

The Effect of Self-Monitoring on Hyperactive, Attention Deficit Disorder, or Attention Deficit
and Hyperactive Disorder Behaviors in Fourth-Grade Students

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Abstract

The purpose of this study was to investigate the effect of self-monitoring on hyperactive, attention deficit disorder (ADD), or attention deficit and hyperactive disorder (ADHD) behaviors in fourth-grade students. An experimental design was used to conduct this study. The study focused on four students with hyperactive, ADD, and ADHD behavioral symptoms enrolled in a predominantly African –American suburban elementary school. The participants studied were labeled as hyperactive, ADD, or ADHD prior to research. The four participants received instruction in a regular education classroom. General observations regarding the effect of a self-monitoring checklist in reading and science were made during the 30-day study period. Differences in instructional routines, pacing, motivational strategies, and lesson format or lesson presentations were identified and listed. Data regarding the students' behaviors were collected and analyzed. Analysis of the data shows significant difference in the occurrence of three of the students' targeted behaviors after the use of the self-monitor checklist. In some instances, behaviors ceased completely. One behavior was not an issue at pre-test and remained so at the conclusion of the observations following the intervention. Further research with fewer behaviors on the self-monitor checklist is warranted to determine whether the rate of extinguishing these behaviors increases when there are fewer behaviors on which study participants would have to focus. A second suggestion includes looking at the long term effect of the use of the self-monitoring checklist to determine if the behaviors remain eliminated or if they return over time.

CHAPTER I

INTRODUCTION

Hyperactivity, Attention Deficit Disorder (ADD), and Attention Deficit Hyperactivity Disorder (ADHD) are highly prevalent disorders found in children. Depending on the criteria used to make the diagnosis, hyperactivity, ADD, and ADHD prevalence estimates could range from 2 to 12 percent of school age children (Jurbergs, Palcic, & Kelley, 2007). Therefore, an elementary class with 20 students may have at least 1 child with the disorder (Rutherford, DuPaul, & Jitendra, 2008).

The symptoms of these disorders include the inability to focus for extended periods of time, to remain seated, to interact appropriately with peers, or to control excessive motor movements. These disorders are usually not detected in children until formal schooling occurs because they are so adverse to the behaviors commonly expected in the classroom.

Additionally, research suggests that on daily classroom performance, up to 80% of students with hyperactivity, ADD, or ADHD perform on lower levels than their peers. They also perform on lower levels than their capabilities. Research also shows that students with these disorders have higher rates of grade retention, placement in special education programs, school dropout, and lower rates of college enrollment (Harris, Danoff Friedlander, Saddler, Frizzelle, & Graham, 2005).

Medication is one successful way to reduce the symptoms of hyperactivity, ADD, and ADHD. However, the cost of the medication makes it difficult for some parents to acquire. Also, some parents are unwilling to subject their children to such side effects as insomnia, high blood pressure, loss of appetite, and increased heart rate. Thus, teachers are left with the responsibility of addressing the needs of these students in their classrooms.

Self-monitoring is a strategy that has been successful in helping students control the adverse behaviors of hyperactivity, ADD, and ADHD. Students are trained to self assess their behavior as well as score their behavior. As a result, students are aware of their adverse behaviors and learn how to control their impulses so that they are able to work responsibly when completing a variety of tasks. Additionally, students are better able to meet the requirements of the classroom culture and improve their academic performance.

Statement of Problem

The purpose of this study is to investigate the effect of self-monitoring on hyperactive, Attention Deficit Disorder, or Attention Deficit and Hyperactive Disorder behaviors in fourth-grade students.

Hypothesis

The behavior of hyperactive, Attention Deficit Disorder, or Attention Deficit and Hyperactive Disorder fourth-grade students who use the self-monitoring checklist is significantly different than the behavior of the same fourth-grade students when not using the self-monitoring checklist.

Operational Definitions

Fourth grade refers to students between the ages of 9 through 11 who are taught using instructional materials on the fourth grade level.

Hyperactive refers to a disorder in children which results in symptoms such as excessive motor movement. These children have abnormally high levels of activity or excitement that interferes with their ability to concentrate or interact with others (Reynolds & Fletcher-Jansen, 2007).

Attention Deficit Disorder refers to a disorder in which children have difficulty sustaining attention for extended periods of time. It is also characterized by persistent impulsiveness. Both symptoms can lead to learning disabilities and various behavioral problems (Reynolds & Fletcher-Jansen, 2007).

