CLASSROOM INTERVENTIONS FOR STUDENTS WITH ADHD

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PROJECT

Submitted in partial satisfaction of
the requirements for the degrees of

SPECIALIST IN EDUCATION

in

SCHOOL PSYCHOLOGY

at

CALIFORNIA STATE UNIVERSITY, SACRAMENTO

SPRING
2009
CLASSROOM INTERVENTIONS FOR STUDENTS WITH ADHD

A Project

by

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Abstract

of

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Delia Villaseñor
Melanie Searls

This project was completed through a collaborative effort between the three authors. Research was conducted by all three authors. Delia Villaseñor completed the abstract and chapter one, three, and four. Bethany Grove and Melanie Searls completed chapter two. The handbook (the product of this project) was completed by all three authors.

Students with ADHD have academic, social, and behavioral difficulties that interfere with their ability to be successful in school. Research shows that there are empirically validated classroom interventions that will help them overcome those difficulties. The purpose of the project is to develop a handbook for teachers that defines ADHD and contains research-based and/or research informed classroom interventions for students with this disorder. The handout will be a useful, clear, and concise resource for teachers who have students with ADHD in their classrooms.

In the development of this project, the authors searched for articles about ADHD on multiple online search engines. The authors focused on research articles that were specific to (a) empirically based classroom interventions for students with ADHD, (b)
ADHD statistics, and (c) implications related to academic performance for students diagnosed with ADHD. After the information was reviewed and organized, the teacher’s handbook (the product of this project) was created.

The handbook is not designed to be a stand-alone treatment for ADHD. Educators may need to collaborate with parents and physicians to find the most effective combination of treatments for students with ADHD. In addition, various interventions may need to be explored before finding one that is effective for the individual student.

Committee Chair

Stephen E. Brock, Ph.D.

4-29-09, Date
ACKNOWLEDGEMENTS

We would like to thank our loved ones for their continued support and encouragement throughout this endeavor.
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Chapter 1
INTRODUCTION

Background

Attention-deficit/Hyperactivity Disorder (ADHD) is one of the most controversial childhood psychoactive disorders due to its increasing diagnosis, unclear etiology, and various treatments (Montague & Dietz, 2006). ADHD is the most commonly diagnosed disorder among school age children (Evans et al., 2006), and each classroom in the United States is likely to have at least one student with ADHD (Ohan, Cormier, Hepp, Visser, & Strain, 2008). The number of children and adolescents diagnosed with ADHD has risen 3% annually from 1997 through 2006, and the overall prevalence rate for children ages 6- to 17-years is estimated to be 8.4% (Pastor, 2008). In some communities, it is estimated to be as high as 18% (Visser, 2005). The number of students ages 12- to 17-years who have qualified under the Other Health Impaired (OHI) special education eligibility criteria has increased by 574% since 1993; for children ages 5- to 11-years it increased by 204%. Students with ADHD comprise the largest group among those with the OHI eligibility criteria (Evans et. al., 2006).

Students with ADHD present with problems such as, academic difficulties, discipline problems, conflict with peers, and as they get older, they have a higher dropout rate and an increased rate of legal problems than students without ADHD (Evans et al., 2006). In the classroom, students are often disorganized, fail to complete tasks, and have
poor writing and study skills (Evans et al., 2006). They have difficulties with sustained attention, controlling impulses, and staying seated, which can result in academic problems, social skills deficits, peer and adult conflict, and ultimately behavior and emotional problems (Ohan et al., 2008). Higher levels of ADHD symptoms have been associated with oppositional defiant disorder (ODD) and difficulties with emotional regulation (Wahlstedt, Thorell, & Bohlin, 2008).

To help all students succeed, teachers and schools must learn how to effectively educate and provide an environment that fosters and supports their unique learning needs. Even though they have many challenging behaviors, every student, regardless if they have a disability or not, has the right to a free appropriate public education (FAPE) as stated by the code of education:

Every individual with exceptional needs, who is eligible to receive educational instruction, related services, or both under this part shall receive educational instruction, services, or both, at no cost to his or her parents or, as appropriate, to him or her (30 EC 56040 [a], 2006, p.1).

Education code 30 EC 56339 (2006) specifically addresses students with ADHD:

If a pupil with an attention deficit disorder or attention deficit hyperactivity disorder is not found to be eligible for special education and related services pursuant to subdivision (a), the pupil’s instructional program shall be provided in the regular education program (p. 4).

All teachers regardless of their credential classification (i.e., special or regular education) should learn and accommodate students with ADHD as needed.
It is further the intent of the Legislature that regular education teachers and other personnel be trained to develop an awareness about attention deficit disorder and attention deficit hyperactivity disorder and the manifestations of those disorders, and the adaptations that can be implemented in regular education programs to address the instructional needs of pupils having these disorders (30 EC 56339 [d], 2006, p. 4).

However, not all teachers know how to work with these students. Many teachers are not prepared to effectively manage the social, academic, and emotional needs of students with ADHD, nor are they open to implementing interventions (Ohan et al., 2008). Some teachers may feel that teaching students with ADHD was not part of their degree’s requirement; they may also see the behavior as defiant and willful. Many do not attend professional development trainings that will provide them with the background knowledge and strategies needed to work with these students. Some teachers implement interventions but soon give up because they are too cumbersome or do not work, and unfortunately, some teachers just refuse to accommodate these students. Nonetheless, these reasons are unacceptable. The law clearly states, “that all pupils, including those with attention deficit disorder or attention deficit hyperactivity disorder, receive appropriate instructional interventions” (30 EC 56339 [c], p. 4). The interventions presented in the handbook will help teachers address those challenging classroom behaviors.

Research has shown that teachers’ knowledge affects their behavior and attitudes toward students with ADHD (Jones & Chronis-Tuscano, 2008; Ohan et al., 2008;
Sherman, Rasmussen, & Baydala, 2008). The greater their knowledge of ADHD, the more favorably they view students with the disorder, understand that much of their behavior is not done out of defiance, and are more willing to implement classroom interventions (Sherman et al., 2008). School psychologists can help increase teachers knowledge by providing school in-services. School psychologists are able to reach more staff members through in-services and they are less time consuming than one-to-one consultation (Jones & Chronis-Tuscano, 2008). School psychologists can conduct power-point presentations about ADHD symptoms, etiology, treatment, academic and behavioral interventions at their school sites on designated school-wide in-service days or staff meetings. As well as, provide them with the handbook that teachers can reference when needed.

Statement of Purpose

The purpose of the project is to develop a handbook for teachers that defines ADHD and contains research-based and/or research informed classroom interventions for students with this disorder. Teachers will be able to implement these interventions to help students diagnosed with ADHD achieve academic success. The handout will be a useful, clear, and concise resource for teachers who have students with ADHD in their classrooms. The handbook will be distributed to school psychologists who in turn will provide it to teachers through in-school trainings, and consultation. It will be available to the student study team and individualized education plan team to help guide interventions
for students with ADHD. The interventions provided in the handbook can also be used to stimulate thought and guide recommendations in psychoeducational reports.

Significance of the Project

This project provides classroom teachers with a handbook designed to guide classroom interventions for the student with ADHD. The importance of such efforts is emphasized by 30 EC 56339 (c), which states: “that all pupils, including those with attention deficit disorder or attention deficit hyperactivity disorder, receive appropriate instructional interventions” (p. 4). This project made special efforts to identify interventions that are either empirically based (i.e., that are directly supported by research), or that are empirically informed (i.e., that are indirectly supported by research). The interventions provided in the teacher’s handbook are designed to be used within the general education setting and within special education classrooms.

Definition of Terms

The following terms are found within the literature review. Their definitions will help the reader gain a better understanding of the information presented in the literature review and handbook.

Active Teaching

When the material and/or expectation is directly taught to the students through discussion, modeling, demonstration, and practice (DuPaul & Weyandt, 2006).
ADHD – Attention-deficit/Hyperactivity Disorder

ADHD is a neurobehavioral developmental disorder that is characterized by a persistent pattern of impulsiveness and inattention, with or without a component of hyperactivity (American Psychiatric Association [APA], 2000).

Antecedent Based Strategies

Intervention strategies that manipulate the events in advance of the target behavior to prevent it from taking place (DuPaul & Weyandt, 2006).

BASC - Behavior Assessment System for Children

The BASC is a broadband rating scale that measures adaptive and problem behavior in children and adolescents (Reynolds & Kamphaus, 2004).

Behavior Management

They are typically identified as strategies that focus on maintaining order in an environment (e.g., a classroom). It includes all of the actions and conscious inactions that increase the probability of the replacement behavior (DuPaul & Weyandt, 2006).

Broad Band Rating Scale

These rating scales are measures that assess multiple clinical diagnostic areas (Sattler & Hoge, 2006).

BSP – Behavior Support Plan

An action plan, delineating what a team has determined to do when a problem behavior is occurring (Sattler & Hoge, 2006).
CBCL – Child Behavior Checklist

A rating scale that measures internalizing-externalizing problems and provides DSM oriented scales for children and adolescents (Achenbach & Edelbrock, 2001).

Conner's Rating Scale (CRS)

The CRS is a narrow band rating scale that assesses ADHD type behaviors in children and adolescents (Conners, 1997; 2007).

Consequent Based Strategies or Contingency Management

Both terms refer to intervention strategies that manipulate the events (i.e., provide reinforcing or punishing consequences) after behavior occurs to promote specific behaviors (DuPaul & Weyandt, 2006).

DSM-IV-TR – Diagnostic and Statistical Manual for Mental Disorders, Fourth Edition, Text Revision

A manual published by the American Psychiatric Association that provides diagnostic criteria for mental disorders. It is used in the United States and in varying degrees around the world, by clinicians, researchers, psychiatric drug regulation agencies, health insurance companies, pharmaceutical companies and policy makers (APA, 2000).

Functional Analysis

An assessment procedure used to determine the relationships between the variables controlling the target behavior in order to modify these behaviors (Sattler & Hoge, 2006).
**Multi-Modal Treatment**

This ADHD treatment approach includes a combination of academic accommodations, behavioral strategies, and medication (DuPaul & Weyandt, 2006).

**Narrow Band Rating Scale**

These rating scales are measures that assess one specific clinical diagnostic area (Sattler & Hoge, 2006).

