in school. In a quantitative study based on success versus failure experiences of students, Hoza, Waschbusch, Pelham, Molina and Milich (2000) found that children with ADHD were less socially efficient and less frustrated with failure, than their peers. The to guide their study the authors investigated how success versus failure experiences would affect the self-reported measures of students with this disorder when compared to their peers. Participants in this study were 120 boys with ADHD and 65 boys without between the ages of 7-12 years.

Having employed a repeated-measures design with a laboratory social acquaintance task, each boy participated in two separate experimental conditions (on different days) of situations that were organized to be success and failure experiences. In each condition the boy was assigned the task to talk with a new student about the summer school program they had participated in that summer. The new student was trained to either give positive or negative feedback during their conversation. Positive feedback involved agreement with the student and commenting that it sounded like fun, while negative feedback involved just giving one or two word comments like, uh huh or yeah (Hoza, Washbusch, Pelham, Molina & Milich, 2000). When the social acquaintance task was finished student with ADHD met with a research assistant and filled out a self-rating form. This form asked them to rate their performance success with the following questions: were they “good” at the task, how well did they do, and would they like to do it again (p. 435).
The findings of this study showed that the boys with ADHD rated themselves as less socially effective than controls but also less frustrated and helpless in their interactions. This implied an acceptance of the failure experiences they had.

Important to this paper is the idea that regardless of the outcome, boys with this disorder rated themselves as more successful than their peers rated themselves. Also, boys with ADHD were more likely to attribute success to external uncontrollable factors—such as the task being easy or that they were lucky—while students without this disorder were more likely to attribute failure to not having tried hard enough.

The problem here is that, the students with ADHD, had an elevated acceptance level for failure experiences and felt that success was attributed to luck or the task being easy. The purpose of this paper is to investigate how teaching skills to children with ADHD would improve their academics. While accepting ones failures is a positive skill, the concern here is that failure has become an expected and accepted concept. How could these children be managed that would have a positive impact on their success experiences?

Management Outcomes

Concerned that failure experiences in school had become expected, Ellis and Nigg (2009) conducted a qualitative study that investigated the relationship between ADHD symptoms and parenting practices. The hypothesis stated that the measures associated with this child would be inconsistent parental discipline, poor supervision, and low involvement. To focus the research, they questioned if there was a relationship between the diagnosis of this disorder and the related symptoms to parenting practices. Prior research showed that negative responses to the behaviors
associated with ADHD might contribute to those disruptive behaviors (Shelton, Barkley, Crosswait, Moorehouse, Fletcher, Barret, Jenkins, & Metevia, 2000; Odom, 1996).

There were 181 participants selected for this study that included: students with ADHD, their teachers, and parents. To implement this study the parents and teachers completed the rating scale of the Conners Rating Scale Short Form and or DSM-IV symptom checklists. The parents were then required to complete a Diagnostic Interview Schedule for Children (DISC), by phone or in person, which measured the presence of any additional learning disorders. Finally, the parents completed the Alabama Parenting Questionnaire, which included 42 items relating to the domains: involvement, positive parenting, poor monitoring or supervision, inconsistent discipline, corporal punishment, and other discipline practices. One limitation to this study was the fact that the parenting practices were a self-reported and self-rated questionnaire.

The results of the data analysis showed that when compared to parent ratings, the teacher ratings of children’s symptoms were somewhat suppressed. The authors concluded that this was because several children were being treated with medication while at school, thus the daytime behavior would be reflected by the medication. The results confirmed the hypothesis with positive parenting and involvement related to fewer behavioral problems; while poor supervision and inconsistent discipline related to elevated behavioral problems. Of the three domains examined, inconsistent discipline was the domain that time and again related to ADHD. Weak self-
regulation, cognitive control and behavioral problems were thought to be contributing factors of parental inconsistency.

The findings suggest that parenting did indeed play some role in the maintenance of this disorder. The results of this study could lead to more effective parenting and teaching methods for these children, who are at higher risk to experience academic and social failure, as Massetti et. al. (2007) suggest in their study. The implication here is that it might be important to involve parents in the evaluation and treatment of ADHD. Parents involvement in planning the management strategies implemented at the school would create a home to school connection with the child’s best interest at heart. Implementing the strategies in both settings (home and school) could increase the effectiveness of that intervention due to consistency.

Summary

Review of the literature in this section showed that Miech, Essex and Goldsmith (2001) found that a child’s level of self-regulation and family’s SES background has a strong correlation to the diagnosis of ADHD. These results imply that children with this disorder could be recommended for intervention and strategy development at an early age. Massetti et. al. (2007) discovered that children with this disorder were expected by their teachers to receive lower academic scores in reading and mathematics than their peers. These findings here also imply the need for interventions and strategies to ensure the students learning needs are met. Hoza, Waschbusch, Pelham, Molina and Milich (2000) explained that children with ADHD tend to be more comfortable with failure than their peers. Students with this disorder also associate their successes with the task being easy rather than due to hard work.
Associating a task that was a success as being easy implies that the student felt capable of success when the task was not challenging. Lastly, Ellis and Nigg (2009) determined that positive and consistent parenting methods have the most success in managing the symptoms of ADHD. The implication is that through positive and consistent teaching methods, a behavioral intervention should be implemented in the school and at home to be successful. Therefore, the next section will analyze the professional literature on the effects of behavioral interventions.

Behavioral Interventions

Prior treatment for ADHD focused mostly on stimulant medication with initial positive results. The evidence for this disorder suggests that not all children show positive responses to medication and they rarely respond to stimulants with a complete remission of those symptoms (Abikoff, Nissley-Tsiopinis, Gallagher, Zambenedetti, Seyffert, Boorady & McCarthy, 2009). Therefore, this section focused on the analyses of behavioral interventions that require a teacher to utilize non-traditional strategies.

In the first study, Shelton, Barkley, Crosswai, Moorehouse, Fletcher, Barrett, Jenkins, and Metevia (2000) research the effect of an intervention focused on children who demonstrate early disruptive behaviors. The intervention was implemented in an intensive, full-day, multi-method program that spanned an entire kindergarten school year. In addition there was a parent-training program created to increase the lasting effects of the intervention. Luman, Oosterlaan and Sergeant (2008) follow with the exploration of reinforcement to determine the effects on children with ADHD. Specifically, what were the results of an intervention that utilized reinforcement of
positive behaviors, and were they sustainable? Each study was critically analyzed to
determine if these behavioral interventions resulted in a sustainable increase in
academic performance of children with ADHD.

*Early Intervention*

Shelton et. al. (2000) conducted a quantitative study that explored the effects
of an intervention for children with early disruptive behaviors (i.e. hyperactive, non-
compliant and aggressive behaviors). The children selected were considered by the
authors to be too young for a diagnosis of ADHD, and therefore, were considered
children with early disruptive behaviors. It was thought that preschool children with
high levels of DB have considerable risk for maladjustment throughout childhood.
The guiding question of the research was: What are the lasting effects of a full-year
behavioral intervention that utilized parent training, behavioral treatments, and a
combined parent training and behavioral treatment intervention. The lasting effect
this study were determined by the data collection and analysis 2 years after the
original study.

The original behavioral treatment interventions were implemented in
kindergarten classrooms on 258 participants. The participants were children with DB
and their parents. The students were transported by school district busing to the
specific classrooms that were conducting the interventions. The parent-training
program, in a 10-week group format, taught parents about their child’s disruptive
behaviors and effective ways to manage those behaviors. The behavioral
interventions used in the classroom included token systems, time out, action and

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3 Furthermore referred to as DB
consequence, social skills training, and self-control instruction\textsuperscript{4}. The children who participated in this study returned to their neighborhood schools for first grade.

At the 2-year follow-up, only 142 original participants were located and willing to continue with the study. At this time there was an extensive list of measures used for the data collection of the study. To name a few: a clinical diagnostic interview was conducted by the first author, the parents and teachers conducted the DSM-IV questionnaire that is used as a diagnostic tool for ADHD as well as 4 more questionnaires. The children participated in psychological and psycho educational testing that checked for the presence and severity of symptoms, as well as, 2\textsuperscript{nd} grade skill development and knowledge. Research assistants, who were blind to the prior study, conducted behavioral observations of the children.

As expected the DB group showed a significant number of ADHD symptoms. This implies that kindergarten should serve as a possible research source for determining students that may need academic intervention. A teacher might concerns to the school counselor and the parents to share his or her concerns. Also of importance, the initial benefits from the parent-training program were not present at the post-treatment. This was thought to be a direct correlation to the lack of participation and attendance of the parent-training program. And lastly, none of the initial post-treatment gains for the children resulted in any lasting effects at this 2-year post treatment follow-up. Thus the students who received the intervention did not differ from the children who did not. These results are indeed sobering. Essential to the purpose of this paper was the fact that there were no lasting benefits of this

\textsuperscript{4} Study refers the reader to (Swanson, Pfiffner and McBurnett, 1990) for a description of these interventions.
intensive, full-day, multi-method classroom intervention designed to improve the behavior of kindergarten students who showed symptoms of ADHD. The implications that must be considered here is that the students, who were too young to be diagnosed with this disorder, could also have been too young for this kind of intervention to have lasting results.

*Reinforcing Behavior*

In a qualitative study that explored the effects of strategies aimed at improving the performance of children with ADHD, Luman, Oosterlaan and Sergeant (2008) researched the motivation of these students, when reinforcement was not available. Hypothesizing that these children “show an abnormal sensitivity to reward by preferring an immediate small reward over a larger delayed reward” they designed a study that measured the children’s responses of reward versus cost situations (p. 446). The question that guided their research: What is the impact of a reward and response cost on the performance of students with and without this disorder and do they have an elevated sensitivity to either the reward or response cost. A reward or response cost was the result of a student’s action while playing a game (reward being money earned, cost being money taken away).

There were 25 children with ADHD and 30 children without⁵ that participated in this 5-day study, which were between the ages of 7-12 years. In the assigned task, children were seated at a computer playing a ‘game’ that asked them to determine a time interval of 1-second after the appropriate signal. They were to press a button when they thought the 1-second interval had elapsed. Textual accuracy information then appeared on the screen that informed the subject whether the estimation was

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⁵ Called peers in future references
correct, too short or too long. This textual information included the number of coins that were to be taken away or given (reward or response cost) to the student.

Results from the data showed that children with ADHD underestimated the time interval as indicated by a lower median response time, when compared their peers. The peer students reduced their tendency to respond prematurely when reinforcement was added to the feedback (p=0.003). But children with this disorder responded similarly during the training and reinforcement conditions (p=0.25). These results indicate that children with ADHD were characterized by a tendency to continually underestimate time, to matter the type of reinforcement. Important to this paper is the implication that students with ADHD could be assumed to consistently have the same behavioral effect before and after an intervention. The purpose of this paper is to find an effective intervention that would help the student improve their academic achievement. This study does not support the purpose of this paper.

One major limitation to the authors’ conclusion was when the researchers suggest that reinforcing positive behavior was as effective as punishing unwanted behavior. This statement must be interpreted within the context of the study to show that the student’s response was consistently premature whether the feedback was positive or negative. The reinforcement provided in this study was in the form of money promised on a computer screen and the phrase, punishing unwanted behavior, is a loaded statement that could be interpreted to mean a verbal or physical punishment if a person was to skim read this study.
Summary

In analyzing the studies of this section Shelton et al. (2000) concluded that even though an intervention may be initially successful, a two-year follow-up does not necessarily show lasting results when compared to their peers. The fact that the intervention was conducted with kindergarten children is relevant. Was this intervention not sustainable by general education teachers? Or are kindergarteners not mentally ready to sustain a full-scale intervention after it is phased out? These two questions are relevant to this paper because the sustainability of an intervention is necessary for it to be considered effective. Luman, Oosterlaan and Sergeant (2007) reported that an intervention based on reward and response cost showed children with ADHD responded with similar margin of error in either situation. These results argue against the use of a behavioral intervention. Also important to this paper is the idea that the student did not taking time to learn from past experiences, but simply reacted.

The analysis of this section leaves one question: Is it possible to teach children with ADHD to manage their own symptoms? The first study in this section involved the families in the intervention but there was a lack of participation and support by those families. In the next section the connection between the child, the home, and school will be researched and analyzed.

Home and School Connection

The previous section analyzed 2 behavioral interventions that were focused on changing the behavior of students with ADHD. This section will critically analyze the professional literature of 3 studies. The focus of this research will be to explore the importance of involving parents in the behavioral interventions their children, with
the idea that the home and school connection is one to be nurtured. Hinshaw, Owens, Wells, Kraemer, Abikoff, Arnold, Conners, Elliott, Greenhill, Hechtman, Hoza, Jensen, March, Newcorn, Pelham, Swanson, Vitiello, and Wigal (2000) start the analysis with a study that questions how a behavioral-medication intervention would change the parenting practices within the home. In the second study, Odom (1996) explored the impact that educating mothers about the symptoms and management of ADHD would have on their feelings of parental competence or self-esteem. The last study of this section conducted by Pfiffner, Mikami, Huang-Pollock, Easterlin, Zalecki and McBurnett (2007), a behavioral intervention was conducted that incorporated extensive parent training in the management of symptoms of this disorder.

*Affect on Home Discipline*

In a qualitative clinical trial study, Hinshaw et al. (2000) state, “It is well documented that children’s receipt of stimulant medication induces immediate reductions in child noncompliance and negativity, with consequential reductions in parental negativity” (p. 558). They conclude that medication treatment apparently reduced the need for controlling negative discipline practices. Therefore, their focus was on how the effects from a behavioral and medication intervention would alter the child’s experiences at home as well as at school. Specifically, the question that guided their research was to determine the effect of reduced negative parental discipline, on a child with ADHD, in non-family domains (Hinshaw et al.).