Attention Deficit and Hyperactive Disorder refers to a disorder usually diagnosed in childhood. The disorder is reported to be more prevalent in males, specifically African-American males. The main features of the disorder are categorized as attention deficit and hyperactive symptoms. Attention deficit symptoms include having problems sustaining attention, being easily distracted, being unable to listen, having difficulty following through on instruction, experiencing difficulty completing class work, and having problems organizing tasks. Hyperactive symptoms include squirming in seat, fidgeting with hands or feet, running and climbing in inappropriate places, excessive talking, and difficulty playing quietly (Reynolds & Fletcher-Jansen, 2007).

The *self monitor checklist* was developed by the researcher and refers to the intervention used to help students monitor four behaviors: looking around, being out of seat, playing with objects, and interacting with peers without permission. Students were trained to assess and record the behaviors which are symptoms of hyperactivity, ADD, and ADHD.

Observer evaluation form refers to the form used by the researcher to observe the students. The four behaviors matched those on the self monitor checklist. The observer evaluation form was used as the pre-test to establish a baseline of students' behavior. It was also used as the post-test to determine the pattern of students' behavior while not on the self monitor checklist.

Peer interaction refers to the student making initial contact with or responding, whether physically or verbally, to others without teacher permission. *Looking around* refers to the student gazing around the room, not focused on work or teacher. *Out of Seat* refers to the student sitting on the seat in such a way the students' weight was not being supported fully by the chair. *Playing with objects* refers to any time the student was manipulating an object such as a pencil or a body part such as fingers or hair (Ardoin & Martens, 2004).

The DuPaul ADHD test refers to a scaled checklist completed by teachers rating the students in the areas of inattention and hyperactivity (Jitendra, DuPaul, Volpe, Tresco, Vile Junod, Lutz, Cleary, Flammer-Rivera, & Mannella, 2007).

CHAPTER II

REVIEW OF THE LITERATURE

This review of literature examines impulsivity, Attention Deficit Disorder (ADD), and Attention Deficit Hyperactive Disorder (ADHD). The first section defines and describes hyperactive behaviors associated with ADD or ADHD. The second section discusses the causes of ADHD. Section three discusses when and how children are diagnosed or identified. Section four describes how ADHD affects students' performance and achievement. The final section, section five, discusses interventions used by teachers and parents to deal with the disability.

Definition and Description of ADHD

Attention Deficit/Hyperactivity Disorder is a mental disorder that commonly affects individuals at a young age and into adulthood. The term Attention Deficit/Hyperactivity Disorder is used to describe impulsivity, Attention Deficit Disorder (ADD), and hyperactivity. Attention Deficit Hyperactive Disorder (ADHD) has undergone a series of name changes. Initially, the terms Minimal Brain Damage, Minimal Brain Dysfunction and Hyperkinetic Reaction of Childhood were used to describe the symptoms associated with ADHD. The term Attention Deficit Hyperactive Disorder (ADHD) has replaced the above terms and is used to describe children who are hyperactive, inattentive, and impulsive (Reynolds & Fletcher-Jansen, 2007).

There are three subtypes represented by the term ADHD. One is a combined type in which a child has both attention deficit and hyperactive behaviors (ADHD-CT). Another subtype is when a child exhibits predominantly inattentive behavior, (ADHD-PI) and the third subtype, (ADHD-HI), is when a child predominantly exhibits hyperactive-impulsive behavior (Carroll, Houghton, Taylor, Hemingway, List-Kerz, Cordin, & Douglas, 2006).

Children who have the combined type of ADHD show both inattentive and hyperactive-impulsive behaviors. The symptoms for the inattentive category include making careless mistakes, not attending to details in work, not sustaining attention, not listening, not following through on instructions, not completing work, having problems organizing tasks, forgetting things, showing reluctance in engaging in activities that require mental effort, and being easily distracted. The symptoms for hyperactive-impulsive category include fidgeting with hands or feet, squirming in seats, having difficulty remaining seated, excessive running and climbing in inappropriate places, having difficulty playing quietly, blurting out answers, talking excessively, having difficulty taking turns, and interrupting others. Children in this subtype usually have six of the symptoms in each category (Reynolds & Fletcher-Jansen, 2007).

Children with subtype two, predominately inattentive, have six of the symptoms mentioned in the inattentive category. However, they do not meet the criteria for the hyperactive-impulsive category. They have less than six of the symptoms for hyperactivity-impulsivity. With subtype three, hyperactive-impulsive type, children demonstrate symptoms from the hyperactive-impulsive category. Specifically, they exhibit at least six of the symptoms. They do not meet the inattentive category because they possess less than six of the symptoms in that category (Reynolds & Fletcher-Jansen, 2007).