**On-task Behavior**

The student is actively engaged in learning or is doing what is expected of him or her.

**Reinforcer**

This term refers to a behavioral consequence that increases the probability of a desired response by being applied following the desired response (Sattler & Hoge, 2006).

**Replacement Behavior**

This term refers to the functional and more appropriate behavior that is replacing the unwanted, or target behavior (Sattler & Hoge, 2006).

**Response-Cost**

This term refers to intervention strategies that incorporate negative consequences into the token economy (DuPaul & Weyandt, 2006).
Self-monitoring

This is an intervention in which the student keeps track of his behavior on charts or tables (DuPaul & Weyandt, 2006).

Semi-Structured Interview

An interview in which the interviewer follows some guidelines and guides the interview in a certain direction, but still allowing the interviewee to speak freely (Sattler & Hoge, 2006)

Structured Interview

This term refers to an interview that is designed to increase reliability and validity of traditional diagnostic procedures (Sattler & Hoge, 2006).

Target Behavior

This term refers to the problem behavior that is being addressed and replaced with a more functional and appropriate behavior (Sattler & Hoge, 2006).

Token Economy

This is an intervention system in which you provide immediate reinforcers in the form of tokens or points for meeting expectations (DuPaul & Weyandt, 2006).

Unstructured Interview

This is an interview format that allows the interviewees to speak freely with little guidance from the interviewer (Sattler & Hoge, 2006).
Limitations

This project identifies interventions that are research based and empirically supported. There are many interventions used within the classroom setting that may be effective with students who have been diagnosed with ADHD that do not presently have research supporting them and therefore are not included in the handbook. Nor does the handbook contain interventions that are beyond the scope of the classroom. Even though the interventions are research based, it does not guarantee that they will work for all students diagnosed with ADHD. Nor does it guarantee that a student with ADHD will be successful by applying all the classroom interventions presented in the handbook. The most effective treatments for ADHD are often multi-modal and include the input of parents, psychiatrists, and physicians.

Organization of the Project

This project is organized in the following way. Following the current introductory chapter, chapter 2 offers the literature review. Its subtopics are ADHD diagnostic criteria; etiology; diagnosis of ADHD; the effect of ADHD on school, social, and home functioning, and general intervention strategies. Chapter 3 briefly reviews the methodology used to develop this project, and chapter 4 offers conclusions and recommendations. The Appendix will contain the handbook, Strategies for Success: Classroom Modifications and Accommodations for Students with Attention deficit/Hyperactivity Disorder, which provides teachers with classroom-based interventions for students with ADHD.
Chapter 2

REVIEW OF RELATED LITERATURE

What is Attention-deficit/Hyperactivity Disorder?

According to the most recent version of the *Diagnostic and Statistical Manual for Mental Disorders* (DSM-IV-TR), children diagnosed with ADHD must show at least six disruptive and inappropriate symptoms of inattention and/or hyperactivity-impulsivity for at least six months. Some of these symptoms must have been present before age 7 and must occur in at least two settings (school, home, etc). The child’s symptoms must cause significant impairment in social, school, or work functioning. They also must not be better accounted for by another mental disorder (American Psychiatric Association [APA], 2000).

*ADHD Subtypes*

The *DSM-IV-TR* recognizes three subtypes of ADHD: Combined type, Predominately Inattentive Type, and Predominately Hyperactive-Impulsive type. Children diagnosed with the combined type, exhibit at least six symptoms of inattention and six or more symptoms of hyperactivity and impulsivity. Predominately inattentive children must display six or more inattentive symptoms and less than six hyperactive-impulsive symptoms. Children diagnosed with predominately hyperactive-impulsive ADHD, must possess at least six of the hyperactive-impulsive symptoms with less than six inattentive symptoms (APA, 2000).
ADHD Symptoms

The symptoms in Table 2.1 are considered diagnostic in the DSM–IV–TR. (APA, 2000, pp. 92-93).

Table 2.1. DSM–IV–TR Symptoms of Attention-deficit/Hyperactivity Disorder

<table>
<thead>
<tr>
<th>Inattention</th>
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<tr>
<td>1. Often does not give close attention to details or makes careless mistakes in schoolwork, work, or other activities.</td>
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<tr>
<td>2. Often has trouble keeping attention on tasks or play activities.</td>
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<tr>
<td>3. Often does not seem to listen when spoken to directly.</td>
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<tr>
<td>4. Often does not follow instructions and fails to finish schoolwork, chores, or duties in the workplace (not due to oppositional behavior or failure to understand instructions).</td>
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<tr>
<td>5. Often has trouble organizing activities.</td>
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<tr>
<td>6. Often avoids, dislikes, or does not want to do things that take a lot of mental effort for a long period of time (such as schoolwork or homework).</td>
</tr>
<tr>
<td>7. Often loses things needed for tasks and activities (e.g. toys, school assignments, pencils, books, or tools).</td>
</tr>
<tr>
<td>8. Is often easily distracted.</td>
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<tr>
<td>9. Is often forgetful in daily activities.</td>
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Hyperactivity

1. Often fidgets with hands or feet or squirms in seat.

2. Often gets up from seat when remaining in seat is expected.
3. Often runs about or climbs when and where it is not appropriate (adolescents or adults may feel very restless).

4. Often has trouble playing or enjoying leisure activities quietly.

5. Is often "on the go" or often acts as if "driven by a motor".

6. Often talks excessively.

Impulsivity

1. Often blurts out answers before questions have been finished.

2. Often has trouble waiting one's turn.

3. Often interrupts or intrudes on others (e.g., butts into conversations or games).


ADHD: Predominately inattentive type. Children diagnosed with the predominately inattentive type of ADHD often do not show any impulsivity or hyperactivity, and on the contrary may be considered “sluggish” (McBurnett, Pfiffner, & Frick, 2001). Barkley, DuPaul, and McMurray (1990) found evidence that these inattentive children may have more problems with memory tasks and processing speed than do hyperactive-impulsive students. There has been speculation that these students may have a greater incidence of learning disabilities than do their hyperactive-impulsive counterparts (Barkley et al., 1990). These students often struggle to maintain attention, remain alert, avoid distraction, and show persistent effort (Barkley, 1998). In the
classroom, these students are often seen daydreaming or staring off in class and struggle to focus on the lesson, causing them to fall behind academically.

**ADHD: Predominately hyperactive-impulsive type.** Children with the predominately hyperactive-impulsive type of ADHD may not show any signs of inattention. Most children diagnosed with this subtype are in preschool or the early years of elementary school, causing some speculation that this diagnosis may develop into the combined type of ADHD in later years (DuPaul & Stoner, 2003). Hyperactive children present with excessive movement patterns and high levels of activity. These children are often described in the literature as being "driven by a motor" or "always on the go." In the classroom, these students are often out of their seats, yelling out answers, making noises and playing with objects. They are often extremely disruptive to a classroom and may frequently get into trouble. Hyperactivity and impulsivity often go hand in hand for these children. Impulsivity typically manifests itself in an inability to inhibit responses and delay gratification and is often considered the hallmark of ADHD. In the classroom, this is often exhibited by providing answers before hearing the whole question, starting assignments before receiving directions, and taking short cuts to complete work as quickly as possible (Barkley, 1998).

**ADHD: Combined type.** Children with the combined type of ADHD show hyperactivity, impulsivity and inattention. They typically have higher rates of aggression, non-compliance, and peer rejection and are therefore more likely to be diagnosed with comorbid behavior disorders. These students are also more likely to be classified as emotionally disturbed and typically have higher numbers of school suspensions. They are
also more likely to receive mental health services than their predominantly inattentive counterparts. In the classroom, these students usually stand out as being disruptive, exhibiting the characteristics of both of the aforementioned subtypes. It is suspected that these students may have a poorer outcome than do students exhibiting the other two subtypes (DuPaul & Stoner, 2003).

Prevalence

ADHD is one of the most common childhood disorders. Approximately 8.4% of children ages 6- to 17-years have been diagnosed with ADHD (Pastor, 2008). This percentage means that at least one child in every classroom will have the disorder. Boys seem to be diagnosed with ADHD far more frequently than girls. Estimations range from six boys diagnosed to every girl to three boys to every girl (Pastor & Reuben, 2002). It may be that the increased frequency with which boys are diagnosed is due to their typically more disruptive and aggressive behavior patterns in the school setting (Hartung et al., 2002). Of the children with ADHD diagnoses, it is estimated that more than half are taking psychotropic medications, while 12% receive special education services and 34% receive mental health services (Pastor & Reuben, 2002). Figure 2.1, obtained from the Center for Disease Control, illustrates the percentage of children diagnosed with ADHD by age, sex, and medication status.
Figure 2.1. Male versus female prevalence rates as well as prevalence of ADHD by state (CDC, 2005, p.845). This work is in the public domain.

**Etiology**

ADHD is thought to have multiple causes (Barkley, 2002). Various theories exist about its etiology, but most are based on correlational research and do not show any specific causal relationships. Most theories of ADHD’s etiology can be classified under the following categories: neurological factors, hereditary factors, and environmental toxins (DuPaul & Stoner, 2003).

**Neurological factors.** Neurological factors have historically been considered the most likely of the possible etiologies. In the early years, brain damage was thought to be the single cause of ADHD, as the disorder was once termed “Minimal Brain Damage”
Some studies have suggested that children with ADHD have structural brain damage that interferes with the child’s attention and behavioral control. Magnetic resonance imaging and positron emission tomography studies have found structural differences and possible abnormalities in the brains of ADHD children. The section of the brain that has received the most attention is the prefrontal cortex, which is responsible for inhibiting responses (DuPaul & Stoner, 2003). Other theories posit that neurotransmitters are less prevalent in certain areas of the brain. Much of these theories are based on the premise that psychostimulant drugs such as Ritalin, which reduce ADHD symptoms, increase the dopamine and norepinephrine in the brain. From these studies, it is assumed that neurological differences in the brains of children with ADHD are due to problems in normal brain development caused by genetic or environmental influences (Schneider, Retz, Coogan, Thome, & Rosler, 2006).