Participating in this study were 579 children with ADHD who were between the ages of 7-9. They were placed into one of three groups: medication only,
behavioral only and combination (medication and behavioral both). The study began with a medication management program, this program was a double blind, placebo-controlled test that was followed by monthly medication management during which the rest of the intervention took place. The medication only treatment just received the medication management program only. The combined treatment received the medication management program and when stabilized, the behavioral portion began. The behavioral only treatment group did not include the medication management program, but started with the behavioral treatment. The behavioral treatment included group and individual parent training programs, a child-focused summer treatment program, and a school-based intervention all delivered in a coordinated fashion. This was an intensive treatment program that tapered off toward the end of the 14-month treatment interval.

The data analysis in the form of ANOVAs revealed that stimulant medications altered the child’s behavioral symptoms, which led to an initial ‘easing up’ of harsh discipline by the parents. This finding is important because it shows a connection between the behaviors of ADHD and the level of harsh or negative discipline that they experience. The researchers speculate that this disciplinary change may help the child to achieve greater self-regulation skills, which might improve the student’s behavior in school. They also speculate that improvements in disruptive behavior at school (facilitated by the medication component or the school consultation component of combined treatment) might enable families to relax harsh discipline at home, in particular when the parent training procedures are being implemented.
Strengths of this study were that it included a large sample size (579 participants) and the long-term nature of the interventions that were delivered (14 months). Many studies that involve children with ADHD have small sample sizes of less than 100 so this showed a higher level of certainty in the results. A limitation to this study was the lack of objectively measured parenting procedures—the parenting procedures were reported by a self-analysis report. Nevertheless, parents perceived the negative parenting practices to be lower at the post treatment evaluation.

These findings are important to this paper because they suggest that the enhancement of parental knowledge and strategies for the management of children with ADHD are significant to the success of school-based improvements in child functioning. The researchers conclude that reductions in power assertive, harsh, and inconsistent or ineffective disciplinary practices relate to changes in disruptive behavior patterns and social skills of these students. This shows that there is a need for school-based interventions, to incorporate the family as a way to enhance the positive effects of that intervention. The next study also focuses on educating the parent to determine the effect on the parenting skills of that parent.

*Educating Mothers*

Teaching a parent to manage their child’s noncompliant behavior in an educational intervention, Odom (1996) focused on obtaining improvements in a child’s social functioning. In a quantitative study that focused on educating mothers about the symptoms and management children with ADHD, Odom questioned if this intervention would have a positive effect on the mothers’ feelings of parental competence and or self-esteem. The author selected 20 low socioeconomic status
mothers who had a male child diagnosed with ADHD. The child was placed on methylphenidate, a prescription drug for the treatment of this disorder.

To implement the study, the mothers were placed into one of two groups, the educational group (the mother received the education and the child received the medication) or the control group (the mother did not receive the education, but the child received the medication). The educational program consisted of a 5-week educational session that lasted approximately 1 to 1 ½ hours each. Components of the program consisted of each of the following topics: the pathology (or medical definition) of ADHD and how it affects the entire family; an examination of positive and negative aspects of available medications for this diagnosis; the meaning of a child’s misbehavior and reasons for those actions; instruction on the concept of positive reinforcement; the establishment of a home points system; the method of time out; behavioral management problem-solving strategies; and a question and answer session (Odom, 1996).

Three assessment measures were used for the data collection. The Home Situations Questionnaire was used to determine level of disruptive behaviors and the situations in which those behaviors rise. The Parenting Sense of Competence Scale measured the mothers’ self-esteem. And the ADHD Knowledge and Opinion Scale were used to measure the mothers’ knowledge and opinions of this disorder.

On the repeated measures of ANOVA there was found to be a highly significant difference between the educational and non-educational group. The educational group reported a significant increase in confidence. They also reported the information they received as helpful in dealing with their children’s medical and
behavioral problems. However, one mother reported the activities she learned in the training sessions were not beneficial. This study did not include data that would explain this mother’s statement. In comparison, by the end of the intervention, the control group showed a substantial drop in parental confidence. This research demonstrated that mothers could learn to deal with their child’s chronic conditions of ADHD through education.

Important in this paper, the educational groups improvements in parental confidence may have been due to the mothers beginning to understand and accept their sons’ ADHD. This acceptance and understanding could have allowed the mothers to believe they were capable of managing and dealing with their sons’ behavior. The intervention taught them that failure in obtaining their child’s compliance was a reflection of the disorder and not of their parenting skills. If a mothers’ sense of competence could be improved through an educational program, it seems reasonable that an intervention that was integrated across home and school would also have positive results.

Teacher Consultation, Parent Training and Child Skills Training

Pfiffner et al. (2007) conducted a quantitative study that utilized the Child Life and Attention Skills\(^6\) Program that focused on improving homework routines, independence and organizational and time management skills. The aim of the study was to reduce behavioral symptoms and improve the academic problems of children with ADHD. The question that guided the research asked specifically what the efficacy of the CLAS program was when compared to a control group who did not receive the intervention. The authors hypothesized that there would be a reduction of

\(^6\) Furthermore referred to as CLAS
inattention and “sluggish cognitive tempo” at the post treatment and that the organizational and social skills of these students would increase (p. 1042).

To conduct this study, 69 children were randomly selected to be in one of 5 cohorts. In the first cohort, children were randomly placed into the CLAS Program or a delayed treatment control group. In the second through fifth cohorts, children were randomly assigned to the CLAS program or a control group. Past studies of this type experienced high dropout rates, so the families were compensated for each of the post treatment and follow-up assessments, the treatment group received $30 and the control group received $200 (Pfiffner et al., 2007).

The CLAS program was implemented over a 12-week period that included three components administered concurrently: teacher consultation, parent training and child skills training. In the teacher consultation the topics discussed were: an overview of behavioral interventions and classroom-based accommodations for ADHD; up to 5 half-hour meetings with the teacher, parent, child and therapist; a school-home daily report card; target behaviors, individualized to each student, that focused on academic work, work-behavior/study skills, and social interactions; and the implementation of classroom accommodations (i.e. seating, reduction in workload, time limits etc). The parent training consisted of: an overview of ADHD and the social learning model. The social learning model involved a set of strategies for managing this disorder and the development of a home challenge with specific target behaviors and rewards. The child skills training was divided into groups that focused on skills for independence and social competence. The independent skills were academic, study, organization, self-care and daily living skills. Children
attended the child group at the same time that their parents attended parent group, and during the last 15 minutes of group, parents and children met together to go over the skill of the week and discuss homework.

The data analysis showed significant reductions in the inattention symptoms for the treated group. In fact from the pre- to post treatment of this intervention, the inattention symptoms decreased by > 50% for the treated group and decreased by < 16% in the control group (Pfiiffer et al., 2007). Important to this paper were the significant gains in focused attention due to this intervention. Another important fact is that following treatment, the percentage of cases with symptoms within the normative range was 55% for the treated group and 27% for the control group. These reductions show statistically that the severity of ADHD symptoms could be obtained. Children’s knowledge of social and organizational skills taught during the group also showed significant improvement.

These findings support the efficacy of behaviorally based treatment programs for helping children with this disorder. The CLAS Program led to statistically and clinically significant reductions in attention problems and improvement in organizational and social skills at post treatment relative to the control group. These reductions were also maintained through the follow-up. Essential to this paper is the fact that the maintenance of an intervention shows the sustainability of that intervention. The evidence suggests that the success of this program allowed the skills learned in a group to be supported in the home and school settings outside of the group.
There are several limitations to this study. The sample size was relatively small with only 13 children in each cohort. This sample size was also mostly urban, middle-class families, which ignores the population of children with ADHD that are living in poverty. Also, the fact that the participant’s were paid to participate in this study may have contributed or altered the amount of success that the families reported at the conclusion of the study, but it could also be the reason that the participation was at 95% (Pfiffner, 2007). The authors felt that the key motivation for participation in this intervention was from enlisting support of principals, collaborating with teachers, and having the parents actively involved. The last limitation that is relevant to this paper was that this intervention program was funded by a federal grant and is time intensive. The teachers that implemented this program would need to be trained, have a facility in the evening when the parents could attend, and have the funding to pay the families at the conclusion of the intervention. It is not reasonable to assume that this type of an intervention would be possible to implement within a classroom without extreme modifications.

Summary

A sustainable and effective intervention must include a home and school connection that strives to maintain consistency. Hinshaw et al. (2000) reported that improved positive parental discipline of a child with ADHD resulted in lower negative behavioral symptoms and higher social skills. Odom (1996) described how an intervention aimed at teaching mothers about their child’s disorder resulted in improved feelings of parental confidence and self-esteem. And Pfiffner et al. (2007) conducted an intervention that involved teacher consultations, parent education, and
child skill development as well as collaborative work together among all parties. The result of this intervention was a reduction of inattention, improvement in organizational skills and maintained the results after the intervention was completed.

In the behavioral interventions section, the summary ended with a question asking if it was possible to teach children to manage their own ADHD behaviors. The results from this section support the idea that these children can learn to manage behaviors that lead to success in school, but they must be supported within the home and school environments. The structure and consistency of an intervention is an important factor in the outcome of the results, unfortunately the intervention that showed the most potential of being an effective intervention (i.e. Pfiffner), was also the most expensive and time consuming. The next section will continue the search for an intervention could be implemented in a classroom that would teach children with ADHD to manage their own behaviors.

Medication Intervention

Research has shown that behavioral and medicinal interventions significantly reduced the symptoms of ADHD. The last section analyzed 3 studies with a focus on the home and school connection. This section will analyze a study conducted by Abikoff, Nissley-Tsiopinis, Gallagher, Zambenedetti, Seyffert, Boorady and McCarthy (2009) that explored the effects of Methylphenidate-osmotic-release oral system (MPH-OROS). MPH-OROS is a stimulant medication prescribed for the treatment of ADHD. The most typical side effects of stimulant medications are appetite loss and sleep difficulties, with the most worrisome being growth suppression, involuntary tics, and cardiovascular changes (Odom, 1996). The focus of
this section will review the research that measures how this stimulant medication affected the symptoms of this disorder, specifically organizational, time management and planning behaviors.

**MPH-OROS**

Abikoff et al. (2009) conducted an investigator-initiated trial that was supported by a grant from Ortho-McNeil Janssen Scientific Affairs. The authors hypothesized that this stimulant medication would improve children’s organizational, time management and planning behaviors\(^7\) but that these behaviors would still remain in the impaired range. “Impairments in OTMP may be behavioral expressions resulting from deficits often found in children with ADHD in executive functions, including arousal, attention and impulse control, delay tolerance and working memory” (p. 166). In school OTMP behaviors are related to classroom preparedness (e.g. misplacing or losing materials, forgetting assignments poor sense of time, ineffective time management, procrastination, lack of homework completion or poor organization). The question that guided the research of this study was: What effect does stimulant medication have on children diagnosed with ADHD—in regard to their organizational, time management and planning behaviors at home and at school. Having met the criteria—diagnosis of ADHD, not taking prior medication for this disorder, and scoring at least an 80 on the Wechsler Abbreviated Scale of Intelligence—19 children between the ages of 8-13 years received either MPH-OROS (treatment group) or placebo (control group) in a random order, double blind method. Children were assessed at the baseline and after the completion of each treatment phase based on the teacher and parent versions of the SNAP-IV and COSS

\(^7\) Furthermore called OTMP behaviors
rating scales. The SNAP-IV assessed the child’s severity of ADHD symptoms and the COSS measured the child’s organizational skills (OTMP). The first 2 weeks of each treatment phase involved a flexible dosing schedule, by slowly increasing each child’s medication to the maximum of 54 mg per day. This optimal dose was maintained for the final 2 weeks of the treatment phase. After a 2-day washout period, where the children are not given any medication, the children were once again given the same medication treatment phase.

As hypothesized, children’s OTMP behaviors improved at home and school with medication. The researchers reported that improved attention and impulsivity facilitated the children’s awareness of information and materials needed for assignments (Abikoff et al., 2009). The effects of the medication were present throughout the school day, giving teachers the opportunity to evaluate the children’s symptoms and behaviors while the medication effects were functioning. In contrast, because the medication effects had worn off by the early evening—the typical time for homework—parents had less time and fewer opportunities to evaluate the effects of the medication on the children’s behaviors. The weaning effect of the medication during the course of the day might have contributed to the low levels of agreement between the parents and teacher’s ratings of OTMP, \( r = 0.018 \) (Abikoff et al.). However, parents and teachers also disagreed in baseline ratings, before the medication intervention began, \( r = -0.21 \) (Abikoff et al.). But, the differences between teacher and parent ratings at baseline were much more significant before the intervention than after. This implies that the medication did have some influence in the evening time, resulting in a much higher level of agreement.
A limitation to this study is that a sample size of 19 is relatively small when considering medication trials. This would make it difficult to generalize these results to a much larger population. A positive effect of this study was the fact that the treatment was given twice allowed the children, teachers, and parents to learn from the first treatment phase and apply that knowledge to the second, increasing the odds for success.

Summary

In school, effective OTMP behaviors may be related to classroom preparedness, which is essential for their academic achievement. Therefore, the findings of the Abikoff et al. (2009) study shows that taking MPH-OROS were effective in improving behaviors that lead to academic achievement. Directly relating to the purpose of this paper to find an effective self-management intervention that that would increase the academic achievement of students with ADHD. The following section will focus on interventions that offer strategies for the development of self-management skills in students with ADHD.