**Hereditary factors.** There is also strong evidence supporting a hereditary etiology of ADHD. Support for this theory includes the higher rate of ADHD symptoms in immediate family members of children with ADHD as compared to children without the disorder (Faraone, 2000). Adoptive studies have also shown that even when adopted at an early age, children diagnosed with ADHD tend to have more biological family members than adoptive family members with ADHD (Van der Oord, Boomsa, & Verhulst, 1994). Twin studies further support this theory in that monozygotic twins have significantly higher concordance rates of ADHD as compared to dizygotic twins (Levy, Hay, McStephen, Wood, & Waldman, 1997). ADHD is thought to be one of the most heritable emotional or behavioral disorders (Barkley, 1998). Molecular genetic studies are seeking
to identify the specific genes associated with ADHD. The most important finding thus far is that differences have been detected between the dopamine receptor genes of children diagnosed with ADHD and children without the diagnosis (Comings et al., 2000).

*Environmental toxins.* Toxins in the environment have also been correlated with ADHD. Lead toxicity has received a great deal of attention; however, only 38% of lead poisoned children are hyperactive and many children with ADHD have not been exposed to lead (Barkley, 1998). Prenatal exposure to alcohol and cigarette smoke is another factor linked to ADHD. Significant relationships have been found between maternal smoking and smoking during pregnancy, and later development of ADHD (Mick, Biederman, Prince, Fischer, & Faraone, 2002). Attention has also been given to the role of food additives in ADHD. However, most studies have found minimal correlations between diet and ADHD (Eigenmann & Haenggeli, 2004). While there is some correlation between environmental toxins and ADHD, the casual relationship is assumed minimal (Du Paul & Stoner, 2003).

*Prognosis*

While ADHD was formerly believed to be a childhood disorder that would be outgrown, studies have suggested that children with ADHD often continue to display symptoms into adulthood (Barkley, Fischer, Smallish, & Fletcher, 2002). Although the frequency and intensity of symptoms decrease in the teenage years, the behavior of their non-ADHD counterparts also improves, maintaining a discrepancy in behavior (Barkley, 1998). Many teenagers with ADHD struggle with adjustment and behavioral problems (DuPaul & Stoner, 2003). Over 60% are estimated to show defiance and non-compliance
with authority and rules (Biederman et al., 1997). Forty percent of children with ADHD exhibit antisocial behaviors such as fighting, stealing, and vandalism (Barkley, 2005). These students are at a higher risk for grade retention, suspension, school dropout, and substance abuse. According to Barkley et al. (2002), over half of children diagnosed with ADHD will show some symptoms into adulthood. It is estimated that almost one third of these students will not finish high school, only 5% will receive a college degree, and 25% will develop chronic antisocial behavior that will carry in to adulthood (Du Paul & Stoner, 2003). It is estimated that 60% of children with ADHD will still meet the diagnostic criteria in adulthood (Biederman et al., 2006) and only one third of children with ADHD will be symptom-free adults (Barkley, 2005). In the United States, approximately 4% of adults 18-44 years of age have ADHD (Kessler et al., 2006).

Diagnosis of ADHD

The diagnosis of ADHD should be a multi-faceted process relying on many different measures (Brock, 1999; Brock & Clinton, 2007). There is no one measure that will reliably diagnose ADHD, but instead information should be gathered from various sources and combined to determine a diagnosis.

Assessment Measures

The diagnosis of ADHD is a multi-faceted process that integrates information from multiple sources. Parent interviews, teacher interviews, child interviews, observations, rating scales, psycho-educational assessments, record review, and medical evaluations are all important pieces of a complete ADHD evaluation (Barkley, 2005).
Interviews. Parent, child, and teacher interviews are crucial methods used in the diagnostic process. The parent interview is an important piece of the puzzle, as parents typically spend the most time with their child and know him or her best. In the same vein, it is important that the information gathered from parents be considered with caution as parents may be biased about their child’s behavior (Barkley, 1998).

Teacher interviews are also useful to determine how the child is performing in school compared to his or her same age peers, as well as how the child’s behavior affects his or her ability to learn (DuPaul & Stoner, 2003). Interviews with the child can also be useful, but it is important to consider that children younger than 9-12 are typically not accurate reporters of their own behavior (Barkley, 1998). Interviews may be conducted in a structured, semi-structured, or unstructured format. Questions considered in the interview process often focus on symptomology, age of onset, family history, and the presence of learning or interpersonal difficulty (Brock & Clinton, 2007).

Rating scales. Rating scales are commonly given to parents, teachers, and older children to assess the child’s behavior and functioning. These scales seek to determine the presence of symptoms, level of functioning, deviance of behavior compared to peers, and environmental or setting factors (Brock & Clinton, 2007). Broadband rating scales such as the Child Behavior Checklist (Achenbach & Edelbrock, 2001) or the Behavior Assessment System for Children (Reynolds & Kamphaus, 2004) may be used along with narrow band measures, which focus primarily on ADHD symptomology such as the Conners’ Rating Scales (Conners, 2007). Like interviews, these results should be interpreted with caution, as they may be biased.
**Observations.** Direct observations are often one of the best ways to gather information about the child’s behavior. Multiple observations should be conducted, ideally in different settings (i.e., math, recess, independent work, direct instruction, etc.; (DuPaul & Stoner, 2003). Information from observations may be gathered anecdotally or in a more structured coding system format such as the ADHD School Observation Code (Gadow, Sprafkin, & Nolan, 1996) or the Behavior Observation of Students in Schools system (Shapiro, 2003). Observations can help the examiner determine how the child performs in their natural environment and if they demonstrate skill deficits because of ADHD-like behavior (Brock & Clinton, 2007).

**Psycho-educational testing.** Cognitive, achievement, and processing tests can shed more light on the child’s intellectual ability, current educational performance level, as well as assess how well he or she performs on measure of attention. From these test results, the examiner can consider if the student is achieving at a level commensurate with his or her ability. These test data can also help to identify what role attention may play in learning. In addition, psycho-educational testing can help determine if the child has any comorbid conditions or learning disabilities (Brock & Clinton, 2007). Commonly used psychological assessments for ADHD include the Conners’ Continuous Performance Test (Conners, 2004), the Wisconsin Card Sorting Test (Heaton, Chelune, & Tailey, 1993), the attention concentration index of the Wide Range Assessment of Memory and Learning (Sheslow & Adams, 2003), the attention index of the Children’s Memory System (Cohen, 1997), and the Cognitive Assessment System (Das & Naglieri, 1997). Although these assessment measures can provide useful information, they are not
able to solely rule out or diagnose ADHD and should be used with other measures (McGee, Clark, & Symons, 2000).

*Record Review.* Reviewing the student's cumulative file and work samples are effective ways to gather more information (Brock & Clinton, 2007). When reviewing school records, it is important to look for qualitative information about the child's performance and behavior such as teacher comments on report cards and discipline records. Work samples can also provide evidence of how the child's symptomology affects his educational performance and ability to learn (DuPaul & Stoner, 2003).

*Medical evaluation.* A medical or psychiatric evaluation is often a part of ADHD diagnosis. A medical interview should include an in depth questioning of the child's genetic, developmental and health background, and current functioning. It is imperative that a differential diagnosis is made between ADHD and other medical conditions such as head trauma, cerebral-vascular diseases, or central nervous system infections. In addition, comorbid conditions should be identified and diagnosed to ensure proper treatment and avoidance of contraindicated medical treatments. A physical exam is also typically performed to determine proper development and rule out other contributing conditions, neurological insults, and abuse. It is imperative that the medical examination of children suspected to have ADHD be thorough to ensure proper diagnosis and effective treatment (Brock & Clinton, 2006).

*Role of School Professionals.* School psychologists typically have the best access to children in their educational environment, where children with ADHD tend to struggle most (DuPaul & Stoner, 2003). School psychologists have the ability to review records,
conduct interviews, give rating scales, and make observations of the child within the learning environment. They also have access to the child’s peer group who may serve as a comparison in determining the deviance of a child’s behavior. Although they are not given sole diagnostic power, school psychologists are clearly an integral part of the ADHD diagnosis and should work with the child’s physician, parents, school professionals, and clinical professionals to determine the best course of action for the child.

Effect of ADHD on Student Functioning

A child’s ability to function in his or her daily life is affected by the symptoms of ADHD within the school, home, and with peers. Due to this impact, students with ADHD are at risk for developing significant difficulties with academic underachievement, noncompliance, aggression, and peer relations (DuPaul & Stoner, 2003).

Effect in the Schools

The effect of a student’s ability to function in the classroom and in the school environment can be seen both behaviorally and academically. As children with ADHD grow into young adults, they have a higher risk for chronic academic failure with high grade retention and school drop out rates when compared to their non-ADHD peers (DuPaul & Stoner, 2003). By the time these students are in their adolescence, close to half have failed at least one grade level in school (Barkley, 2005). Low rates of work completion are thought to contribute to the academic underachievement and performance problems that up to 80% of children with ADHD exhibit (DuPaul & Stoner, 2003).
Research by DuPaul and Weyandt (2006) suggests that children with ADHD also tend to have significantly lower rates of on-task behavior. Lower rates of on-task behavior and work completion make it difficult for the children to learn and practice the skills needed to be academically successful.

Many students with ADHD have behavior challenges in the school as well as academic difficulties. As recognized by Barkley (2005), symptoms of ADHD, such as hyperactivity, impulsivity, and inattention are often disruptive to the classroom environment and learning process. When students display these types of behaviors, they often are given verbal reprimands or removed from the classroom (DuPaul & Weyandt, 2006). As the students continue their academic careers and move through adolescence, they are three times as likely to have been suspended or expelled from school as students who do not have ADHD. Furthermore, close to 35% of students with ADHD will drop out of school before graduating (Barkley, 2005). These statistics highlight the importance of providing effective interventions in the educational setting.

Effect in the Home

A child with ADHD can affect the home environment in many ways. For instance, DuPaul and Stoner (2003) suggest that ADHD can change the relationship between the parent and child and create a need for more direct supervision during tasks such as homework. Close contact with a doctor and the school may be needed to keep the child healthy and developing appropriately (DuPaul & Stoner, 2003). For the family with a child with ADHD, Barkley (2005) states that the interactions between parents and children, as well as children and their siblings may be more stressful and negative.
Furthermore, the biological predisposition for ADHD may also affect family interactions and dynamics. Research reported by Barkley (2005) suggests that there is around a 40% chance that a child with ADHD will have at least one parent with ADHD as well.