Self-Management Interventions

The last section analyzed a study that was a medicine trial. The findings showed a link between taking stimulant medication for ADHD and the behaviors that lead to academic achievement. This section will focus on analyzing the literature of self-management interventions directed at reducing the symptoms of this disorder to improve their academic achievement. The types of self-management interventions, or sub-groups, that will be analyzed are full classroom, small group and individual.
**Full Class**

This sub-group will focus on self-management interventions that involve the full classroom, with no one individual singled out. The students in these classroom interventions will be children with ADHD as well as their normal achieving peers. Full classroom interventions are important because they offer the opportunity to help all children in a classroom instead of the select one or two they are designed for. Belonging to a group is an essential tool for achieving the confidence of children with this disorder. The classroom is a social situation whose activities could increase or decrease the active involvement and compliance of these children. In the first study, Kalpaka (2005) focuses on reducing repetitions within the classroom in order to increase student compliance. The second study conducted by DuPaul, Ervin, Hook and McGoey (1998) investigates the effects of class-wide peer-tutoring on the behavior and academic performance of students with this disorder. The last study of this section, Miranda, Presentacion and Soriano (2002), research the effects that teachers had on the inhibitory control, memory, perceptual-motor control, and the attention of these students.

*Reducing Repetition.* In a quantitative study based on the strategy of reducing repetition within the classroom, Kapalka (2005), hoped to increase the compliance of students with ADHD. This study was based on Barkley’s research that non-compliance often results in a repetitive cycle where the teacher continually asks the student to comply with negative results. Kapalka hypothesized that a teacher (of a student with ADHD) who states a command, repeated it once, proceeds to a warning and then administered the stated consequence, would experience a reduction in their
student’s non-compliance. This study questioned the effectiveness of 86 elementary teachers reducing repetitive commands in order to obtain the compliance of children between the ages of 5-10 years.

The participants were randomly placed into either a treatment or control group. Both groups were taught the first behavior management lesson, and then only the treatment group was taught the follow-up lessons in 2-week increments. The first lesson focused on the causes of ADHD and the available treatments. The following lessons focused on advising teachers to issue an instruction, if compliance was not obtained, repeat the command once, then if necessary proceed to a warning where the child is informed of a specific consequence. If compliance was still not obtained, teachers were instructed to administer the stated consequence without repeating the warning again.

The results of this study are important to the purpose of this section because they showed that the treatment group exhibited significant reductions in classroom non-compliance (p < 0.002) which confirms the hypothesis that limiting the number of repetitions the teacher gained compliance of the students with ADHD (Kapalka, 2005). In addition, an enhanced sense of self-efficacy allowed the teacher to remain composed and addresses the students in a calm manner. This is an intervention that would easily be sustainable by a teacher in a classroom.

One weakness to this study is that compliance was the only variable measured. This strategy is one that could be used as a tool for limiting the number of confrontations a teacher experiences with their students before major problems occur. A consistent approach would give the student a prior expectation of a known
consequence. With the implementation of this strategy, the teacher became more effective in managing students with ADHD. This improved management could result in the improved academic achievement of those students.

However, compliance is not the only variable that could affect a student’s academic achievement. Children with this disorder typically exhibit a higher than average rate of off-task behavior in classroom settings (Tabassam & Grainger, 2002; Barry & Messer, 2003). Experiencing off-task behavior in the classroom could also lead to compromising a child’s performance on academic tasks. Therefore, reducing repetitions would be helpful to the teacher, but not be an effective intervention for improving the academic achievement of children with ADHD.

Class Wide Peer Tutoring. DuPaul, Ervin, Hook and McGoe (1998) conducted a quantitative study that questioned what the effects of class wide peer tutoring would be on the classroom behavior and academic performance of students with ADHD. They hypothesized that class wide peer tutoring would lead to higher levels of task engagement, lower levels of physical activity, and better performance on weekly posttests. The participants of this study were 18 children with ADHD and 10 of their normal achieving peers. All children were between the ages of 6-10 years. The teachers of the 18 children in the study also volunteered to participate in this study.

Classroom behavior, academic performance and social validation were the dependent measures. Classroom behaviors were measured through direct observations to monitor the frequency of on-task, off-task and fidgety behaviors of all participants. Academic performance was measured through the weekly pretests and posttests of
academic material covered that week. And all participants completed a consumer satisfaction rating scale that measured social validation at the end of the study. This asked them to rate the level of enjoyment the peer tutoring exercise was for them and whether they believed it was helpful.

During the baseline conditions, the teacher was instructed to conduct the classroom activities as typical for the school year. The only change in the schedule was the inclusion of weekly pretests and posttests to determine the student’s achievement of the content taught. The first author of the study met with the teacher on at least two occasions to review the procedures of the intervention, answer questions, and model the steps. To implement the intervention student-tutoring pairs, selected by the teacher, would work together 3-4 days per week for 15-20 minutes on a specific academic skill. The teacher monitored the behavior of all tutoring pairs and provided assistance as necessary. Bonus points were awarded to pairs if the proper instructional procedures and behavior control were exhibited; members at the end of the week with the most points were given a round of applause.

This study was conducted with the BABA model that consisted of baseline (no changes), class wide peer-tutoring, baseline (removal of tutoring), and class wide peer-tutoring. The analysis of the data for on-task behavior of students with ADHD was determined to be at 29%, 80%, 21% and 83%. Off-task behavior was measured at 27%, 8%, 24% and 6% (DuPaul, Ervin, Hook & McGoey, 1998). It seems reasonable to conclude that a significant increase in on-task behavior would have a profound effect on the academic achievement of all students, but the test scores did not show significant results. The reason for the increase in on-task behaviors not being
reflected in the achievement of these students is not apparent. It is possible that the students needed more process time before the posttest, the tests were too difficult or that the tests did not reflect the different learning styles of the students. The researchers conclusion was that the intervention increased the active engaged time for students with ADHD and reduced their disruptive off-task behaviors.

This study is promising because it showed an increase in active engagement could be reached for all students within a general educational setting, which is relevant to the outcome of this paper. In effect, an increase in active engagement could lead to enhancing the academic achievement of children with or without ADHD. This would benefit all children within the classroom. One possible limitation to this intervention was that unless the teacher had a well thought out activity and the children were motivated to succeed, it might be difficult for the children to stay on task willingly. Training and practice in using this non-traditional teaching method would be key to its success.

*Teacher Education.* Research has shown that utilizing non-traditional teaching strategies is an important tool in increasing the academic achievement of children with ADHD (Luman, Oosterlaan & Sergeant, 2007). The following quantitative study by Miranda, Presentacion and Soriano (2002) utilized a non-traditional teaching strategy that questioned the effect teachers had on the inhibitory control, memory, perceptual-motor control and the attention of students with this disorder. The author’s theory was that long-term academic success is not likely unless children are taught the skills they need. Conducted in Valencia, Spain, 52 teachers of students between the ages of 8-9 years participated in this study. The criterion stated that the teacher
had a child in his or her classroom that was diagnosed with ADHD. In addition, most of these students were from low socioeconomic backgrounds.

To conduct this study the first 30 teachers from an alphabetically organized list were placed in the experimental group with the remaining 22 placed in the control (no treatment) group. Ten doctoral degree students conducted the pretreatment assessments, the teacher training sessions and the post treatment assessments. The assessments consisted of: behavioral observations of the children in their classrooms; behavior rating scales filled out by parents and teachers; and a questionnaire designed to assess the teacher’s knowledge of and management procedures for children with ADHD. Furthermore, 5 team members who conducted the training sessions interviewed the teachers weekly to assist them with application of the management strategies.

During the 4-month period, teachers from the experimental group attended 8 training sessions of approximately 3 hours each. The sessions focused on the latest research driven strategies for teaching students with ADHD. These strategies included: general knowledge about this disorder; behavior modification procedures, positive reinforcement, token systems, etc.; instructional management procedures, classroom accommodations, presentation of explanations or use of directions and feedback; and cognitive behavioral techniques, the use of self-instruction and reinforced self-evaluation (Miranda, Presentacion & Soriano, 2002).

One weakness to this study appeared in the comparison between the authors’ theory and the findings. The authors had noted that the lasting effects of an intervention would not be obtainable if the students were not taught the skills they
need. The authors did not follow this up with analysis about the lasting effects of this intervention. This was disappointing because the focus of this paper is to determine an intervention that would effectively teach students with ADHD to manage their own behaviors in order to improve their academic success.

The data analysis showed significant differences in the sustained attention of the children in the experimental group, $t = 2.5$, $p < 0.05$ (Miranda, Presentacion & Soriano, 2002). Another interesting finding was that at the baseline, the experimental and control groups had similar levels of academic achievement in mathematics and language. But the post assessment results showed the experimental group experienced significant improvements in mathematics, natural sciences and language, while the control group did not show any such improvements. Rather, the control group stayed consistent in their level of academic achievement. This implies that adjustments in the teaching techniques and procedures resulted in successful improvements in academic achievement.

These findings are explicitly relevant to the purpose of this paper. The fact that a teacher-training program could result in significant improvements of the sustained attention and academic achievement of children with this disorder is promising. This implies that while these children typically have low levels of academic achievement, a teacher could utilize techniques and procedures within the classroom that assist in improving those symptoms and level of achievement.

*Summary.* This section analyzed 3 studies that focused on interventions that were implemented within the general education classroom without any disruption of classroom routines. Instead of having one student stand out as needing intervention,
all children participated and had the opportunity to benefit from the intervention. Each intervention guided changes in the teaching strategies and procedures of the class. In addition, each intervention specifically showed effectiveness at increasing the teacher’s knowledge in responding to the educational needs of children with ADHD.

Kapalka (2005) found that reducing repetitions limited the number of confrontations a teacher faced in the classroom. The compliance of children with this disorder increased due to the consistency of this management tool. The one weakness of this study was that the academic achievement of these students was not measured. It is simply implied that the compliance of children with ADHD could lead to higher levels of academic achievement.

DuPaul, Ervin, Hook and McGoey (1998) discovered that class wide peer tutoring had a significant effect on the active engaged time for students with this disorder. The on-task behavior of these students increased from 54-59% during the peer tutoring time when compared to working alone. An interesting result was that the academic achievement gained by these students was negligible. This is contradictory to the next study researched by Miranda, Presentacion and Soriano (2002) who reported that an intervention measuring the effect a teacher training program had on students with ADHD resulted in significant gains in active engaged learning as well as significant improvements in mathematics, natural sciences and language.

In regard to active engaged learning, each of these interventions resulted in improving the time that these children were engaged, or on task. Important to this paper, the academic achievement was improved in only one study. The Miranda,
Presentacion and Soriano (2002) study reported improvement in the academic achievement of these children. Another strong point to each of these interventions was the focus on educating teachers about the techniques and procedures that would help them meet the needs of children with ADHD. While this section analyzed interventions that utilized the full classroom, the next section will critically analyze the literature based on interventions conducted in small groups.

**Small Group**

Research has found that children with ADHD are generally more successful in smaller groups (Spellings, Hager, Posny & Danielson, 2006). Working in smaller groups allows students to support each other in their daily tasks and activities. General educational theories find this helpful, for students with this disorder, to maintain the attention to being on-task for longer periods of time.

While the last section analyzed studies incorporating the full classroom, this section will focus on interventions that utilize small groups. Each of the 3 self-management studies in this section will be critically analyzed with a focus on reducing the symptomatic behavior associated with ADHD and whether the academic achievement of students with this disorder was improved. The first study conducted by Houck, King, Tomlinson, Vrabel and Wecks (2002), implemented 2 separate studies that focused on decreasing the disruptive behaviors of these children. In the second study, Rogevich and Perin (2008) investigate self-management techniques that are thought to affect the on-task behavior of children with this disorder. Finally, Davies and Witte (2000) research the effectiveness of a combined intervention approach that involved self-management, peer feedback and support.
Social Competence. In a qualitative study that conducted 2 separate practice improvement projects, Houck, King, Tomlinson, Vrabel and Wecks (2002) were concerned that children with ADHD have “developmentally inappropriate levels of attention, concentration, distractibility, impulsivity and activity” and the reported consequences of these actions were low self-esteem, lack of satisfying friendships and learning difficulties (p. 196). The question that guided this study asked if it was possible to create an intervention that would develop the social competence of these students while being implemented in the schools. There were four domains of skills addressed: emotional understanding, communication, friendship, self-control, and social problem solving skills. Three school nurses conducted the practice improvement projects that focused on improving the social behavior of 3 elementary and 8 high school children. These students were previously diagnosed with ADHD and were taking medication as the only treatment for this disorder.

In the elementary intervention the participants were 2 boys (1st and 2nd grade) and 1 girl (3rd grade) who were identified by the teacher as behaviorally disruptive in the classroom. The student’s behaviors were rated on the Teachers Conners Rating Scale, at the baseline and conclusion of the intervention to measure the severity of their symptoms. A higher score on this measure reflects a higher degree or level of ADHD symptoms. The student’s general education teacher completed this measure.

The students met as a group with the school nurse for 30 minutes. The meetings took place once a week for the duration of 16 weeks. The activities the students participated in were designed to be cooperative in nature. This required the students to work together for a common goal. The cooperative activities of in this
The project was: games like Jenga, or Chutes and Ladders; crafts like modeling clay objects, or dipping candles; and decorating the meeting room. Each activity was selected for the likelihood of success and potential satisfaction. Weather permitting, outdoor activities (tag, ball, follow the leader, etc.) were implemented. All activities were engaged with an unhurried, noncorrective focus.

The results from the data showed that at the baseline scores for the participants were 43, 83 and 21 on the Teachers Conners Rating Scale. The post intervention scores were 40, 50 and 26. These results reflect a reduction in the ADHD symptoms that these children expressed by the conclusion of this intervention. Important to this paper is the fact that by working in a small group, outside their normal classroom, in an unhurried and noncompetitive way, these students experienced a reduction in their behavioral symptoms during their normal classroom routine.

The students in the high school intervention were 8 students in the 9th grade. The measure of data collection for this intervention was the Conners/Wells Adolescent Self-Report of Symptoms, which measured the severity or level of ADHD symptoms. A higher score on this measure reflects symptoms of this disorder with a higher severity. The students completed this assessment at the baseline and at the end of the intervention. Ten group meetings were held over a 4-month period for this intervention. The support group meetings lasted for 45 minutes each. The topics of these meetings were organized to address different ways of coping with this disorder and focused on being successful in the classroom. Each session had three components: laying ground rules for the group; addressing a ‘myth’ about ADHD;
discussing the ‘facts’ about this disorder; and focusing on social skill development through communication, problem-solving games and role-playing. The measure utilized for learning these new skills were the games Communicator and Problem Solver. These games were designed for children with this disorder and encouraged the natural discussion of social topics.

The results of the data analysis showed that the high school intervention resulted in an insignificant decrease in symptoms of ADHD. The fact that the support meetings were one time a week, with a couple weeks being missed due to non-school days reflects a possible need for this intervention to be conducted on a more regular basis.

In analyzing both of these practice improvement projects, it is apparent that the results of the elementary intervention were more significant than the high school intervention. This suggests that interventions may have the potential to be more effective at a younger age for this disorder. Two weaknesses are apparent. First, improving social skills were the focus of the intervention, which limits the ability to apply these results to the skills of self-management. And secondly, the author of this study is a registered nurse with a PhD. This is different than a psychiatrist with a PhD. To implement this intervention the nurse had to fill the role of a counselor, which may be a role that he or she is not qualified to fill. For the purpose of this paper, the academic achievements of these students were not analyzed in this study.

*Self-Regulated Strategy Development.* In a quantitative study that also focused on adolescents, Rogevich and Perin (2008), investigate a self-management technique called think before reading, while reading, after reading, with summarization (TWA-
WS). TWA-WS was a technique that incorporated self-regulation procedures and provided literacy instruction within that framework. The framework focused on goal setting, self-monitoring, self-instruction and self-reinforcement. Rogevich and Perin’s research was guided by the question that asked if the TWA-WS model intervention would be effective with a group of behaviorally disruptive adolescents with or without ADHD.

This intervention took place in a self-contained residential treatment facility. Facility regulations forbade audio-taping or video-taping. Having a second research assistant present in the instructional sessions was also forbidden. The participants for this study were 63 juveniles between the ages of 13-16 years who were undergoing intensive treatment and rehabilitation that addressed a variety of behavioral and emotional needs. All participants were of low socioeconomic status and had been found guilty of crimes such as sexual abuse, larceny and assault.

The students were placed in groups based on the severity of their behavioral symptoms. The students worked in groups of 3-4 in either the experimental or comparison condition. At the baseline and post intervention scores, the students created summaries of a short passage, which was graded with a rubric that awarded a score of 0, 1, or 2. A zero was given when there was no mention of the main idea. A one was given if there was a mention of the main idea but no elaboration. And a two was given if the main idea appeared in the summary with descriptive detail.

The intervention consisted of five 45-minute sessions that entailed discussion, review of prior knowledge and instruction in the elements of writing a summary. The elements of writing a summary were interpreting the authors purpose and finding the
main idea. The focus of the sessions was to introduce the students to the strategy of thinking while reading and thinking after reading. The participants created summaries of science related passages that they read. They learned to summarize what they had read by using five summarization rules, delete trivial information, delete redundant information, substitute super ordinate terms, select a topic sentence and invent a topic sentence if one does not exist. The comparison groups also read the science passages, but they engaged in a brief group discussion and then wrote a summary, using the same texts and writing the same number of summaries. The format of the comparison lessons was the method used prior to the implementation of this intervention.

The analysis of the data showed significantly better performance for the intervention group than for the comparison group on all four tasks. Despite previous reports that students with behavioral disorders were uninterested in school and careless in their work, the researchers reported that the participants appeared to be highly invested in and excited about the intervention. The researchers also reported that the self-management techniques taught were beneficial for these students with ADHD.

Several limitations are present with this study that may have had an effect on the analysis of the data. First with only one researcher allowed into the facility and without the use of recording devices, the documentation of the participant’s actions and responses to the intervention would be impossible. Having limited documentation of the student’s participation level and documented prior knowledge of the topic it would make it difficult to analyze the student’s results. Secondly, although the researcher provided breaks, the pre and post treatment testing was time intensive. The
students could have experienced mental fatigue that may have compromised these results. And finally, directly related to the purpose of this paper, this intervention was not conducted in a general education setting, a general education setting would not have such a high population of behavioral disorders. It is not conclusive whether these results would be replicated, improved, or lowered in a general education setting. But, when considering one students comment it becomes clear that this intervention was necessary. “This has really helped me figure out what’s important in a passage. They should teach us how to do this in school, but they don’t, they just expect us to already know how to do this” (Rogevich & Perin, 2008, p. 147). This implied that the students success was a direct result of this intervention. Applying previously learned skills to a new situation requires flexibility, sustained attention and planning ability, areas that are particularly challenging for students with ADHD. This study showed that group work encouraged the development of these skills.

Self-Management, Peer Feedback and Support. Concerned with improving the classroom behavior of students with this disorder, Davies and Witte (2000) focused on the use of self-management, peer feedback and support. In this quantitative study, the authors reported that capitalizing on the influence of peers effectively reduces teachers’ need to be authoritarian, by allowing them to assume the role of a behavior-management consultant. A behavior-management consultant role was defined as monitoring student use of the intervention and offering support and advice when needed. Davies and Witte questioned how effective a combination intervention approach would be that involved self-management, peer feedback and support, embedded within a group contingency for medicated children with ADHD. Thirty
students were present in the classroom. Selected, as participants of this study, were 4 students who were diagnosed with ADHD and 4 comparison students who were similar in gender, academic ability, and socioeconomic status. After 4 weeks, 3 of the comparison students were moved to another classroom so new comparison students were selected.

Inappropriate verbalizations were selected as the target behavior for this intervention. Inappropriate verbalizations were defined as any verbalization made without teacher permission during lesson time or work time. Direct observation was the method used for data collection under both the baseline and treatment phases. To implement the intervention the students were placed into table groups of 4. At the same time each morning—on Monday through Thursday for 12 school days—the groups worked together to attain the desired target behavior. During the first 5 minutes of each session the table groups how the previous day went and create a strategy to improve their score. Each table group used a chart in the middle of their table to monitor their group behavior, and each student was responsible for an individual data sheet that required them to also monitor their own behavior. Fridays were set-aside for the teacher to hold a training session where the students were taught what the target behavior consisted of and a quiz was then administered.

The data analysis showed that there was a clear and substantial decrease in inappropriate verbalizations of all 4 students with ADHD and their comparison students. The researchers reported that students having a mutual goal that related to their behavior resulted in a positive interdependence. The implication here is that the students were working together for a common goal and it encouraged them to
communicate their strengths and weaknesses in meeting the target behavior of the intervention. The students with this disorder were aware that their behavior as individuals impacted the other students in their group. Important to this paper is that this is a cost-effective management system that could be employed in any classroom or school. The teacher was allowed to concentrate more on academics than on the behavior management that she had previously resorted to. Also the students were introduced to self-managing their own behavior as well as working collaboratively toward a common goal without any one student having been singled out.

The fact that after 4 weeks, 3 of the comparison students left the classroom so new comparison students were chosen was a definite limitation to the analysis of the results. This could skew the data and slow the intervention down because the teacher would need to, once again, explain the process and what was required. But, considering that the students with ADHD, as well as the students without, experienced a substantial decrease in inappropriate verbalizations this information did not seem to argue against the implementation of this study. Another limitation that is important to this paper was that academic achievement was not measured in this study. More research needs to be done to determine what effect this kind of small group intervention would have if the target behavior were something that would reflect the academic performance of these children.

*Summary.* Each of the 3 studies in this section was analyzed with a focus on reducing the symptomatic behavior associated with ADHD, and how these results affected the academic achievement of students with this disorder. Houck et al. (2002) researched whether the social behavior of children with ADHD is enhanced by small
group cooperative activities. The results showed that the elementary children were significantly more likely to enhance their social competence skills than high school students. The elementary teachers confirmed that the student’s behavior was more manageable as a result of the intervention, but the data showed a lack of evidence to confirm how this skill development affected their academic achievement due to this intervention.

Rogevich and Perin (2008) determined whether the TWA-WS strategy was effective with behaviorally disruptive students with ADHD. The results of the data confirmed that the intervention showed significant performance gains in language skills, but it was not conclusive what effect, if any, that the intervention had on the behavior of these students.

Finally, Davies and Witte (2000) questioned whether inappropriate verbalizations could be reduced in students, with and without ADHD, through the use of self-management, peer feedback and support. They found that the inappropriate verbalizations of all students was reduced which allowed the teacher to focus more on academic content and less on managing student behavior. There was not evidence of increased academic achievement; instead there is an implication that it would follow due to the reduction of behavior management problems.

The studies in this section support the prior research stating that children with ADHD are generally more successful in smaller groups (Spellings, Hager, Posny, & Danielson, 2006). Each of these studies taught the students self-management strategies that gave the students skills to utilize that were aimed at improving their
success within the classroom. In the next section, studies that focus on self-management interventions created for the individual student will be analyzed.

**Individual**

Students with ADHD are individual in the severity of their behaviors and level of academic achievement. Teaching students with ADHD to manage their own behaviors and actions within a classroom setting requires a focus on the individual student. Self-management interventions for the individual student are important because they have the potential to be designed exclusively for that particular student's needs. Depending on the student's need, this type of intervention may have an elevated potential for success. The studies in this section will be critically analyzed by focusing on the effect they have on reducing the symptoms of ADHD and improving the academic achievement of the individual.

The prior section reviewed interventions that analyzed small group interventions based on teaching students with ADHD to manage their own behaviors. The 9 studies in this section analyze interventions that focus on the individual student. In the first study, Shapiro, DuPaul, and Bradley-Klug (1998) focus on building the self-rating skills of students with ADHD. Investigating self-management programs, Bugental, Walen, and Henker (1977) determine how increasing on-task behavior affects the performance of these students in academic tasks. Reid and Ortiz-Lienemann (2006) complete a study on the written narratives of students with this disorder. In the fourth and fifth study, Barry and Messer (2003) and DuPaul and Hoff (1998) measure academic performance, on-task behaviors and disruptive behaviors of students. Harris, Friedlander, Saddler, Frizzelle, and Graham (2005) investigate self-
monitoring of attention and performance with reinforcement. Also focusing on a self-monitoring system, Stahr, Cushing, Lane and Fox (2006) to facilitate communication and consequence-based strategies. Gumpel (2007) investigates whether or not, children with ADHD, have social skills within their repertoire. And finally, Gureasko-Moore, DuPaul and White (2006) determine the results of teaching classroom preparation skills to students with this disorder.

**Building Self-Rating Skills.** In a qualitative study, Shapiro, DuPaul and Bradley-Klug (1998) teach two students a self-management strategy to improve their classroom behavior. The intervention focused on building the self-rating skills of students with ADHD. Based on the research of the Lehigh University-Consulting Center for Adolescents with Attention Deficit Disorder the authors’ goal was to provide a description of this strategy when applied to these students. The participants of this study, Justin and Danny, were 12 years of age and diagnosed with ADHD. The intervention program was specialized for each individual in order to meet his personal needs.

The methodology of this intervention involves the teacher selecting 5 different variables to be measured. Then the teacher chooses a designated time period to implement the strategy, and collects a baseline rating score measured on a 1-5 scale. The intervention begins when the teacher verbally sets the guidelines for the desired behavior to the student. Next, teacher rates the students behavior during a specific time period and shares the result with the student. Then, the student is asked to rate themselves on the following days and compare (match) it with the teacher score. The student would then continue rating themselves while the teacher checks the accuracy
of the score. In the final phase, the student takes full responsibility for monitoring his or her own behavior.

Several problems could arise due to this method. First, when the student moves to rating himself or herself with the frequency of the teacher matching being lessened the student ratings could be inflated hoping to obtain a higher score. In that case the teacher would need to increase the frequency of matching instances for a short time. Second, a student could consistently rate their behavior at the midpoint of the criteria (i.e. score of 3 out of 5). This would maximize the students’ chances of having a higher score. If this occurs the teacher could change the rating scale to 1-6 so that there is not a number in the middle to choose from.

At the time of the intervention Justin was not taking any medication. Justin’s teacher chose target behaviors as: having all materials for the lesson, staying on-task, no talking to peers during lesson, using appropriate language and raising his hand to be called on. The end result of the intervention showed that Justin’s behavior steadily improved during the teacher management phase and was maintained at or above that level during the matching condition. His level of on-task behavior improved from 75% in the baseline to 100% at the conclusion of the intervention. Reports obtained from the teacher indicated substantial reductions of inattention and hyperactivity behaviors, remaining well within the average range for a student his age.

At 8am and 12pm each day Danny was taking 15mg of Ritalin. At the time of the intervention Danny’s teacher felt that his behavior was not a problem, but he had great difficulty with the academic demands of his classroom. Therefore, the targets for his intervention were: having materials ready, completing homework, following
instructions the first time they were given, staying on-task and completing class assignments. The results from his intervention showed that he improved and maintained his academic performance during the entire intervention. Danny also showed improvement in his on-task and inattentive behavior that closely matched that of his peers.