The need for close supervision during tasks and activities affects family interactions and the home environment. Barkley (2005) found that children with ADHD are less compliant, more likely to be off-task, and less able to comply with directives given by their mothers. These behaviors will likely influence the ability and way the family makes demands of the child in the home.

A child with ADHD may display aggressive behaviors as well. Aggressive behaviors that have been found to increase the risk for interpersonal conflict at home in children with ADHD include defiance or noncompliance with authority figure commands, poor temper control, and argumentativeness (DuPaul & Stoner, 2003).

Effect with Peers

Students who display ADHD symptoms tend to have difficulty with peer relations. This difficulty affects their ability to function socially when engaging with their peers. Research conducted by Guevremont in 1990 states that some of the challenges students with ADHD have in social situations include inappropriate attempts to join ongoing group activities, poor conversational skills and strategies, and use of aggressive problem-solving strategies.

Barkley (2005) reports that the challenges children with ADHD face in social situations start during the early school years and continue in a pattern of social rejection. They are often not successful in activities like scouts, school clubs, or sports. As the
children get older, the social difficulties tend to become an established pattern of behavior. Research conducted by Milich and Lorch (1994) and reported by Barkley (2005), states that around preadolescence, about 25% of children with ADHD have problems with fighting with their peers and around 30-50% show symptoms of antisocial behavior.

However, research by Stormont and Stebbins (2001) showed that many times students with ADHD could explain what the appropriate social skills in a situation are, but are unable to use them. This suggests that the social skills difficulties students with ADHD have may be due to social performance difficulties rather than true social skills deficits (DuPaul & Stoner, 2003).

**General Intervention Guidelines**

Given the effect of ADHD on functioning, there is a need for effective psychosocial interventions to treat the disorder. Students with ADHD have been found to benefit from interventions to help them academically, behaviorally, and socially. The interventions described in this project have been found to be effective in helping students improve in these areas. Each intervention is supported by or based on research showing its efficacy.

Fabiano and Pelham (2003) conducted a case study to demonstrate how to improve the effectiveness of classroom interventions for ADHD. Research cited in this study reports that most teachers report using some modifications in their classrooms for students with ADHD. Reid, Masa, and Wright (1994) found that 72% of teachers
reported using behavior modifications with their students who have ADHD. In a similar study, 81% of general education teachers reported using behavior modification procedures (Fabiano, Pelham, Pisecco, Hannah, Evans, Manos, et al., 2001). Despite the large percentage of teachers using behavior modification, many students with ADHD still struggle in the classroom. Fabiano and Pelham (2003) suggest that this may be due to their lack of training and knowledge on how to effectively modify, individualize, and implement interventions.

In a study by Nowacek and Mamlin (2007), general education teacher practices regarding modifications for students with ADHD in their classrooms were investigated. The study used a multiple case study design and included teachers who were identified by their principal as being effective, had taught for at least 5 years, and currently had students with ADHD in their classes. Teachers from the primary and upper elementary grades were included and all had participated in staff development within the 5 years prior to participation. The four teachers selected to participate were given an independent semi-structured interview that was tape-recorded. The results of this study support the idea that many classroom teachers do not have the knowledge or support to select modifications that are appropriate and specific to the needs of the child. Specifically, teachers were found to make few modifications. Of the modifications they made, there was very little individualization for the unique needs of the students. Teachers were also found to be inconsistent in implementing the modifications. This study suggests that there is a need to provide more information and support to teachers in their attempts to implement modifications in their classrooms that meet student needs (Nowacek &
Mamlin, 2007). With the wide range of needs and available interventions, this project aims to provide empirically based interventions with proven efficacy. For the purpose of this literature review, classroom modifications and accommodations will be divided into two different approaches: antecedent-based and consequent-based (Brock, 1998).

**Antecedent-Based Strategies**

Antecedent-based strategies manipulate the events that precede the target behavior to prevent problematic behaviors. This is also known as setting the student up for success.

*Task modification.* Modification of tasks and expectations have been found to be successful interventions for students with ADHD (DuPaul & Weyandt, 2006). Ervin, DuPaul, Kern, and Friman (1996) conducted a study on the efficacy of task modification for students with ADHD. The task engagement of student with ADHD increased and off-task behavior decreased when tasks were modified. DuPaul and Weyandt (2006) report several different ways a task can be modified to help set the student up for success. For instance, a task can be modified by changing the duration of the assignment through breaking the task into smaller pieces, allowing breaks between sections of work, and reducing the overall length of the assignment.

Flood and Wilder (2002) conducted a single subject design to determine how to improve on-task behavior in the classroom for a student with ADHD. They found that the student was most likely to be off-task during difficult tasks and tasks easy enough to result in boredom. Specifically the student was off task during difficult tasks 66% of the intervals measured and off task during easy tasks 86% percent of the intervals. This study
found that students with ADHD work best when tasks are at their correct level of
difficulty. Tasks that are too easy or difficult often do not sustain their attention and are
not completed.

Tasks can be modified to increase the novelty of the assignment. Novel tasks were
reported to be able to hold the interest and attention of students with ADHD, which
increases their performance levels. Specifically, Milich and Lorch (1994) cite that using
"verbal highlighting" by altering vocal tone and speed and adding pauses for emphasis
was found to increase on task behavior. They also found that using "peculiar" voices
improved the students' attention to the speaker (Milich & Lorch, 1994).

When presenting students with assignments, it is helpful to use color, underline,
bold, or highlight crucial elements of directions and expectations (Zentall, 2005).
Students with ADHD who were given spelling words with difficult to remember or
irregular letters highlighted in color, outperformed students without ADHD when
spelling performance was matched. Coloring the tops of letters for students with ADHD
who have poor handwriting was shown to be effective in improving attention and
handwriting performance. Zentall, Grskovic, Javorsky, and Hall (2000) conducted
research on reading tests when non-informational color is added with 25 third to fifth
graders with and without ADHD. They found that the non-specific use of color should
not be added to a task until the basic task is mastered, as it can serve as a distraction.

A study by Zentall, Cassady, and Javorsky (2001) found that students with ADHD
have greater difficulty understanding stories read to them and answering comprehension
questions about the story. Specifically they found that students with ADHD have greater
difficulty attending to the main elements of the story, predicting outcomes, and providing solutions to problems within the story. However, when children with ADHD were asked to recount information from the story after hearing it, they were able to offer the same amount of solutions to problems within the story. The act of recounting the story improved their ability to comprehend it. This study suggests that prompted recall is effective for improving comprehension, and therefore can be effectively used in the classroom by asking students to repeat or recount important information and instructions.

Another way to modify tasks is to allow students to make choices. Choice-making is the ability to choose from two or more classroom activities to work on at a time. Often the students are given a menu of tasks, developed by the teacher, from which they may choose. However, this study found that it is important that the students are not given so many choices that they have trouble making a decision. This strategy was found to help improve on task behavior and work completion because it is still required the student to perform academic tasks, while giving them some control (DuPaul & Weyandt, 2006).

A similar study by Harlacher, Roberts, & Merrell (2006) found that allowing students to make choices decreases behavior problems in the classroom. The study further states that providing a student with the opportunity to make a choice through a menu of tasks often requires little effort to implement and has been shown to be effective in the classroom environment.

Romaniuk, Miltenberger, Conyers, Jenner, Jurgen, and Ringenberg (2002) evaluated the effects on choice making on student with ADHD displaying behavior problems with functions of escape, attention, and escape and attention. They found that
providing choices substantially decreased the problem behavior of the students escaping their work. No difference was seen for the students seeking attention. Choices were effective for the students escaping work and seeking attention only when they were escaping work. This study suggests that giving students' choices is most effective for students attempting to escape schoolwork.

Another strategy found to be effective in the classroom is computerized instruction. Ota and DuPaul (2002) found that computer assisted instruction was effective in improving math scores for students with ADHD. Their study used a game-like math computer program. Research by Clarfield and Stoner (2005) found that by using computerized instruction, students with ADHD improved their oral reading fluency and on-task engagement. They found that students who used a computer-based reading program three times per week for 20-30 minutes per session improved their oral reading fluency up to 4.05 words per minute. In addition, off-task behavior decreased by an average of 29%. While the study acknowledges that the results that they found were preliminary, it is consistent with Ota and DuPaul's (2002) research which also found computerized instruction to be effective for students with ADHD who were having academic difficulties (Clarfield & Stoner, 2005).

*Environmental modifications.* Because students with ADHD are easily distracted, it is helpful to eliminate irrelevant cues and distractions from the education environment (Barkley, 1998). Playing non-lyrical music during academic tasks has however, been found to be increase productivity and accuracy for students with ADHD. Students with ADHD performed more math problems and were more accurate when music was playing.
In contrast, students with ADHD did not show any difference in performance when music was played (Abkikoff, Courtney, Szeibel, & Koppelwicz, 1996).

Students with ADHD often have an increased drive to move around during class. By building physical movement into educational activities, the student with ADHD will be able to move around in a productive manner. Erasing the board, filing, organizing, and taking roll to the office are all useful ways to allow the student to move about the classroom productively. Making students with ADHD classroom helpers is an effective way to do this (Leung, Leung, & Tang, 2000).

Research by Antrop, Roeyers, and De Baecke (2005) found that children with ADHD have more out of seat behavior and are more restless in the afternoon when compared to their same age peers without ADHD. The findings from this study did not support the idea that children with ADHD are more calm and cooperative after active playtime. In contrast, students with ADHD had more difficulty settling down after playtime, especially in the afternoon. The results of this study have specific implications for the classroom. Important academic tasks and tests should be presented in the morning for students with ADHD. Less academic subjects are best scheduled in the afternoon, especially following recess.

Encouraging peer tutoring is a useful way to provide students with ADHD one-on-one attention, instruction tailored to their pace, and immediate feedback. A class-wide peer tutoring system developed by Greenwood, Maheady, and Carta (1991) has been shown to increase on-task behavior and accuracy on assignments (DuPaul, Ervin, Hook, & McGoey, 1998). Du Paul et al. (1998) implemented a study in which a group of
students with ADHD and a group of controls participated in class-wide peer tutoring for one to two weeks for the academic area they were struggling in most. The on-task behavior of students with ADHD increased from a baseline of 29% to 80% during tutoring sessions. Off-task behavior decreased from 24-27% to 6-8% during tutoring. Students with ADHD showed an average increase of 22% in weekly test scores after the implementation of four 20-minute tutoring sessions as opposed to a baseline increase of 13%. Half of the ADHD group showed at least a 10% improvement on post-test scores compared to only 30% of the control group (DuPaul et al., 1998).