The authors reported that in each case study, the implementation of the self-management program coincided with observed improvements in the academic behavior and performance targeted for each student regardless of the medication status. Thus, the implementation of this self-management strategy was successful in preparing Justin and Danny to improve their academic performance skills. These results are essential to this paper; they show that this intervention utilized self-management skill training that resulted in positive gains in academic preparedness and achievement. Next, a study will be analyzed that also focused on academic achievement.

*Increasing Attention and Performance.* This next quantitative study researched by Bugental, Whalen and Henker (1977), employed 2 separate self-management programs that investigated a hyperactive child’s attention and performance on academic tasks. The goal of their study was to determine the extent that a student’s expectations were related to the outcomes of either a social reinforcement or self-regulation intervention. The authors’ hypothesis was two-fold. First, students who view academic events and outcomes as due to luck or teacher bias would benefit from a program that focuses on effort, rather than product. And
secondly, students who view academic events and outcomes as due to their effort and personal dedication would benefit from programs that teach self-control.

Child expectations were measured by an interview that asked students what the potential causes for school success or failure was. Sample questions were: “1. If you get a bad grade on a test, what makes that happen? a. Not studying, b. The teacher doesn’t like you, c. Bad luck. 2. If you get a good grade on a test, what makes that happen? a. Studying hard, b. The teacher likes you, c. Good luck” (Bugental, Whalen & Henker, 1977, p. 879). The measures used for data collection were qualitative scores on a test and the Conners Abbreviated Teacher Rating Scale. Qualitative scores, conducted before and after the intervention, were based on errors in style and strategy rather than solutions to problems provided. The Conners Abbreviated Teacher Rating Scale assessed the restless, inattentive and impulsive behaviors, of the students, at the baseline and completion of the intervention.

Participating in the study were 36 hyperactive boys between the ages of 7-12 years. To implement the intervention, 18 trained experimenter-tutors participated that were advanced undergraduate students in the developmental-psychology program at the University of California. For 8 weeks, a trained tutor worked with two children in their regular classroom, 1 hour a day, 2 days per week. Each tutor used self-control training with one child and social reinforcement with the second child. The first week of the intervention, the tutors dedicated their time to determining the baseline and getting acquainted with each child. Tutoring sessions were conducted for the next 6 weeks. Training sessions included the normal classroom curriculum and educational
games. Typical activities of the tutoring sessions were handwriting practice, simple arithmetic, word-attack skills, drawing, spelling and a sentence construction game.

The self-control training program consisted of the tutor modeling self-control; by verbal self-reinforcement on tasks such as handwriting a task requiring focused concentration. Statements like “Go straight to the pencil sharpener and back to the desk” were made in a whisper and were repeated mid-task (p. 878). To enhance a sense of confidence in self-control they were videotaped only while performing the controlled speech and self-reinforcement followed by action. Tutors were instructed to give as little verbal reinforcement as possible. In the social reinforcement program the tutor provided instruction in the curricular content, attended to and praised the child when on task. If the child’s behavior or actions were inattentive or inappropriate for the task at hand the tutor was instructed to ignore the child.

The results showed that children, who had high expectations of their academic success, were reported to show improvement for either intervention but manifested somewhat stronger gains, when offered tools for enhancing their self-mastery skills. The researchers also reported that 6 of the 18 students from the self-control group were entirely unwilling to engage in the self-talk, so the data from those children were excluded from all subsequent analyses. This is important to the outcome of this paper. If 30% of a group was entirely unwilling to participate in the same part of an intervention then the results of the study do not reflect a large portion of that group. It was noted that these six children did not differ from the remaining population in any way (i.e. medication, expectation, or age).
The findings from this study imply that it is not the specifics of an intervention that are essential to the success of that intervention, but the initial expectations of the student. A student who expects to succeed when hard work is applied is more likely to succeed at academic tasks. The point here is that rather than focus on skills and behaviors that need adjustment, an intervention should be selected that fit the individual’s needs and expectations. For the 6 students who refused to participate in the self-talk, this intervention was not appropriate.

**Written Expressions.** In a qualitative study, Reid and Ortiz-Lienemann (2006) focused on the literacy needs of children diagnosed with ADHD. This study investigated the effect of a self-regulated strategy development on the length, completeness and holistic quality of struggling writers narratives. Having received a score below the 20th percentile on the Story Construction Subtest—which assessed the student’s ability to write 3 complete and interesting stories—3 students with ADHD were selected to participate in this study. Each participant was Caucasian and received medication for this disorder in the morning before school.

The students’ self-regulated strategy was conducted in the hallway, outside the general education classroom during the morning. An important part of this self-regulation strategy was the implementation of goal setting. This approach emphasized the role of effort and strategy use in learning, making improvements concrete and visible (by self-monitoring and graphical organizers), enhancing motivation and promoting a positive can-do attitude. The instruction focused on the following: developing the essential parts of writing a story through the use of story prompts as discussion tools; discussing the importance and use of strategies in writing by
analyzing stories for their parts; teacher modeling the strategies; teacher and student collaboratively writing a story; and independent performance in which the student successfully writes 3 stories with all essential parts. Essential story parts included: characters, setting, time or when, what the characters are going to do, what happens next, story ending, and how the characters feel. The narratives, or stories, that the students created were scored for number of story parts, number of words and holistic quality.

When compared to the baseline scores, the results of the intervention showed that number of story parts significantly increased by 215%, 200% and 205% (Reid & Ortiz-Lienemann, 2006). Also, during the independent performance, a significant increase in the number of words was determined, 681%, 206% and 323% respectively (Reid & Ortiz-Lienemann, 2006). The authors reported that this intervention demonstrated the effectiveness of a self-regulated strategy developmental model for students with ADHD. While this is indeed true, the design of this study (all 3 participants received the same intervention) did not allow for analysis of which component of the intervention package—the strategy, the self-monitoring of performance, or both—were responsible for the results.

These findings are relevant to the outcome of this paper. In a very short time, the quality of the students’ writing went from below average to above average. This implies that this intervention has the potential to significantly affect the academic achievement of children with ADHD. Also, the fact that the students were taught to set goals and monitor their own progress toward that goal implies the student’s practiced self-management of the behaviors traditionally expressed by ADHD.
Unfortunately, the fact that this intervention took place in the hallway, outside the classroom is does not reflect the application of this intervention by the classroom teacher.

Performance and Behavior. In a study that assessed the relationship between self-management and academic performance of students with ADHD, Barry and Messer (2003) focused on the relationship between self-management and behavior. The goal of the study was to demonstrate how a classroom teacher could implement a self-management intervention involving children with ADHD, in a general education classroom. The authors stressed, “self-management promotes independence and personal control over behavior by teaching students how to use behavioral interventions for self-treatment” (Barry & Messer, p. 239). This study was based on prior research, which related successful behavioral interventions with these students as more effective when medication is used. The authors selected 5 sixth grade students who were taking medication for ADHD to participate in this study. The students were described, by their teacher, as having off-task and inattentive behaviors that resulted in rare completion of their assignments.

The methodology included an ABABAB pattern with 3 non-treatment phases and 3 treatment phases. Prior to implementing the intervention the teacher and student worked together to create a list of reinforcers that would be particularly rewarding for the student, and target behaviors that would be best suited for this program. After studying a manual developed by Koegel in 1995, the teachers taught the students self-management strategies. To do this, the teacher would model the desired behaviors; record the behaviors on a data sheet, and then the student recorded their own
behaviors for one hour with teacher guidance. Daily practice with recording continued until the teacher and student reached consistent agreement on the students recording measures. The next phase was included 15-minute segments during a 2-hour period, in which the student continued to record their behaviors as the teacher verified the results. The final stage consisted of the student self-managing their own behavior and simply recording whether or not they completed their assignments.

Analysis of the data showed that the use of self-management was effective in reducing off-task and disruptive behavior. Also, the academic performance was increased due to the use of the self-management procedures. A consistent result of the ABABAB design was that during each A phase, or non-treatment phase, the participants behaviors returned to the initial baseline. The data points across the B phases did however remain consistent across the study, even as the support systems were faded. The authors conclude that the use of this self-management intervention not only helped the teacher manage classroom behavior, but also influenced academic performance of the students as well.

The findings relate directly to the purpose of this study. A major strength of this study was that it was implemented within the general education classroom and involved the teacher and a student already present. This speaks for the sustainability of this intervention. If the student started to slip, the teacher could reinstate the intervention. A limitation to this study occurred in the case of one participant, this happened when a teacher’s aide collected the data on student behavior during 33% of the observations for on-task and disruptive behaviors. Unless the aide was present throughout the training and baseline period and was instructed by the teacher in how
those behaviors were rated this fact could affect the consistency of that students data analysis.

Important to this paper is the fact that while the self-management phases were effective in improving the behavior and academic performance of students with ADHD, when the intervention was removed (A phases) those gains returned to the baseline level. This suggests that the students would not sustain the results if the intervention were discontinued. The implication being that the self-management procedure would need to be a daily component in the management of children with ADHD if it were to be successful and sustainable.

**Self-Monitoring with Reinforcement.** In a quantitative study conducted in a general education classroom setting, DuPaul and Hoff (1998) focused on decreasing the disruptive behavior of 3 fourth grade elementary students with ADHD. Their hypothesis was that a self-management strategy would enable the individual to take control of his or her own behavior, thereby increasing the probability of maintaining appropriate performance. DuPaul and Hoff’s ultimate goal was to discover if this intervention would lead to reductions in the aggressive and disruptive behavior that would be sustainable with the passage of time and across settings- i.e. playground and classroom environments.

There were 4 different measures of data collection for this study. Disruptive behaviors were measured through direct observations. These behaviors were rated as: positive interactions (sharing); negative non-aggressive interactions (noncompliance); verbal aggression (name calling); physical aggression (hitting or kicking); non-interactive (not participating); on-task behavior; and off-task behavior. The Iowa
Conners Teachers Rating Scale, completed at the baseline and conclusion of study, measured the level of aggression. A rating scale, completed at baseline and conclusion, measured the presence and severity of disruptive behaviors. And finally, student and teacher acceptability questionnaires were administered to measure the acceptability and feasibility of the intervention.

The methodology was conducted in 8 phases. The first phase provided the baseline scores of student behavior. The observations took place in 2 academic subjects and 1 recess period. The teacher chose subjects that were the most difficult for the student to manage their behaviors in. Phase 2 consisted of token reinforcement and systematic verbal feedback. The student was taught the rating scale used for the targeted behaviors and to provide frequent and meaningful teacher feedback about their performance. The token reinforcement process meant that the student received tokens for the rating score that could be exchanged for privileges (computer time, free homework pass or pencils). Phase 3 involved the student continuing the rating scale during 3 twenty-minute sessions and followed by teacher checking for agreement. Phase 4 extended the rating procedure to 3 five-minute intervals. If the student and teacher’s ratings matched students received a bonus token, but if there was a 2-point discrepancy then the student did not receive any tokens for the day. Phase 5 involved extending the rating intervals from 3 five-minute sessions to 1 fifteen-minute session. While phases 6-8 focused on the fading of teacher support. This happened by continuing to check for matching of rating scales with no verbal feedback on the students behavior, checking for matching only 75% of the times, and a complete fading of the teacher’s checking for matching of rating scales. During the recess
intervention baseline data were gathered continuously, and a shortened matching procedure consisted of a student and teacher 3-day matching period with 100% agreement. The rating interval was extended to only 1 fifteen-minute interval and was followed with a faster fading schedule.

Analysis of the data showed that all students decreased their level of disruptive behavior in the classroom and recess environments. This result was also maintained during the teacher phasing out stage. These findings are important to this paper because they imply that self-management is an effective strategy for maintaining reductions in the disruptive behaviors of students with ADHD. Most importantly, the disruptive behavior of these students was also reduced in the playground settings. This shows consistency in that the children were aware of their own behaviors when in school and at recess, which is often unstructured free play. This argues for the sustainability of this intervention.

One limitation was that that the intervention finished at the end of the school year and therefore did not have a follow up period to determine if the results were indeed sustainable. Another aspect that is important to this paper, the academic performance of these students was not examined, so it is inconclusive whether these results affected their academic achievement. While positive results were found with this study that utilized reinforcement, the next study focuses on self-management without reinforcement.

Self-Monitoring without Reinforcement. Harris, Friedlander, Saddler, Frizzle and Graham (2005) determine through a quantitative study, whether self-monitoring of attention and performances were effective without external reinforcement. The
focus of the research was to determine what effects attention and performance monitoring had regarding the on-task and study behavior of 6 elementary students with ADHD. Self-Monitoring of Performance (SMP) encourages students to assess, evaluate, and record particular aspects of their academic performance, thus concentrating on academic accomplishments. Self-Monitoring of Attention (SMA) encourages students to assess, evaluate and record attentional behaviors thus concentrating on increasing on-task behaviors. SMP assumes that growth in academic performance will increase on-task behaviors, whereas, SMA supposes that increasing the percentage of on-task behaviors will improve academic performance. Therefore the question guiding the research of this study asks what differential effects SMP and SMA had on academic performance.

At the baseline, the normal classroom routing for spelling consisted of spending 15 minutes each day studying a list of spelling words. Having selected up to 10 words that the student misspelled the previous week, the students selected five of these words on Monday to be their spelling words for the week. The study format for spelling was a modified version of the Fitzgerald spelling study procedure which included the following six steps: look at the word, close your eyes and spell the word out loud, study the word again, cover the word and write it three times, and check the spelling. The student’s academic performance was measured by the number of times the student spelled the word correctly. This method was chosen because a list developed through self-selection was thought to be more relevant and motivating for students.
To implement the study, the students were taught both of the self-monitoring interventions in pairs based on their class schedules. The phases of the intervention were: phase 1 - baseline and phases 2 and 3 - SMP and SMA in a random counterbalanced order. The baseline data for on-task behavior and academic performance were collected until stability or a decreasing trend was established. The students were reminded of the normal study routine and asked to begin. In the SMP procedure the teacher and child discussed the meaning and importance of practicing spelling words. The child was taught to count the number of times that the weekly spelling words were practiced correctly. This occurred at the end of each spelling period, and was entered by the student on a graph that was kept in a spelling file. The SMA procedure consisted of the teacher and child discussing the importance and meaning of paying attention. During this condition, the child heard a tone via a headphone connected to a tape player. Immediately after hearing the tone the child was taught to self-record whether he or she was on task. The average interval between tones was 45 seconds. Both the SMP and SMA procedure was taught Monday through Thursday with Friday designated as spelling test day.

Analysis of the data showed that both attention and performance monitoring had a positive impact on the spelling study behavior of the students with ADHD in this study. The students demonstrated a higher level of spelling practice when monitoring their attention on task as compared to monitoring their performance (or number of correctly spelled words). The researchers reported that special importance should be placed on the fact that self-monitoring was not combined with any form of external reinforcement and was still effective. One limitation to this study was the
short term of the implementation. There was not a withdrawal period that would compare the results when the intervention was removed. Because of this, it is not apparent if the students were responding more positively to the SMA because of the pleasure they received from using the headphones or because of focusing on attention to being on-task. Nevertheless, the students responded to this intervention with a positive increase in number of words spelled correctly in the practice sessions during this intervention. Important to this paper is the fact that there was a positive result in the academic performance of students with ADHD during this intervention. Also, this intervention would be sustainable in that any teacher who had a tape recorder with headphones could implement this intervention in their classroom. This study focused on the academic performance of students while the next study focuses on the reasons for off-task behavior.

Communication and Consequence Based Strategies. Using a qualitative function-based intervention Stahr, Cushing, Lane and Fox (2006), investigated self-monitoring the on-task behaviors of 1 student with ADHD. The intervention facilitated communication and consequence-based strategies that were aimed at increasing on-task behaviors. Function-based interventions are based on skill building and supporting prosocial behavior with less emphasis on reducing problem behaviors. The variable in this intervention was on-task behavior, which included looking at the teacher while she was instructing, doing or attempting the assigned task, seeking assistance and following directions.

Shawn, who was a 9-year old African American boy, was diagnosed with ADHD, a speech impairment, and a language impairment. He received special
education services in a fourth-grade classroom that served students with emotional and behavioral disorders. Shawn took medication daily to help manage his anxiety and attention. The intervention involved teaching Shawn a method for seeking assistance in a way that was acceptable to the teacher. The intervention focused on teaching him to regulate his own behavior. First implemented in language arts, the intervention was then introduced in math.

The methodology included an ABAB design with a baseline, treatment phase, removal of intervention, treatment phase, and final phase that served as a fading period. To implement the intervention Shawn was given three colored cards that he placed in a stack on his desk to serve as a signaling system. The cards were green, yellow and red. A green card indicated that he was working independently with the teacher having been instructed to praise his on-task behavior. A yellow card indicated that he would need assistance shortly with the teacher or paraeducator responding within 5 minutes. And a red card indicated that he needed immediate assistance where the teacher would respond within 1 minute. In addition to the card system, a checklist was provided for Shawn to monitor his own on-task behavior every 15 minutes, which was verified by the teacher at the end of the selected time period.

Shawn’s on-task behaviors immediately increased when the intervention was implemented in his language arts class. His baseline average on-task behavior was 32.83% and the average on-task behavior during the intervention was 74.44%. When the intervention was withdrawn, Shawn’s average on-task behavior steadily declined to 36.70%, which dropped almost to the level of his baseline score. The intervention was then reintroduced and his average on-task behavior increased to an average of
When the intervention was introduced in his math class, Shawn’s on-task behavior increased immediately to an average of 57.83%. When the intervention was withdrawn the average on-task behavior decreased sharply to 10.60%. And finally, when the intervention was once again reintroduced during the final phase in math, his on-task behavior immediately increased to an average of 72.33% (Stahr, Cushing, Lane & Fox, 2006).

Interestingly, Shawn’s anxiety was also improved. Prior to the intervention, he often rocked in his chair, tapped his pencil and/or shook his head repeatedly which was followed by a verbal outburst. The teacher and therapist noted sharp decreases in these behaviors during the intervention. Important to the purpose of this paper, Shawn’s average on-task behavior doubled in language arts and quintupled in math. While on-task behavior does not reflect achievement, it does provide the development of skills that are necessary for academic achievement. Of interest was that each time the intervention was phased out the on-task behavior steadily declined. This showed the effectiveness of the card system in the communication between Shawn and his teacher, paraeducator and therapist. The limitation of this intervention is that the it only worked when the supervisor used the cards correctly. If Shawn were in a situation with no cards available, or in another classroom that does not use this strategy, his on-task behaviors would decline drastically. The success of this intervention did not include self-management skill development that would enable Shawn to be successful in other situations. Instead he is dependant upon a system that that places other people in control of the success he experienced. One positive aspect of this system is that it would encourage Shawn to be aware of his own needs and to
communicate those needs to others. The implication here is that the social skills of a student with ADHD would be improved through the implementation of this intervention.

*Social Skills.* In a 3 tiered qualitative study Gumpel (2007) investigated whether students with low self-regulation had social skills within their repertoire. Research implies that self-regulatory functioning⁸ is a prerequisite for successful social behaviors (Gumpel). There were 2 hypotheses for this study: (a) the students with average intellectual functioning have appropriate social skills but will not consistently use them and (b) students with ADHD will have problems with performance of social skills.

Twelve boys between the ages of 8-15 years participated in this 3-tiered study. Observation sessions for each study took place twice a day, during the morning and afternoon recess for a 10-minute period. Study 1 focused on documenting a baseline for all students. One child at a time was observed during each recess period. Study 2 examined the efficacy of a social skills intervention based on self-regulatory training. The theory for this study was that reinforcement would improve positive interactions and reduce negative interactions. Three of the 12 students were randomly chosen to participate in this intervention. The students were taught to record on a notepad whether they were or were not playing with at least one other child, when a timer attached to their shirt beeped. Lastly, study 3 served as a replication of the previous study. Three students were chosen for this intervention who had inappropriate social interactions in the baseline.

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⁸ Self-regulatory functioning is the ability to direct one’s own behaviors in ways that are deemed acceptable for the situation at hand.
The dependant variables were: no interaction, which was defined as child not engaged in any activity with another person; positive interaction which was considered as any instance where the child was actively engaged with one or more children and was within 1.5meters away from a child; and inappropriate interaction which was defined as any interaction that involved any sort of aggressive act including cursing, pushing, name calling, or making forceful bodily contact with another.

The results of study 1, which served as the baseline for the following studies, showed that boys with aggressive behavior problems performed positive and inappropriate prosocial behaviors. For the boys described as shy and withdrawn, baseline data clearly showed positive prosocial behaviors. The results from this study show that for the children observed, each one was able to utilize different social behaviors that had positive and or negative results.

The results of study 2 showed an increase in positive behaviors for all three boys. This implies that the social behaviors of children with ADHD can be positively influenced with the use of self-monitoring and reinforcement. Even more important was the fact that the data recording took place during recess time, which is an unstructured free-play time.

The results of study 3, which was conducted with 3 students whose baseline data confirmed that their social skills were reported as inappropriate, did not show significant results. During the recess period of the intervention they had little contact with other students. Therefore, the self-monitoring and reinforcement that these students took part in had little effect on their social skills during their recess period.
Interestingly enough once the intervention was removed the students showed a slight reduction of contact with adults along with a slight increase in positive interactions with other children.

Throughout this 3-tiered study it was determined that the social skills do in fact exist within the behavioral repertoires of all participants. Unstable baselines are a defining characteristic of some individuals with poor social skills, as shown in the third study. The authors conclude that social performance is more complex than the presence or absence of specific prosocial skills. One limitation to this study was the fact that the data did not specify what the students were doing in their interactions. An interaction that was deemed positive could have involved the student actively engaged in following other students and simply mimicking their behavior. While social skills are known to be essential to self-regulation, they do not determine the level of acceptance or rejection that a child may experience due to the existence of inappropriate behaviors on behalf of the student with ADHD. If the goal of a study is to affect the social skills of the students, then why did the study not teach or train those skills? This study broadly defined what type of social skills the children were taking part in, and investigated how reinforcement would affect those skills. This study does not provide results that support the purpose of this paper other than the fact that an intervention could have some effect for improving the behavior of students with ADHD. The last study of this section focuses on teaching skills to encourage children with this disorder to meet the demands of the social environment.
Classroom Preparation Skills. In a quantitative study, Gureasko-Moore, DuPaul and White (2006) created an intervention package that focused on teaching classroom preparation skills, specific to secondary students in their academic classes. The study questioned the effects of a self-management procedure on the classroom preparation skills of students with ADHD. The authors hypothesized that the intervention would positively affect the classroom preparations skills of the students.

Classroom preparation skills are preacademic behaviors that enable students to meet classroom demands. For the sake of this study, these skills were defined as attending class daily, arriving promptly, being prepared, paying attention during instruction, sufficiently completing teacher assigned tasks, and handing work in on time. Three seventh grade students, Barry, Seth and Kevin who were all diagnosed with ADHD participated in this study.

To implement this study, baseline data were collected on each student until a “minimum of three data points were identified that the participant engaged in less than 70% of the six identified classroom preparation behaviors” (Gureasko-Moore, DuPaul & White, 2006, p. 166). During this time, the teachers were instructed to follow their customary routine. The self-management intervention had 2 primary components: a student training of self-management skills and monitoring the student’s use of their newly acquired skills. The self-management portion of the intervention involved discussing what self-management was, discussing current classroom performance, teaching the self-management plan, students learning to use a self-monitoring checklist and a student log (for reflection), the students creating weekly goals, student-researcher daily meetings to discuss progress, a fading period
where the student-researcher meetings decreased to every other day, and a maintenance period where the student-researcher meetings happened once a week. The researcher commended students on compliance with goals that were met and assisted them in areas where the goals had not been met.

Analysis of the data demonstrated positive results, indicating that the self-management intervention was successful in improving the classroom preparation behaviors of these three students. Each of the participants had a baseline average of 50%, 53% and 40% of classroom preparation behaviors. At the conclusion, or maintenance period the average classroom preparation behaviors were 100%, 100% and 100% (Gureasko-Moore, DuPaul and White, 2006). Important to this paper, the participants’ classroom preparation skills were maintained at 100% through the fading and maintenance periods. These results imply that the academic performance of children with ADHD could be improved and was sustainable.

One limitation to this study becomes apparent in the analysis of the data. Academic achievement was not evaluated; future research might consider examining the intervention effect on the amount of class work completed, or the amount of time spent on-task. Also there was not a long-term follow-up period after the intervention was removed in full. To determine if this intervention was fully effective it would need to reflect the academic achievement of the students and be sustainable.

Summary. Teaching students with ADHD, to manage their own behaviors and actions within a classroom setting, requires a shift in focus from the intervention to the individual student. Self-management interventions designed for the individual have the potential to be created exclusively for the needs of that student. The studies
in this section critically analyzed the effect they had on reducing the symptoms of ADHD and improving the academic achievement of the individual.

Shapiro, DuPaul and Bradley-Klug (1998) and Stahr, Cushing, Lane and Fox (2006) discovered that self-management skills improved and maintained the behavior of students with this disorder. Bugental, Whalen and Henker (1977) and Reid and Ortiz-Lienemann (2006) found that academic performance and achievement were positively affected by the implementation of self-management interventions. Barry and Messer (2003), Harris, Friedlander, Saddler, Frizzelle and Graham (2005) and Gureasko-Moore, DuPaul and White (2006) found a connection between behavior and academic achievement in students with ADHD. The results showed that reducing off-task and disruptive behavior of these students revealed an increase of academic performance and achievement. DuPaul and Hoff (1998) found a link, in social situations outside the classroom, between self-management and a decrease of the disruptive behaviors associated with ADHD. Gumpel (2007) conducted a study focusing on the social skills of students with this disorder. The results imply that the students need to be taught the skills necessary in order to improve upon them.

Every study in this section showed positive results with only 3 showing direct relevance to the focus of this paper. Barry and Messer (2003), Harris, Friedlander, Saddler, Frizzelle, and Graham (2005), and Gureasko-Moore, DuPaul and White, (2006) found a connection between learning self-management skills and improved academic achievement. One limitation that each of the studies in this section had in common was that there was not a long-term follow-up period that evaluated the lasting effect of the interventions. If an intervention is to be successfully implemented
within a school setting it needs to be sustainable within that setting by the staff of the school.

**Summary of Self-Management Interventions**

When selecting a self-management intervention one should carefully consider a student’s abilities, needs and goals. The procedures of “an intervention should be efficient, appropriate to the target behavior, acceptable to the student, minimally laborious or obtrusive, and relevant to the students needs or goals” (Harris, Friedlander, Saddler, Frizzelle & Graham, 2005, p. 155). The studies in this section were critically analyzed by focusing on reducing the symptoms of ADHD in order to improve their academic achievement.

The full class interventions in this section found that the active engaged learning improved the on-task behavior of students with this disorder. When considering academic achievement, the Miranda, Presentacion and Soriano (2002) study showed improved academic achievement of students with ADHD. Every intervention in this sub-section was implemented in a general education classroom with no one individual excluded, or pointed out as different.