Active teaching of classroom rules is also included as an effective antecedent-based intervention. DuPaul and Weyandt (2006) suggest that less than 10% of all school-aged students could accurately state the rules for their classroom when asked during an interview. The use of active teaching of the classroom rules is one way to increase the students’ knowledge of these rules and the expectations for the classroom and school environment. Sprick, Borgmeier, and Nolet (2002) found the following teaching strategies of classroom rules to be effective: provide students with simply worded rules, remind the students of the rules regularly through discussion and demonstration, point out examples of students following rules, and remind students of rules prior to starting a class activity. Sprick et al. (2002) also suggest posting class schedules with clear expectations on the board.

Research by Schillings, Washington, Billingsley, and Deitz (2003) suggests that the use of therapy balls, instead of a chair, is effective for students with ADHD. Therapy balls are large rubber balls, typically used for physical therapy that can take the place of a
chair. Using a therapy ball instead of a chair allows students with ADHD more opportunities for physical movement as they can bounce or roll on their ball. Replacing a chair with a therapy ball effectively increased in-seat behavior and legible word production for students with ADHD. Both students and teachers reported positive effects of using the ball.

Bennett, Zentall, Giorgetti-Borucki, and French (2005) found that students with ADHD respond better to cross-modal feedback. When completing visual tasks, students respond best to verbal feedback and vice versa. Students with ADHD were found to perform less accurately on visually presented math problems when the answers were also provided visually. However, they performed as well as their non-ADHD counterparts when math problems were presented verbally and the answers were provided visually. Bennett et al. (2005) posit that when information and feedback are provided by the same medium to students with ADHD, feedback may overlap the task stimuli, causing difficulty in discerning one from the other. Cross-modal feedback allows students with ADHD to differentiate feedback from the task at hand. Feedback is most effective when it is immediate (Bennett et al, 2005).

Skills training. An additional intervention strategy that has been researched is organization and homework skills training. Research has been conducted by Langberg, Epstein, Vrbanowicz, Simon, and Graham (2008) to look into how organization skills training can improve academic functioning in students with ADHD. Students in the study participated in an 8-week organization and homework intervention. Classes met twice per week for 75 minutes each. Specific topics covered include physical organization of
materials, accurate recording of homework, and planning for tests and projects. An
organizational checklist was created to help students organize their backpacks, binders,
and lockers and evaluate their progress. They were also expected to record their
homework in a planner and get a teacher signature. At the end of the treatment, students
improved their organization skills, as evaluated by the checklist, up to 60% and improved
their planner use by 40%. In addition, the treatment group significantly improved their
grade point average. The study suggests that many of the deficits in organizational and
planning skills found in students with ADHD relate to academic difficulties. The results
of the study support the idea that providing students with organizational skills training
will help them in their academic functioning. The students in the study made
improvements in organization and homework management skills that remained consistent
at a follow up eight weeks after the training. While this study provides support for the
effectiveness of organization training as an intervention for students with ADHD, the
researchers note the need for continued studies before a more reliable generalization can
be made.

Social skills training for students with ADHD has been shown to have mixed
efficacy. The most effective programs are those in which students set and monitor goals
related to their newly learned skills (Rief, 2005). Antshel and Remer (2003) evaluated the
effects of social skills training for children with ADHD. Children were given 8 weeks of
social skills training focusing on cooperation with peers, problem solving, controlling
anger, assertiveness, conversations, and accepting consequences. During group meetings,
the previous week’s skill was reviewed followed by an introduction to the new skill. The
group then did an activity related to the skill, the therapists modeled the skills, the children role-played the skills, and the session concluded with a free play activity using the skill learned. Although the study found limited efficacy overall, there are two important conclusions that can be made. First, assertion skills training appeared to be effective for the children in the study, as significant improvements were rated by their parents. The study also found that groups that are diagnostically heterogeneous are most effective, as they allow students without ADHD to serve as models of appropriate behavior.

Explicit "attention training" sessions can also be effective for students with ADHD. Semrud-Clikeman, Nielsen, Clinton, Sylvester, Parle, and Conner (1999) conducted attention-training sessions for students with ADHD. The training group met for 60 minutes twice a week for 18 weeks. Students were grouped in four or five by age. They plotted their progress weekly and set goals. Visual attention was measured by finding a target among distracters. Auditory attention was measured by counting targets presented on a cassette tape. Guidance on effective strategies and ways to improve performance was provided. Results showed significant gains in both visual and auditory attention. The results of this study suggest that students with ADHD can improve attention with explicit instruction and practice.

Training parents on effective homework interventions has been shown to be useful for ensuring that students with ADHD have consistent homework routines with limited distractions (Anesko & O'Leary, 1982). Parent training has also been useful in improving the school-home connection and allowing parents and teachers to work as a
team (Habboushe et al., 2001). Hook and DuPaul (1999) conducted a study on parent tutoring for students with ADHD. Parents were trained in tutoring their child. Behavior management techniques, reinforcement, timing and videotaping, and specific procedures for tutoring were taught. All parent tutoring sessions were videotaped to ensure treatment fidelity. Student performance was evaluated by reading probes given at home, curriculum-based measures (CBM) given at school, teacher ratings of academic performance, and student’s rated their attitude toward reading. All students showed an increase in words read per minute as evaluated by the home reading probes and CBM probes. Students also showed a slight improvement in their attitudes toward reading. This study suggests that training parents to tutor their children can be an effective way to improve reading performance.

Consequent-Based Strategies

Consequent-based strategies manipulate the events that occur after the target behavior. These interventions are also known as ways to encourage appropriate behavior. According to DuPaul and Weyandt (2006), two of the most common consequent-based strategies used in a school setting are verbal reprimands or removal from the classroom. However, the sole use of these strategies has been found to be rarely effective for students with ADHD. Instead, research supports the use of token economies, response cost, and self-monitoring strategies as more effective approaches. This project describes ways to increase the effectiveness of some interventions commonly used in the classroom as well as includes new approaches that can be tried.
Verbal Reprimands. Research conducted by Pfiffner & O’Leary (1987) more recently substantiated in DuPaul and Weyandt (2006) about commands given to students, suggests that students are most likely to attend to the commands that are given in a straightforward, declarative manner rather than as a request or question. The study found that to be the most effective, a command should be delivered without potential distracters and when eye contact has been made. Research on the effective use of reprimands by Curran (2006) found that pairing a direction to stop engaging in a problematic behavior with a direction to start engaging in an appropriate behavior is more effective than a verbal reprimand alone. For this strategy to be successful, teachers should pause between delivering the reprimand and instructing the student to engage in the appropriate behavior. These studies acknowledge the limitations that using verbal reprimands and commands have in changing behavior, however, the results found may be useful in increasing the effectiveness of interventions that are already being used in the classroom.

Token Economies. Research conducted by DuPaul and Weyandt (2006) also suggests that the use of a token economy system can be an effective intervention in the classroom. The intervention is a way of providing the students with immediate reinforcers in the form of points or tokens for meeting behavioral or academic expectations, which can be exchanged for reinforcers that are more powerful later. This approach works to help change how students with ADHD respond to environmental events through immediate contingencies.

A case study conducted by Higgins, Williams and McLaughlin (2001) supports the effective use of a token economy system in the classroom. The participant was a 10-
year-old male student who had high rates of disruptive behaviors. The student was a member of an integrated classroom with a certified teacher and a teaching assistant. For this study, three behaviors were examined: out of seat, talking out, and poor seat posture. The study used a multiple baseline design across behaviors to collect data. During the intervention period, a token economy system was used. From the observational data collected, a functional relationship between using a token economy system and a decrease in target behaviors was found. The lower incident rate and overall decrease of inappropriate behaviors support the effectiveness of the token economy system used in the classroom during this case study.

Another study on the effectiveness of using a token economy system in the classroom was conducted by Self-Brown and Matthews (2003). The study examined how class structure influenced achievement. For this study, three elementary school classes were randomly assigned to the token economy, contingency contract, or control conditions. Seventy-one fourth and fifth grade students participated in the study. The students in all conditions were required to set weekly goals and success was determined through meeting of those goals. The data for the token economy system condition found that while the students met both performance and learning goals, they met more performance goals than learning goals. The results of this study suggest that using a token economy system can help students meet performance goals in a classroom.

DuPaul and Weyandt (2006) also provide support for the effectiveness of an intervention that incorporates negative consequences into the token economy system. This is considered a response cost strategy. In a response cost program, the points or
tokens that the student has earned towards reinforcement can be taken away for displaying the problem behavior. DuPaul's research states that students who have ADHD often have low frustration levels. Due to this, the study found that it is important that the students are given the opportunity to earn points back by displaying appropriate behavior and that they are given the chance to earn more points than the amount that is taken away. The use of a response cost program is reported to increase on-task behavior, productivity, and academic accuracy for students with ADHD (DuPaul & Weyandt, 2006).

Research by McGoey and DuPaul (2000) compared the effects of a token economy system to a response cost system in reducing disruptive behaviors. The study included four participants with ADHD. A peer comparison from each class was observed to determine the expected behavior in the classroom. Random 20-minute direct observations were conducted around three times a week during the study. A 15-second partial interval recording system was used to collect data on inappropriate behaviors. Rating scales were also collected throughout the study. A reversal design was used to conduct the interventions of token economy and response cost systems. From the data collected, the authors found that the token economy and response cost system were associated with reductions in disruptive behaviors. The disruptive behaviors displayed were reported to be similar to the comparison peers in their classroom.

Daily Report Card. A review of research was conducted by Chafouleas, Riley-Tillman, and McDougal (2002). The study makes note of the limited research available on daily reports cards and what is needed to make them effective in the classroom. In order to gain some more information, this study specifically looked how important
accuracy and reliability are when using daily behavior report cards from the data reported. The review found that when the ratings are compared to observational data, there is an increase in the amount of work completed and a decrease in behavior challenges. When no observational data is used to ensure the accuracy of the daily report card, no changes were reported. Therefore, the study suggests that effectively using daily report cards is related to the accuracy of ratings of the students. To determine the importance of reliability, the study compared data on inter-rater reliability. The data on inter-rater reliability ranged from around 78-90% for teachers. The authors further note that teacher ratings can be variable based on individual perceptions or possible bias, which may result in problems having reliable ratings given on the daily report card.