The small group interventions supported prior research that showed students with this disorder work well in small groups. The studies in this section focused on teaching students the skills necessary to be successful in the classroom. In each of these studies the student’s behavioral symptoms were improved, but only Rogevich and Perin (2008) showed an improvement in academic achievement.

Individual interventions showed that teaching students with ADHD, to manage their own behaviors and actions within a classroom setting, required a shift in
focus from the intervention to the individual student. Self-management interventions designed for the individual were created exclusively for the learning needs the student. Every study in this section had positive results, with 4 showing a connection between the behavior of students with ADHD and their academic achievement (Bugental, Whalen & Henker, 1977; Reid & Ortiz-Lienemann, 2006; Barry & Messer, 2003; Harris, Friedlander, Saddler, Frizzelle & Graham, 2005).

The important implication to this paper was that whether the intervention was full class, small group, or individual there were documented increases in the disruptive behavior of the children with ADHD. The results of the individual interventions showed a higher percentage of studies that resulted in academic achievement (44% compared to 33%) of the students. This could be a reflection of the intervention being designed for the needs of the individual instead of the symptoms the teacher wanted to be changed. All together 6 of the 15 studies analyzed in the Self-Management Interventions section showed improvements in the disruptive behaviors and academic achievement of students with ADHD. Therefore, the results in this section imply that the question of this research could be answered positively. Self-management strategies could be taught to students with ADHD that positively affect their academic achievement.

Summary

Chapter three was a review of the research about the existence of ADHD within the United States educational system. The findings of the studies were summarized and analyzed, based on the conclusions provided. The research was
reviewed to examine how teaching self-management strategies to students with this disorder could improve their academic achievement.

The research in the Multiple Perceptions of ADHD section indicated that there was a need for school districts to have a structure in place that supports children with this disorder. The research in the Support Programs for Teachers section demonstrated that school personnel must be educated to meet educational needs of these children. The research in the Academic Achievement section proved that students with this disorder consistently perform lower in academic achievement than their peers. Also, these students often associated success with the task being easy or they were lucky because the teacher liked them. The research in the Behavioral Interventions section indicated that the improved behavior of students with ADHD was not sustainable without continued support. The research in the Home-School Connection section demonstrated that with the addition of family into the intervention, behavioral interventions could have successful results. The research in the Medication Interventions section showed that with the addition of stimulant medication, behavioral symptoms and academic skills were positively affected. Finally, the research in the Self-Management Interventions section demonstrated that self-management can have a positive affect on the behavioral symptoms of ADHD as well as the academic achievements of these students.

Chapter four will outline the summary of the findings from this chapter with respect to Multiple Perceptions of ADHD, Support Programs for Teachers, Academic Achievement, Behavioral Interventions, Home-School Connection, Medication Interventions and Self-Management Interventions. Following that, chapter four will
discuss the classroom implications of these findings and consider suggestions for future research.
CHAPTER 4: CONCLUSION

Introduction

Chapter one examined the statistical presence of ADHD within the United States educational system. It explained that educators need effective methods to develop the behavioral and academic skills of these children. It explained how the symptoms of this disorder, impulsivity, inattention and hyperactivity typically limit a student’s ability to manage their own behaviors. Also introduced was the fact that children with this disorder typically experience low academic achievement. Chapter one also discussed that teaching self-management skill development to children with ADHD, could improve their academic achievement.

Chapter two explained the historical background of ADHD within the U.S. educational system, the perceptions of this disorder, and how they affect the success and or failure of these students. In reviewing the history it was noted children with this disorder were often viewed as troublemakers, lazy or disobedient children (Stallard-Glass 2000). It was also noted, that these children often experienced low self-esteem and low academic achievement within the educational system. Chapter two also introduced that recent trends in educational literature have included a rising interest in utilizing multiple teaching strategies for the education of children with ADHD.

Chapter three reviewed the research about this disorder within the United States educational system. The research of this chapter was organized into 7 areas: multiple perceptions of ADHD, support programs for teachers, academic achievement, behavioral interventions, home-school connection, medication
intervention and self-management interventions. Each of the main groups were summarized and analyzed based on the findings provided in each study. The research was examined to determine whether teaching self-management strategies to students with ADHD could improve their academic achievement.

Chapter four is the concluding chapter. This chapter revisits the guiding question, could teaching and learning self-management skills improve the academic achievement of children with ADHD, and uses a summary of the findings —based on the findings of the 7 areas: multiple perceptions of this disorder, support programs for teachers, academic achievement, behavioral interventions, home-school connection, medication intervention and self-management interventions from the initial review—from chapter 3 to answer the question of the study, implications for classroom practice and suggestions for further research.

Summary of Findings

The guiding question of this study asks how teaching and learning self-management skills could improve the academic achievement of children with ADHD. This is important when you consider the fact that 15% of problem students consume 90% of a teacher and school administrator’s time (Wolfgang, 2009). Self-management skills within a classroom were defined as: being prepared for class by having pencil, paper, and homework; keeping focused and on-task; completing assignments and participating in classroom activities. Without these essential skills a student is not ready to learn, and will not be able to take an active role in the learning process. Children with this disorder typically have low self-management skills; therefore, the studies in chapter three were summarized and analyzed to determine
effective self-management interventions that could be utilized within the U.S. educational system.

For the purpose of this paper an effective intervention has two separate meanings. First, effective refers directly to how the self-management skills learned affect the academic achievement of children with this disorder. Second, effective refers to the idea that the intervention needs to be sustainable within the school system. Importance was placed on the fact that the classroom teacher would implement the intervention. An intervention that pulled the teacher’s time away from educational pursuits or required additional staff to implement could be considered ineffective.

*Multiple Perceptions of ADHD*

This section was important in discovering the cultural, generational and individual views of students with ADHD. Brewis, Schmidt and Meyer (2000) suggested that U.S. culture found the symptoms common to this disorder as dysfunctional, while Columbian culture found the symptoms to be a natural symptom of childhood. Another interesting point was that the children with this disorder in U.S. and Columbia experienced academic levels relative to each other when compared to their peers. While the peers of children with this disorder, were more apt to dislike them, Harnum, Duffy and Fergusun (2007) found that the teachers’ opinions of these children was more positive. Tabassam and Grainger (2002) showed that children with ADHD had lower self-efficacy of their social status and academic level. Thus, in the United States, symptoms of this disorder were seen as dysfunctional, and students with this disorder experienced lower self-efficacy and academic achievement than
their peers. One weakness of this analysis was that Brewis, Schmidt and Meyer (2000) did not show evidence that related the self-efficacy of Columbian students. The different perspectives become even more important when considering the No Child Left Behind Act of 2001 and the assessment measures that followed. Because the achievement levels of all students were monitored, pressure was placed on the school districts to measure academic success through test scores (Spring, 2008). The low efficacies of these students reflect the need for structure that assists the school districts in supporting these children.

Support Programs for Teachers

An absence of support for teachers is a major roadblock in the education of children with ADHD. Research has found that a child’s teacher is often the first to suspect that a child might have this disorder (Sharman, Rasmussen & Baydala, 2008). This data is disconcerting because unless teachers are educated about behavioral disabilities that affect children in their classrooms and multiple strategies that are effective in teaching those children, the number of parents seeking guidance from their health care providers may be high.

Given the findings of Kataoka, Kraayenoord and Elkins (2004) and Stallard-Glass (2000) teachers and administrators were found to be lacking in knowledge and education, of learning disabilities and teaching strategies, that would enable them to meet the needs of these children. A weakness in this analysis was reflected by the fact that the, Kataoka, Kraayenoord and Elkins, study was conducted in Japan. Comparing the education and knowledge of those teachers to the teachers in the United States is problematic. The strength of this argument was that Stallard-Glass (2000) showed
that teachers with 20 years of experience, in the United States, were more likely to utilize multiple teaching strategies and have higher levels of academic achievement in students with ADHD. These findings implied that teachers with less than 20 years of experience are implicated to be less effective in teaching these children, due to their inexperience. Therefore, the need for a support structure in place that assists teachers and administrators in meeting the needs of these students becomes apparent.

**Academic Achievement**

A review of the research shows that one of the serious difficulties faced by youth who meet the criteria for ADHD is poor academic achievement in comparison to their peers (Sharman, Rasmussen & Baydala, 2008; Miranda, Presentacion & Soriano, 2002). As discussed before, the No Child Left Behind Act of 2001 increased the pressure placed on children with learning disorders like ADHD to succeed academically (Spring, 2008). The resulting trend in the educational system was to search out strategies that could affect the academic achievement of all children.

Analyzing the professional literature of this section showed that Miech, Essex and Goldsmith (2001) reported that a child’s level of self-regulation and family’s SES background had a strong correlation to the diagnosis of ADHD. The results implied that children with symptoms of this disorder should be recommended for intervention and strategy development at an early age. Massetti et. al. (2007) discovered that these children were perceived by their teachers to have lower academic ability in reading and mathematics than their peers, which was confirmed in the data analysis. Of concern, Hoza, Waschbusch, Pelham, Molina and Milich (2000) explained that students with this disorder were comfortable with failure and associated their success
with the task being easy. Therefore, the students felt capable of success when the task was simple, but expected failure when the task was not simple. Lastly, Ellis and Nigg (2009) determined that positive and consistent parenting practices related to higher levels of academic success in children with ADHD. This research supported the idea that interventions focusing on behavioral modifications should be implemented, at an early age, to obtain higher levels of academic achievement.

Behavioral Interventions

Behavioral interventions are a recent trend in the education of children with ADHD. The research reviewed in this section focused on modifying a child’s behavior to help him or her be more successful in school. Given the findings of the Shelton et al. (2000) study, a behavioral intervention for children with this disorder may not reflect the positive results at a two-year follow-up. This intense full-year intervention was conducted in a kindergarten classroom and was not sustainable by the general education teacher. Luman, Oosterlaan and Sergeant (2007) reported that an intervention for children with ADHD that was based on reward and response cost (positive and negative reinforcement) was not successful.

The review of the results argues against using a behavioral intervention to manage the symptoms of this disorder. Unfortunately, the studies did not teach students to manage their own behaviors; they were simply given a positive or negative response to the behaviors they experienced. The next section investigated the connection between the child, home, and school.

Home-School Connection
The home-school connection is one to be nurtured, the communication between a family and the educators of a child with ADHD, would result in a level of consistency and therefore a higher opportunity for behavioral improvement. The findings from a 14-month intervention conducted by Hinshaw et al. (2000) showed that increased positive discipline of a child with this disorder resulted in lower negative behavioral symptoms and higher social skills. Odom (1996) described how a 5-week intervention that educated mothers about their child’s disorder improved their feelings of parental confidence and self-esteem. And Pfiffner et al. (2007) conducted a 12-week intervention that involved teacher consultations, parent education, and child skill development as well as collaborative work together among all parties. The result of this intervention was a reduction of inattention, improvement in organizational skills and was sustained after the phasing out.

The results from this review support the idea that children, with support from the home and school environments, are capable of learning to manage their ADHD behaviors and improve their academic achievement. Unfortunately the intervention that showed the most success, Pfiffner et al. (2007), was also the most expensive and time consuming. This intervention would not be sustainable by the teacher within his or her classroom because of the cost and additional time investment. The next section analyzed a medication trial.

Medication Intervention

Research shows that medication interventions reduce the symptomatic behaviors\(^1\) of children with ADHD (Odom, 1996). In school, effective organizational, time management and planning behaviors (OTMP) may be related to classroom

\(^1\) Inattention, impulsivity and hyperactivity
preparedness, which is essential for their academic achievement. Therefore, the Abikoff et al. (2009) study showed that taking the stimulant medication, MPH-OROS, was effective in improving the OTMP behaviors of these students. This study is limited by only having 19 participants. To generalize the effects of this medication on the OTMP behaviors of students with this disorder further research must be conducted. The following section will focus on the development of self-management skills for students with ADHD.

Self-Management Interventions

The active involvement of the learner, according to Zull (2002) and Rogoff (2003), is required. Self-management skills require a person to take an active role in their own management and organization. Therefore, this section is important because it focuses on the development, or learning, of self-management skills in children with ADHD. The development of self-management skills requires the student to actively monitor and evaluate their behavior and performance.

Full Class. Full classroom interventions are important because they offer the opportunity to help all children within a classroom. Kapalka (2005) found that reducing repetitions limited the number of confrontations a teacher faced. While the compliance of children with ADHD was increased, the student’s academic achievement was not measured. It was simply implied that the results could lead to higher levels of academic achievement. DuPaul, Ervin, Hook and McGoey (1998) discovered that an increase in the active engaged time for students with this disorder was not reflected in their academic achievement. This is contradictory to the next study researched by Miranda, Presentacion and Soriano (2002) who reported that a
teacher-training program resulted in significant gains in active engaged learning and significant improvements in mathematics, natural sciences and language.

Each of the full class interventions showed improved on-task behavior, but only one study (Miranda, Presentacion & Soriano, 2002), showed improved academic achievement. A weakness to this study is that it did not include follow-up results. The next section analyzed the literature based on interventions conducted in small groups.

**Small Group.** Working in smaller groups allows students to support each other in their daily tasks and activities. Houck et al. (2002) and Davies and Witte (2000) reported that social behaviors were improved through small group activities, unfortunately, there was no evidence that related the academic achievement of these students. Rogevich and Perin (2008) had the exact opposite result. This study determined that small group activities resulted in significant performance gains in language skills, but it was not conclusive what the behavioral effect the intervention was. A major weakness in the study by Davies and Witte developed after 4 weeks, when 3 of the 4 comparison students were replaced because they moved to another classroom. This one fact has serious implications to the findings. In the next section, studies that focus on self-management interventions created for the individual student were analyzed.