Further research was conducted by Chafouleas, Riley-Tillman, Sassu, LaFrance, and Patwa (2007). In this study, the uniformity of on-task data from multiple raters using a daily behavior report card or direct observation was explored to gain a better understanding of the reliability in using daily behavior report cards. Three elementary general education teacher-student dyads were included in this study. The teachers who participated were women with three or four years experience teaching while the students were males who received some type of modification or accommodation in the school. The teachers were given training on protocol and practice rating before the study began. After a baseline period, each student was met with and informed what a daily behavior report card is and how it would be used to rate their behavior. Next, the intervention phase was conducted. It included five observations per student during which the student was informed that they were being rated and was given feedback on their behavior.
following the intervention observation period. The results found that the daily behavior report card might provide data that is similar to direct observation. Through the data collected and the results of the study, the authors noted some reasons they found the daily behavior report cards to be more useful than direct observation. For example, the study states that using a teacher rated daily behavioral report card uses less resources, which are often limited in the school environment. Additionally, it suggests that the data may be more consistent with typical classroom behavior due to the reduction in reactivity effects of an external observer being in the classroom.

**Self-Management.** Many research studies report the effectiveness of using self-management based interventions to help increase self-control of behavior. Reid, Tout, and Schartz (2005) conducted a meta-analysis of the literature for self-management strategies. They include the strategies of self-monitoring, self-monitoring plus reinforcement, self-evaluation and self-reinforcement as interventions that are considered to be self-management or self-regulation. In order meet the criteria for this study, the literature needed to be peer reviewed, published between the 1974 and March of 2003, report observational data, employ quantitative research, and use participants that were under 18 years old and diagnosed with ADHD. These criteria were met by 16 studies and include 51 participants. The study reports that self-regulation can produce improvement in on-task behaviors, productivity, and a reduction in disruptive behaviors (Reid, Tout, & Schartz, 2005).

Harris, Friendlander, Saddler, Frizzelle, and Graham (2005) have also conducted research on self-management interventions. Their study used a multiply-baseline and
across-subject design to help determine if attention and monitoring would have an effect on the behavior of six elementary students with ADHD. This research helps provide support for how these interventions are effective. The study reports that these types of interventions allow the student to continue to engage in a range of tasks and can be carried out with more independence. The study found that the likelihood of experiencing success in this intervention could be increased through using desired outcomes that are valuable to the student. In addition, it was found that feedback that is ongoing, immediate, and given frequently needs to be included for students with ADHD (Harris et al., 2005).

Another study by Ardoin and Martens (2004) continues to provide support for the effectiveness of using self-management interventions. This study included students who were between 9-11 years old and referred by their teacher for behavioral and academic difficulties in the school environment. Rating scales to assess levels of inattention, impulsivity and hyperactivity were given to teachers and a review of school records was conducted. Students that were not rated as having at risk or significant difficulties in the area of attention or those with a history of disabilities not related to attention or hyperactivity were excluded from the study. Four students met the criteria and were included in an ABA withdrawal design study. The participants were exposed to definition training, self-evaluation forms and accuracy training, The study found that self-management interventions are useful when students have the skills to perform the desired behavior, but are not consistent in their performance of them and that they also can provide valuable information about the student’s perceptions of changes in their behavior.
*Time out.* The use of time out has been investigated by Fabiano et al. (2004), who evaluated three time out strategies to determine which was the most effective for students with ADHD. The three treatment conditions evaluated were a 5-minute fixed timeout, a 15-minute fixed timeout, and an escalating and deescalating 5-15 minute time out. Timeouts were given for intentional aggression, intentional destruction of property, and repeated non-compliance. Results of the study showed that time outs significantly decreased problem behavior. All three conditions were found to be effective and there were no significant differences between treatment conditions. From this research, it can be extrapolated that the duration or contingency of timeout is not as important as the act of removing the child from a reinforcing activity itself. This suggests that using a simple five-minute timeout is effective in reducing problem behaviors.

**Conclusion**

The research that has been conducted on interventions strategies for students with ADHD in the classroom has shown some positive results. Many of the studies report finding strategies that can be used to help targeted behaviors and individual needs. While the research findings suggest success can be achieved with many different strategies, it is also important to recognize the limitations the studies have. More research is still needed with the successful intervention strategies that have already been found and new strategies that are emerging. This project used these research findings to help describe and target interventions that have been shown to have good reliability and effectiveness for improving the challenges students with ADHD face.
Chapter 3
METHODOLOGY

The authors searched for research articles on PsycINFO, ERIC, WilsonWeb, PsycArticles, PubMed, and Academic Search Premier between the years of 1982 and 2009. Articles were also accessed through the National Association of School Psychologists (NASP) website. Key terms such as, intervention, classroom, teacher, behavior modifications, behavioral interventions, accommodations, academic, school, functioning, evidence-based, attention deficit hyperactivity disorder and attention deficit disorder, were used to search for the articles. The authors began searching for relevant articles starting in January 2008. Additional relevant information was gathered from textbooks, diagnostic manuals, and law books.

After reviewing the articles, the authors focused on those that were specific to empirically based or empirically informed classroom interventions for students with ADHD; ADHD statistics; and implications related to academic performance for students diagnosed with ADHD. The relevant articles were reclassified under the main headings of the project. Once all the information was reviewed and organized the teachers handbook with evidence-based classroom interventions was created.

The teacher’s handbook, Strategies for Success, was then emailed to a group of general and special education teachers. Each teacher was asked whether he or she thought it was helpful, what changes they would suggest we make to it, and whether it was...
something they would reference when needed. Nine teachers evaluated the handbook. They all found it to be a useful tool and felt that it would be very helpful in working with students with ADHD. Several teachers noted that it was extremely helpful to have a concise, easy to read resource with so much information. Other teachers expressed that they are often unsure where to find effective interventions, making the handbook very helpful to them. Overall, the feedback received was extremely positive. Areas of improvement suggested by teachers included a more “teacher-friendly” explanation of functional assessment and providing examples of common functions of behavior. Changes were made to the handbook to address these concerns.
Chapter 4

CONCLUSIONS AND RECOMMENDATIONS

Students with ADHD are not only found in special education. All classrooms are likely to be affected, as ADHD is the most commonly diagnosed childhood disorder. Students with ADHD are considered at-risk of dropping out of school and having more legal problems due to the higher levels of academic, social, and behavioral difficulties they experience on a daily basis (Evans et al., 2006). They have unique needs that need to be addressed. Many of these needs can be addressed through classroom interventions. The authors have highlighted the classroom interventions that are empirically based or empirically informed. They can be used with all students that present behavioral problems, not just students with ADHD. The interventions are simple to follow and some require very little preparation or implementation time.

School psychologists are encouraged to disseminate information about ADHD. Conducting presentations at school in-services and via consultation are great ways of increasing awareness (Jones & Chronis-Tuscano, 2008). Providing staff members with the handbook provided in this project will add to their knowledge and repertoire of interventions. Research has shown that teachers tend to view students with ADHD more positively and are more receptive to working with them when their knowledge of the disorder increases (Ohan et al., 2008; Sherman et al., 2008; Jones & Chronis-Tuscano, 2008). Awareness of ADHD is not only necessary considering the high prevalence of ADHD, but it is also required by law (30 EC 56339).
As this is a very heterogeneous population, it is not surprising that research has not identified interventions that are proven to work with all students diagnosed with ADHD. It may take a combination of interventions and multiple tries before changes are apparent. A multi-modal intervention plan is best when working with these students. In other words, combinations of medication, behavioral strategies, and educational accommodations have been found to be most effective (DuPaul & Weyandt, 2006). The reader is invited to keep in mind that interventions must be applied consistently to be most effective (Fabiano & Pelham, 2003).

Since there is no one intervention proven to work with every student with ADHD the process of finding a good multi-modal intervention plan can be stressful for teachers, students, and supporting staff. The authors recommend that future research be more specific in identifying interventions that work best with the different populations of students with ADHD. There are students that present with similar challenges and can therefore be grouped together. It would be helpful to have specific interventions that target the different grade levels, ages, and genders.

Not only will it be less stressful to have interventions divided by subgroups, but also the needs of the students are also different. For example, students in preschool are developmentally different from students in high school; each will benefit from different interventions. Likewise, not only are boys and girls different on many levels, it appears that in general ADHD appears to affect boys and girls differently. Therefore, having a set of interventions that are more likely to work with each gender will help decrease the guesswork in deciding which intervention to use. Having evidence based classroom
interventions sub-grouped may help teachers, parents, and students experience less distress due to the menu of interventions that will work with each population of students with ADHD. Therefore, it is recommended that future research be conducted in these areas.
APPENDIX

Strategies for Success Handbook
Strategies for Success: Classroom Modifications and Accommodations for Students with Attention deficit/Hyperactivity Disorder

A Handbook for Educators

Bethany Grove, B.S., M.A.
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Melanie Searls, B.A., M.A.
CLASSROOM INTERVENTIONS FOR STUDENTS WITH ADHD

Introduction

Attention-deficit/Hyperactivity Disorder (ADHD) is one of the most common childhood disorders. There is at least one child in every classroom that has been diagnosed with ADHD (Pastor & Rueben, 2002). In addition to the children who have been diagnosed with ADHD, many students display challenges and symptoms similar to those associated with ADHD. Students with ADHD have been found to have a higher risk for academic failure and behavior problems (DuPaul & Stoner, 2003). Due to the high rate of students in the classroom who have difficulties with inattention, hyperactivity, and impulsivity, it is important that their needs be met through interventions that have been empirically shown to be effective. This handbook includes researched-based interventions that will help students with ADHD related symptoms succeed in the school environment.

General Intervention Techniques

Students with ADHD typically display a core set of symptoms including hyperactivity, impulsivity, and inattention. However, these core symptoms include a wide range of academic, behavior, and social difficulties. Many different interventions may be effective in helping students with ADHD become more successful in the areas that are challenging for them. Due to the numerous possible symptoms and interventions, it is important to identify and define the specific target behaviors before beginning any specific intervention. The use of a functional assessment of the student’s behavior can help
identify the function of the behavior being displayed. A functional assessment is typically conducted by a school psychologist or a behavior specialist with input from the teachers, parents, and observations of the student. The goal of the assessment is to understand why the student is behaving a certain way so that the problem behavior can be replaced by an appropriate behavior that meets the same function. Once the function is known, intervention strategies that are linked directly to that function can be used to increase the effectiveness of the intervention plan being implemented (DuPaul & Stoner, 2003). Intervention plans that are the most effective will include two different behavioral modification approaches. These two approaches include changes to the environment that will help to set the student up for success and changes to the environmental contingencies that can reinforce and encourage appropriate behavior (Brock, 1998). Interventions supported by research for both setting the student up for success and encouraging appropriate behavior are included below.

**Setting Students with ADHD Up for Success**

Setting up the student for success involves modifying the student’s environment, tasks, and expectations to help him or her succeed. The goal is to prevent problematic behaviors before they start.

*Eliminate Distractions*

Because students with ADHD have a difficult time ignoring distractions in their environment, it is helpful to eliminate any irrelevant cues and distractions from the learning environment (Barkley, 1998). Items such as colorful toys, stuffed animals, and
cartoons should be removed from the student's desk and surrounding work area. Auditory distractions tend to be especially troublesome for students with ADHD. It is important to eliminate side conversations and music with lyrics during complex thinking tasks (Zentall, 2005).

**Highlight Relevant Information**

Students with ADHD often have a difficult time separating relevant and irrelevant information. By bolding, highlighting, or underlining crucial aspects of written directions and assignments, students are better able to determine which elements are most important to focus on (Zentall, 2005). Students with ADHD tend to better understand and retain directions or expectations when they are provided with examples or models. Asking students to repeat, recount, or summarize instructions is also an effective way to ensure they understand the task at hand (Zentall, Cassady, & Javorsky, 2001). Oral reading has been shown to produce more accurate reading comprehension than silent reading. Having students read important information aloud will likely increase their understanding of the information (Dubey & O’Leary, 1975). The use of colors can also improve the child’s attention to academic tasks. For instance, children with ADHD have been found to remember more of their spelling words when they are provided in bright colors (Zentall, Grskovic, Javorsky, & Hall, 2000).

**Play Music**

Adding classical or non-lyrical music or sounds during academic tasks can improve the productivity and accuracy of work for some students with ADHD. It is important to note
that music with lyrics often serves as a distraction and can provide opposite results (Abikoff, Coutney, Szeibel, & Kopelwicz, 1996).

**Increase Novelty**

Increasing the novelty and interest level of academic tasks has been shown to improve attention. Teachers can increase novelty in the classroom by bolding important elements of written directions, using bright colors, animation, or different intonations when teaching a lesson (Milich & Lorch, 1994). Students with ADHD respond better to novelty in class lessons such as films, models, projects, and skits than routine lectures and seatwork (Taylor, Kuo, & Sullivan, 2001). Repetitive tasks should be decreased as much as possible, as students with ADHD are most likely to become off task during these tasks (Shroyer & Zentall, 1986).

**Provide Opportunities for Movement**

Activities and lessons that include physical movement have been shown to improve the child’s attention to the lesson. Activities such as games, drills, and even calculator use can be beneficial for students with ADHD. Allowing students to move around the classroom in between lessons or write standing up can be helpful (Pfiiffer & Barkley, 1998). Making a student with ADHD a class helper is an easy way to allow them more opportunities for productive movement while improving their self-esteem. Class helpers can clean white boards, take roll to the office, and pass out papers (Leung, Leung, & Tang, 2000).
Adjust Task Difficulty

Academic tasks should be chosen carefully to match the student's instructional level. Students with ADHD become bored more easily with simple tasks and give up more easily on tasks above their instructional level. It can also help students with ADHD to provide them with work at a graduated skill level. Begin with easy tasks to allow the child to experience success and build confidence then, progress to more complex tasks after a period of practice (Flood & Wilder, 2002). Students often take more ownership of their academic success if they are encouraged to set their own goals relative to their instructional level and not that of their peers (Zimmerman, 2001).

Adjust Task Duration

Reducing the quantity of items or amount of time required for class work in one sitting is effective for students with ADHD. It is also helpful to allow them to take breaks during work periods (DuPaul & Weyandt, 2006). Large projects and assignments should be broken up into smaller measureable parts (Sandoval, 1982). Large assignments tend to be daunting to students with ADHD and they are not sure where to begin. By helping them organize their work into small do-able sections, students are more likely to turn in quality work while improving their self-efficacy. Using fewer words to explain assignments and shorter task directions is also helpful (Zentall & Gohs, 1984).

Adjust Class Schedule

The time of day a difficult task with high attention demands is assigned can also make a difference for students with ADHD. Students with ADHD have been found to work better
in the morning and have a difficult time completing a complex task in the afternoon and evening especially right after recess (Antrop, Roeyers, & De Baecke, 2005).

**Actively Teach Classroom Rules**

Actively teaching students the classroom rules has been shown to increase the knowledge of rules and expectations in the classroom. Skills for actively teaching rules include: providing rules in the simplest words possible, reminding the students of the rules regularly with discussion and demonstration, giving examples of students who are following the rules, and reminding students of the expectation to follow the rules before starting activities (DuPaul & Weyandt, 2006).

**Modify Verbal Reprimands and Commands**

Verbal reprimands are most effective in reducing behavior for students with ADHD when they are delivered privately, immediately following the behavior, and with minimal discussion and affect (DuPaul & Stoner, 2003). Students are most likely to attend to commands when they are delivered in a straightforward, declarative manner rather than as a request or question. Commands should be given with eye contact and supervision should be provided following the command (DuPaul & Weyandt, 2006).

**Provide Opportunities for Practice**

Students with ADHD perform best in school when provided with short repeated exposures of new material. It is helpful to break up long lessons into shorter components and allow the students to master one component through repeated practice before moving one to another component. This ensures the student has mastered all crucial parts of a complex lesson or assignment (Gardner, 1990).
Provide Academic Feedback

Immediate feedback is most effective for students with ADHD. Students with ADHD have been found to respond better to cross-modal feedback. For example, students respond better to verbal feedback when completing visual tasks. Students also tend to do better when response options are available in a format different from the question. For example, when presented with a question orally, students do better when their response options are listed visually. Cross-modal feedback allows students with ADHD to differentiate the information they are receiving about their performance from their task and differentiate the information they are taking in from the information they are putting out (Bennett, Zentall, Giorgetti-Borucki, & French, 2005).

Increase Structure

Students with ADHD respond better to structure and predictability in their classroom routine and activities. These students may benefit from posting a daily schedule on the board and sticking with a consistent day-to-day routine. It may also be helpful to give students advanced notice of changes in the class routine (Pfiifner & Barkley, 1998).

Encourage Choice-Making

Allowing students with ADHD to make choices about their assignments not only increases their ownership of the task at hand, but also improves on-task behavior. Examples of choices that can be offered include allowing the student to choose what book they read, allowing them to choose a selected number of math problems on a worksheet, and allowing them to choose what activity they engage in first from a list or menu of independent work. It is important that teachers do not provide so many choices
that students have trouble making a decision (DuPaul & Weyandt, 2006). In addition to increasing on-task behavior, this intervention has also been shown to decrease behavior problems (Harlacher, Roberts, & Merrell, 2006). This technique is typically most effective when paired with a behavior management system (Raggi & Chronis, 2006).

**Provide Social Skills Training**

Students with ADHD often lack common social skills. This can lead to not only problems in the classroom, but poor peer relationships and poor self-esteem. Components of successful social skills programs include introducing the skills and spending the majority of the training playing a supervised game or activity with prompting or coaching on using the skill. This should be followed by a short debriefing with feedback and reinforcement for students who demonstrated the skill. In the most effective programs, the skills learned in the group are generalized across settings and are practiced both at school and at home. Students should also be encouraged to set and monitor specific goals related to the learned skills (Rief, 2005). The best results for social skills programs are those in which the groups are diagnostically heterogeneous, as this allows students without ADHD to model appropriate behaviors (Antshel & Remer, 2003).

**Assign Buddies to Students**

Assigning students with ADHD a buddy at school is a useful way to integrate them into the social network of the school and build their social and friendship skills. The buddy system has been found effective regardless if both or one of the students has ADHD. Buddy systems are most effective when parents are involved and encouraged to hold play
dates and activities outside of school for the buddies (Hoza, Mrug, Pelham, Greiner, & Gnagy, 2003).

**Encourage Peer Tutoring**

Having students with ADHD pair with a peer tutor allows them to get one-on-one instruction tailored to their pace and academic level. Students with ADHD also benefit from immediate feedback from their tutor (Greenwood, Maheady, & Carta, 1991). Class-wide peer tutoring is also effective for students with ADHD. Students are first instructed on how to be effective tutors and are given scripts of academic material. Immediate feedback is given and points are awarded for correct responses. Each student plays the role of a tutor and a tutee. Teachers monitor the process carefully. Students with ADHD who have participated in class-wide peer tutoring have been found to have increased on task behavior and improved accuracy on academic tasks (Hook & DuPaul, 1999).

**Allow the Use of Computer-Assisted Instruction**

Computer-assisted instruction has been shown to increase both academic performance and on-task behavior. Effective computer-assisted instruction targets specific instructional objectives using a computer program. The most effective programs are presented in a game-like format, without animation, and offer an unlimited response time. Many of these programs have been proven more effective than reading programs because it does not require any extra preparation from the teacher. Computer-assisted instruction is easy to implement in the classroom (Ota & DuPaul, 2002).
Provide Strategy Training

Students with ADHD may also benefit from explicit directed instruction on attention or “attention training sessions”. Skills practiced in these sessions include eliminating irrelevant cues and selectively attending to important material. These trainings have been shown to increase significantly the student’s ability to selectively attend to important material (Semrud-Clikeman et al., 1999). In addition, teaching note-taking strategies increases the benefits of direct instruction. Teaching students note-taking skills using direct instruction has also been shown to improve significantly on-task behavior, scores on assignments, and comprehension. As students learn to take effective notes, the prompting is gradually faded (Evans, Axelrod, & Langberg, 2004).