**Individual.** This section was important because teaching a student with ADHD to manage his or her own behaviors requires a focus on that individual. Shapiro, DuPaul and Bradley-Klug (1998) and Stahr, Cushing, Lane and Fox (2006) discovered that self-management skills improved and maintained the behavior of students with this disorder. Bugental, Whalen and Henker (1977) and Reid and Ortiz-
Lienemann (2006) found that the students’ academic performance and achievement were positively affected by the implementation of self-management interventions. And most importantly, Barry and Messer (2003), Harris, Friedlander, Saddler, Frizzelle and Graham (2005) and Gureasko-Moore, DuPaul and White (2006) found a connection between the improved behavior and academic achievement of students with ADHD. They discovered that reducing off-task and disruptive behavior of these students reflected an increase in academic performance and achievement. The disruptive behaviors of students with this disorder decreased, as DuPaul and Hoff (1998) found, in social situations outside the classroom. The Gumpel (2007) study showed that these students must to be taught self-management skills, in order to improve upon them.

Each study in this section showed positive results, but only 3 showed a connection between self-management skills and academic achievement (Barry & Messer, 2003; Harris, Friedlander, Saddler, Frizzelle & Graham, 2005; Gureasko-Moore, DuPaul & White, 2006). One limitation that each of the studies in this section had in common was that there was not a long-term follow-up period that evaluated the long-lasting effect of the interventions. If an intervention is to be successfully implemented within a school setting it needs to be sustainable within that setting by the staff of the school.

**Summary**

Perhaps the greatest implication that results from the review of chapter three is that by teaching self-management skills to students with ADHD, the behavior and academic performance of these students were improved. As shown in the academic
achievement section, the low self-regulation, or self-management, skills that are common with this disorder, limit the performance and achievement that the students experience. The research in this paper suggested that if students with this disorder are to manage their own behavior, they must be taught how to develop these skills with the support of their family, mental health physician, and teachers.

Classroom Implications

The United States educational system coincided with the development of ADHD. The educational system, having been built upon the standard industrial model that sought to teach children to conform to the demands of the industrial workforce, gave birth to the rise of ADHD in our schools (Spring, 2008). The curriculum and instruction of the time emphasized memorization, submission, and authority within a regimented classroom. The behavioral symptoms of this disorder hyperactivity, inattention and impulsivity were viewed as dysfunctional (Brewis, Schmidt & Meyer, 2000). The education of children with ADHD has limitations as the Kataoka, Kraayenoord and Elkins (2004) and Stallard-Glass (2000) studies discovered, because teachers and administrators were found lacking in knowledge of teaching strategies that would enable them to meet the learning needs of these children. The implication here is that the educational system must search out educational opportunities that would help them teach all students in the school system.

The No Child Left Behind Act of 2001 increased pressure on schools to measure the academic achievement of all children in the public school system (Spring, 2008). The resulting accountability movement has focused the grade level
expectations\(^2\) of every student to be met by a specific date, when the state test is given. As the research from the academic section proves, children with this disorder face poor academic achievement (Sharman, Rasmussen & Baydala, 2008; Miranda, Presentacion & Soriano, 2002). Therefore, it becomes imperative for the educational system to create a support structure that focuses on increasing the academic achievement of children with ADHD. A support structure focused on increasing the academic achievement of these children is likely going to require the effort and collaboration among pediatric mental health specialists, parents, and school staff (Cook, 2005). Interventions, educational opportunities and collaborative meetings must include all members of this support structure.

As the research shows, not all interventions utilize the support structure that surrounds children with this disorder. In a medicine trial, Abikoff et al. (2009) showed that stimulant medication reduces the symptoms of ADHD. While these results are promising, the problem emerges when one considers that the student does not learn how to manage their own behaviors. When the medication wears off, the student’s behaviors return to the level they were before. Because of this, a growing trend in educational research has focused on behavioral interventions that utilize alternative teaching strategies. The findings of Shelton et al. (2000) and Luman, Oosterlaan and Sergeant (2007) support the idea that students with this disorder must be taught how to manage their own behaviors. Their studies focused on changing behaviors typical to ADHD without the student being accountable for documenting their own behaviors; instead the studies were based on simple action and response. As a result the findings of the interventions were not significant or sustainable.

\(^2\) The student learning goals for that grade level.
The following studies utilize the support structure of students with ADHD. Hinshaw et al. (2000), Odom (1996) and Pfiffner et al. (2007) discovered that interventions, which support the home and school environments, teach these children to successfully manage their behaviors and result in improved academic achievement. Parent training, teacher training and implementation of the intervention resulted in a consistency that was thought to increase the possibility for success. Thus, the families and educators working together to take an active role in the management of the child’s behavior affected the level of achievement that these students were able to obtain.

According to Zull (2002) and Rogoff (2003) learning requires the active involvement of the learner. Research in this paper shows that teaching self-management skills to children with ADHD, also requires the active involvement of the learner. Gumpel (2007) found that students with this disorder must be taught self-management skills in order to improve upon them. The students, in this intervention, were required to document their behavior during a specific time period and were given verbal reinforcement at the conclusion. The results were not found to be sustainable; therefore, the implications of this study supported the fact that educators must focus on developing the self-management skills of students with ADHD.

The Miranda, Presentacion and Soriano (2002) study showed that improved self-management skills increased the sustained attention of students with this disorder 2.5 times greater than their peers. This study also related self-management skill development to significant gains in academic achievement. Important to the success of this intervention was that the teachers learned how to respond to the educational
needs of these children, and communication with the families supported the positive behavioral effects of the intervention. While the family was not directly involved with the intervention, the communication between the school and home allowed the family to offer their support.

The creation of a social support structure within the classroom was also found to be successful. In a study that developed self-management skills through a focus on the interdependence of students, behaviors of children with ADHD were improved, as Davies and Witte (2000) discovered. The accountability that students experience within a group, add to the pressure for students to perform successfully. Even without the support structure between the home and school environments the fact that peers worked together for a common goal created a social structure in which the students depended upon each other for the success of their group. The natural human desire for social acceptance speaks for the potential sustainability of this type of intervention.

The findings of Barry and Messer (2003), Harris, Friedlander, Saddler, Frizzelle and Graham (2005) and Gureasko-Moore, DuPaul and White (2006) connected the improved behavior of students with ADHD to academic achievement. Specifically, the disruptive and off-task behavior of students with this disorder were reduced with the implementation of a self-management skill development intervention. A major strength of these 3 studies was a focus on the individual child, with target behaviors chosen for that specific child. Teaching a student to manage his or her own behavior requires a focus on that individual. Self-management interventions for the individual student have the potential to be designed exclusively for that particular students needs. Depending on that students need, this type of
intervention may be more appropriate with an elevated potential for success. The findings of the studies above support the purpose of this paper that asks if children with ADHD could be taught self-management skills that would result in the improvement of their academic achievement.

Summary

The research in this paper suggests that there is no quick fix to the problems that children with ADHD face in the United States educational system. The implications shown from this review show those children struggle academically because their learning needs are different than how the educational system is set up. The low self-regulation skills that are inherently symptomatic to this disorder are also what makes them be viewed as dysfunctional students (Brewis, Schmidt & Meyer, 2000). Simply telling a child what they need to do and how they need to act do not seem to be enough. The research in this paper shows that these children need to be taught how to develop self-management skills in order to be academically successful in school.

Educators and administrators must become educated about ADHD and learn effective methods and or interventions that will help meet the needs of all children. The implication that educators alone are responsible for fixing the low academic achievement of these students is not reasonable. As Cook (2005) stated, “successful intervention for severely disruptive children is likely to require effort and collaboration among pediatric mental health specialists, parents and school staff” (p. 8). A support system needs to be in place that includes all these members in the education and treatment of a child with ADHD.
Perhaps the greatest implication that results from the findings of this paper is that by teaching self-management skill development to students with ADHD—with a structured support system that includes pediatric mental health specialists, parents and school staff—the behavior and academic performance of these students can be improved. The point here is that the focus of the support must be on teaching and bettering the skills of the child instead of simply removing the behavior deemed dysfunctional. The research suggests that for the gains in behavior and academic performance to be sustained, the support system must make the effort to collaborate and work together throughout and beyond the implementation of the intervention.

Suggestions for Further Research

Perhaps one of the greatest weaknesses in this research paper was the difficulty in finding empirical studies that focused on teaching self-management skills to students with ADHD. There is a great plethora of literature on behavior modifications, but the recent literature on teaching self-management skills is limited. With the exception of Bugental, Whalen and Henker (1977), the 15 studies in the self-management section were published since 1998. Of the 30 empirical studies reviewed in this paper only 17 met the criteria of having self-management as an integral part of the research. Therefore, the guiding question, which asked could self-management skills be taught to children with ADHD in order to improve their academic success was directly related to just over half of the studies analyzed in chapter three. Rather than delving very far into the past research this author chose to analyze: the perspectives of ADHD, support that teachers have to learn about this disorder, the academic achievement trends of these children, behavioral interventions, the
importance of the home to school connection and a medication intervention along
with analysis of self-management interventions. This implies that there is a great need
for future research to focus on teaching strategies that encourage self-management of
children with ADHD.

A limitation that was present in the self-management section was the fact that
Kapalka (2005), Miranda, Presentacion and Soriano (2002) and Rogevich and Perin
(2008) were the only studies that had more than 50 participants in their studies. The
average sample size of the rest of the studies limited the reliability of the larger
picture regarding teaching self-management strategies to children and how those
strategies affect their academic achievement.

Follow-up research, if it was done at all, was often done within the year of
initial intervention. More research is needed to determine how the development of the
students is affected by these interventions. Did the studies by Bugental, Walen and
Henker (1977) and Reid and Ortiz-Lienemann (2006) retain the positive academic
performance and achievement results that were reported at the conclusion of the
intervention? How about the Barry and Messer (2003), Harris Friedlander, Saddler,
Frizzelle and Graham (2005) and Gureasko-Moore, DuPaul and White (2006) studies
that found a connection between self-management skill development, improved
behavior and academic achievement? Where the results sustainable? These questions
imply that there is a need for follow-up research to determine the long-term results of
an intervention. This need suggests the importance of a connection to the families of
the students throughout the implementation of any intervention. The family would be
able to support that child’s progress after the intervention was removed and communicate with any future needs that arose.

Conclusion

Chapter one discussed the reasons for a review of the professional literature regarding ADHD. It explained that the symptoms of this disorder—hyperactivity, inattention and impulsivity—typically limit a student’s ability to manage their own behavior. It introduced concept of self-management skill development and noted that traditional teaching strategies limit the academic performance of these students. Chapter 1 also discussed the controversies regarding ADHD, and gave the reader limitations for the literature review. Chapter two explained the historical background of ADHD within the U.S. educational system, the perceptions of this disorder, and how they affect the success and or failure of these students within this system. This chapter discussed that students with this disorder are experiencing high rates of academic failure. Chapter two also discussed that recent trends in the education of children with this disorder have reflected a rising interest in multiple teaching strategies.

Chapter three reviewed the research of this disorder. The research of this chapter was organized into 7 areas: multiple perceptions of ADHD, support programs for teachers, academic achievement, behavioral interventions, home-school connection, medication intervention and self-management interventions. The self-management section was divided into 3 sub-groups: full-class, small group and individual. Each of the main groups was selected to answer this paper’s guiding question: how teaching self-management strategies to students with ADHD could
improve their academic achievement. The research reviewed in the Multiple Perceptions of ADHD section found that the behavioral symptoms of this disorder were seen as dysfunctional in the United States educational system. In the Support Programs for Teachers section, the research suggested that principals and teachers do not know how to meet the learning needs of these children. The research reviewed in the Academic Achievement found that children with this disorder consistently perform lower than their peers. The Behavioral Interventions section found that changing symptomatic behaviors associated with ADHD is no simple task. The review of the Home-School Connection strongly supported the education and involvement of families in the management of a child with this disorder. In the Medication Intervention section, it was proved that stimulant medication improves a student’s academic performance. The review of the Self-Management Interventions showed that teaching self-management skill development has a positive affect on the behavioral symptoms, academic performance and academic achievement of children with ADHD.

Finally, this chapter revisited the guiding question: Could teaching and learning self-management skills improve the academic achievement of children with ADHD? And then uses a summary of the findings —based on the findings of the 7 areas from chapter three— implications for classroom practice and suggestions for further research.

Children with ADHD are experiencing low academic achievement within the school system. The implications shown from this review show that these children struggle academically because their learning needs are different than how the
educational system is set up. Simply telling a child what they need to do and how they need to act are not sufficient. The research in this paper shows that if these children are taught to develop their self-management skills they will be capable of improving their academic achievement.

Educators and administrators must become educated about ADHD and learn effective methods for teaching all children. Educators alone are not responsible for fixing the achievement of these students. As Cook (2005) stated, “successful intervention for severely disruptive children is likely to require effort and collaboration among pediatric mental health specialists, parents and school staff” (p. 8). Instead, a support system should include all members in a child’s life. This is perhaps the greatest implication that arises from the findings of this paper. By teaching and learning self-management skill development—with a structured support system that includes pediatric mental health specialists, parents and school staff— the behavior and academic performance of a student with ADHD can be improved. Essential to the success of any intervention is that the focus must be on developing the skills of the student instead of simply removing the behavior that is thought to be dysfunctional. The research in this paper suggests, that for the gains in behavior and academic performance to be sustained, the support system must make the effort to collaborate and work together throughout and beyond the implementation of the intervention.
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