Provide Organizational Skills Training

Students with ADHD often have deficits in the area of organizational skills. Due to this, they may benefit from explicit training on strategies that can be used to increase their organization. Strategies such as checklists for organization and homework management, use of planners, and the organization of their backpack and desks can be included in the training. The organizational skills training has been found to increase students’ organizational skills as well as academic functioning (Langberg, Epstein, Vrbanowicz, Simon, & Graham, 2008).

Train Parents on Effective Homework Interventions

Parents often get frustrated working with their children on homework. By providing parent training sessions, parents can learn effective ways to help their children be successful at home. Effective parent training programs teach parents to establish
consistent homework routines. Students with ADHD should be provided with a quiet homework environment free of distractions. Parents are also taught to help their children prioritize their homework, break down large assignments, and set goals (Anesko & O’Leary, 1982). Training parents on how to tutor effectively their children at home has also been shown to be effective in improving oral reading fluency at home and at school (Hook & DuPaul, 1999). Home and school communication is another important component of educational success for students with ADHD. This allows parents and teachers to work together as a team to address the student’s need, set goals, and manage homework. It also provides the student with consistent structure at home and school. Home-school communication has been shown to be an effective way to increase homework accuracy and completion rates (Habboushe et al., 2001).

**Provide a Therapy Ball**

Allowing students to sit on a therapy ball during a portion of the day instead of a chair at their desks can help increase in-seat behavior. Therapy balls are large rubber balls, typically used for physical therapy that can take the place of a chair. Using a therapy ball instead of a chair allows students with ADHD more opportunities for physical movement as they can bounce or roll on their ball. Replacing a chair with a therapy ball has been shown to increase in-seat behavior students with ADHD (Schilling, Washington, Billingsley, & Dietz, 2003).
**Encouraging Adaptive Behavior**

Encouraging adaptive behavior refers to modifying the student's behavior to make problem behaviors inefficient, ineffective, and irrelevant. The following techniques are used to change existing problem behaviors.

*Increase Positive Feedback*

Teachers should increase the intensity and frequency of positive feedback to encourage the learning and practice of new skills. Students with ADHD tend to perform better when given a higher level of verbal praise and immediate reinforcement (Sagvolden, Metzger, & Sagvolden, 1993). Immediate feedback increases stimulation and helps sustain the student's attention. Students with ADHD are more influenced by earning an immediate reward or praise than they are by the history of past rewards. Praise is most effective when delivered frequently and immediately following appropriate behavior. Praise should also be specific and related to the desired behavior (Tripp & Alsop, 1999).

*Create a Behavior Support Plan*

Before a behavior support plan is implemented, a functional analysis of the behavior should be conducted to evaluate the function of the student's behavior (i.e., Escaping work, gaining attention, meeting sensory needs, etc). Once the function of the behavior is understood, a behavior support plan should be implemented to make the target behavior irrelevant, ineffective, and inefficient. The goal of a behavior support plan is to provide the student with a means of achieving the desired function of the target behavior in an appropriate way. Before implementing the behavior support plan, it is crucial that the students understand the expectations and procedures. The behavior that the student will
be rewarded for must be clearly defined and understood. All behavior should be framed in positive language and should focus on the desired behavior and what we want the student to do. Behavior contracts can also be used to help the student understand the goals and contingencies of the plan (Brock, Puopolo, Cummings, & Husted, 2004).

**Apply Contingency Management Techniques**

Effective contingency management techniques include self-monitoring (as outlined below), token economy systems, response cost systems, and time out. Token economy systems allow the student to earn points for appropriate behavior that can be used to “purchase” desired rewards. Response cost systems operate on the same premise, but allow the student to lose points for inappropriate behavior. These systems can be effective, but students with ADHD may become frustrated if the “cost” is too frequent. It is important that there is an opportunity to earn the lost points back (DuPaul & Weyandt, 2006). Time out can also be used for younger students. It is important to start with the least restrictive form, which is time out from attention. The child is not provided with attention following an inappropriate behavior (Brock et al., 2004). If that is not effective then move on to more restrictive forms, such as time out away from the group and so on.

**Teach Students to Self-Monitor**

Teaching students to use self-monitoring strategies before starting tasks can be an effective way to get them started. Sample questions for students to ask themselves include: “What is my problem?”, “What is my plan?”, “Am I following my plan?”, and “How did I do?”. This technique has been proven to improve selective attention to tasks, sustained attention, and language all while reducing impulsivity (Miranda, Presentacion,
Other ways to use self-monitoring with students is to provide students with a chart (see below) and give cues such as taped oral signals or a tap on their desk to self-monitor their behavior. Mechanical devices and PDA's are also effective ways for the student to monitor his or her behavior (Reid, Trout, & Schartz, 2005). Students can also self-reinforce with stickers or by charting their performance. This has been shown to improve on-task attention and persistence (Levendowski & Cartledge, 2000). Placing a mirror on a child's desk so he or she can see him or herself has also been shown to increase persistence and productivity (Hall & Zentall, 2000). Self-monitoring provides immediate behavioral feedback and can help students become more aware and control their actions (Zentall, 2005).

<table>
<thead>
<tr>
<th></th>
<th>Tone 1</th>
<th>Tone 2</th>
<th>Tone 3</th>
<th>Tone 4</th>
<th>Tone 5</th>
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</thead>
<tbody>
<tr>
<td>My Rating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teacher Rating</td>
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<tr>
<td>Teacher on-task rating</td>
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<td></td>
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<tr>
<td>My on-task rating</td>
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<tr>
<td>Agreement</td>
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</tbody>
</table>

(Brock, Puopolo, Cummings, & Husted, 2004)

*Use “Mini-Conferences” to Provide Behavioral Feedback*

Teachers can hold one to two minute “mini-conferences” with the student several times throughout the school day to discuss the student’s behavior. At each conference, the teacher provides verbal praise for appropriate behavior during the last work period. Teachers can use a tally sheet to reinforce positive behavior. Encouragement and
feedback on behaviors not displayed should also be given. The more mini-conferences per day, the better, although the number must be feasible for the teacher (Brock et al., 2004). Below is an example of a mini-conference chart.

<table>
<thead>
<tr>
<th>Daily Tally Sheet</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Work Period</strong></td>
</tr>
<tr>
<td><strong>Begin Work</strong></td>
</tr>
<tr>
<td><strong>Immediately</strong></td>
</tr>
<tr>
<td><strong>Work Quietly</strong></td>
</tr>
<tr>
<td><strong>Remain Seated</strong></td>
</tr>
<tr>
<td><strong>Ask Good</strong></td>
</tr>
<tr>
<td><strong>Questions</strong></td>
</tr>
<tr>
<td><strong>Work Carefully</strong></td>
</tr>
<tr>
<td><strong>Follow</strong></td>
</tr>
<tr>
<td><strong>Instructions</strong></td>
</tr>
<tr>
<td><strong>Complete</strong></td>
</tr>
<tr>
<td><strong>Assignments</strong></td>
</tr>
<tr>
<td><strong>Total</strong></td>
</tr>
<tr>
<td>My Daily Total</td>
</tr>
<tr>
<td>My Daily Goal for This Week</td>
</tr>
</tbody>
</table>

(Brock, Puopolo, Cummings, & Husted, 2004)

**Use Daily Report Cards to Provide Feedback**

Daily report cards are an effective way to connect the reinforcement to the home environment. They encourage teachers and parents to work together and communicate about the student’s behavior. Daily report cards work best when the goals the student is working towards are included on the report card, are stated in a positive way, only a few goals are concentrated on at a time, feedback is provided, and parents are included in the process (Brock et al., 2004). Examples of daily report cards follow.
**Daily Behavior Report Card**

Student: ___________________________  Date: ______________

Please rate this child’s behavior today in the areas listed below.

++ = very good, + = okay, -- = poor

Please initial each row following your rating at the end of the activity being rated.

Comments can be added when needed. Please make a copy for parents and provide them with feedback as indicated in the parent – school communication agreement.

<table>
<thead>
<tr>
<th>Behavior to be rated</th>
<th>Activity/Subject</th>
</tr>
</thead>
<tbody>
<tr>
<td>Follows directions</td>
<td></td>
</tr>
<tr>
<td>Cooperates with others</td>
<td></td>
</tr>
<tr>
<td>Asks for help when there is a problem</td>
<td></td>
</tr>
<tr>
<td>Comments:</td>
<td></td>
</tr>
</tbody>
</table>
**Daily Behavior Report Card**

Student: ___________________________  Date: ______________

Please rate this child's behavior today in the areas listed below.

1 = excellent, 2 = good, 3 = fair, 4 = poor, and 5 = very poor

Please initial each row following your rating at the end of the activity being rated.

Comments can be added when needed. Please make a copy for parents and provide them with feedback as indicated in the parent – school communication agreement.

<table>
<thead>
<tr>
<th>Behavior to be rated</th>
<th>Activity/Subject</th>
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<tbody>
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</tbody>
</table>

Comments: 

(Barkley, 2005)
Provide Rewards

Before the behavior support plan is implemented, the student and teacher should agree on a daily behavior goal. The student should be encouraged to set this goal if developmentally appropriate. Goals should be easy to meet in the beginning to ensure that the student achieves success and then gradually increased over time. If the student reaches his or her daily goals, they should be rewarded daily based on the behavior contract. Weekly rewards can also be used. They are typically of greater magnitude than daily goals, as they are earned less frequently. These goals are most effective with older students. Weekly goals should not replace daily goals and immediate reinforcement. Progress toward goals can be graphed during the student’s mini-conference (Brock et al., 2004).

**Weekly Contract**

<table>
<thead>
<tr>
<th>Day</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

My weekly total goal is □

This week’s total □

If I meet my weekly goal, I will earn: ________________________________
**Concluding Thoughts**

Students with ADHD often display a wide range of academic, behavioral, and social difficulties. Due to this wide range, there is no set of interventions that will work for all students with ADHD. Therefore, it is important to look at each student who displays symptoms associated with ADHD as individuals and determine the interventions to be used based on their individual challenges and needs. Students with ADHD are at a higher risk for developing significant difficulties in the areas of academic underachievement, noncompliance, aggression, and peer relations (DuPaul & Stoner, 2003). In order to help them succeed, teachers and schools need to learn how to teach them and provide an environment that fosters and supports their learning needs.
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