Attention Deficit Hyperactive Disorder is highly prevalent in children before age 7 and typically persists through adulthood (Carroll et al., 2006). The disorder affects about 3 to 10 percent of school age children (Jitendra, et al., 2007; Rutherford, et al., 2008). Attention Deficit/Hyperactivity Disorder is most commonly found in African-American children from low socioeconomic backgrounds. Also, children from this background tend to show more severe symptoms than children from middle- and upper-class backgrounds (Jurbergs, et al., 2007).

Attention Deficit/Hyperactivity Disorder is also more common in males than in females (Carroll et al., 2006). According to Reynolds and Fletcher-Jansen (2007), the reported rate of males to females exhibiting the disorder ranges from 2:1 to 9:1.

Causes of ADHD/Hyperactivity

Reynolds and Fletcher-Jansen (2007) state that there is much controversy regarding the exact cause of ADHD. Neurobiological factors have received much support as one of the greatest contributors to ADHD. Functional resonance imaging (fMRI) and single photon emission computed tomography (SPECT) scans depict levels of activity in different regions of the brain of children with ADHD compared to children without ADHD. Also, compared to children without ADHD, children with ADHD have more activity in the cingulate gyrus and less activity in the frontal region of the brain. These two areas control focused attention and executive functioning. Executive functioning includes such basic skills as attention, memory, and motor skills.

Another possible explanation is that ADHD is hereditary disorder, meaning it is a disorder that is passed from parent to child. According to Reynolds and Fletcher-Jansen (2007), 50% of the children who have ADHD have parents who have the disorder.

A third plausible cause for ADHD is low levels of neurotransmitters. According to research, children with ADHD have less epinephrine, dopamine, and norepinephrine than other children. These neurotransmitters are connected to attention and motor activity. Other possible suggestions for the cause of ADHD are such neurological etiologies as prenatal and peri-natal complications, infections, and exposure to toxins in the environment. Poor parenting, parental characteristics, chaotic home life, and low socioeconomic backgrounds have been suggested as

possible causes; however, there is little experimental support for these factors as causes (Reynolds & Fletcher-Jansen, 2007).

Diagnosis and Identification

Children are usually identified as having ADHD when they begin formal schooling. During this time, children are expected to sit still and complete academic tasks for extended periods of time (Carroll et al., 2006). Children who have ADHD usually have difficulty meeting these expectations.

Several approaches are used to determine if a child has ADHD. One approach is a multimethod approach in which several techniques are used to evaluate a child for the disorder. Reynolds and Fletcher-Jansen (2007) describe the multimethod approach as a method which “involves obtaining information from multiple informants (e.g., parent, teacher, and child), measures, and settings (home, school) to pinpoint problematic areas of concern” (p. 202). Information is obtained through clinical interviews, medical interviews, behavior observations, physical examination, academic achievement measures, personality measures, intelligence measures, neuropsychological tests, and functional behavior assessments.

Teacher checklists or rating scales are diagnostic tools that are also commonly used in determining ADHD in children. Teachers are often required to complete behavior rating scales such as Conners’ Teacher Rating Scale – Short Form, CTRS-SF (Jurbergs, et al., 2007); Achenbach Teacher’s Report Form, TRF (Ardoin & Martens, 2004); the Academic Competence Evaluation Scales (ACES); and the Social Skills Rating System, SSRS (Rutherford, et al., 2008).

Parents, as well, are at times required to complete checklists or rating scales. One such scale is the Conners’ Parent Rating Scale – Long Form, CPRS-LF (Jurbergs et al. 2007).

Another parent checklist or rating scale used is the ADHD Rating Scale – I (Volpe, DuPaul, DiPerna, Jitendra, Lutz, Tresco, & Junod, 2006).

How ADHD/Hyperactivity Affect Performance and Achievement

Rutherford et al. (2008) state that reports by teachers and parents show “children with ADHD underperform relative to their own abilities as well as compared to their classmates” (p.145). Researchers have reported that up to 80% of ADHD students tend to have academic performance problems. (Harris, et al., 2005; Peck, Kehle, Bray, & Theodore, 2005). They often complete their work “at rates lower than expected, produce work of poorer quality than they are capable of, and have difficulty maintaining on-task behaviors or following through when given instructions” (Harris et al., p.145). These authors also state that, on achievement tests, students with ADHD tend to perform in the average level.

Rutherford et al. (2008), claim that children with ADHD not only struggle academically in work productivity or performance, but also with academic achievement. Attention Deficit Hyperactivity Disorder students usually deal with failing grades and function up to one standard deviation lower on standardized tests than their classmate (Jitendra et al., 2007). Jurbergs et al. (2007) also state that impulsivity, inattention, and hyperactivity in ADHD students usually result in problems with “staying organized and completing and handing in classwork and homework. These symptoms often lead in turn to decreased productivity, low achievement, failing grades, and retention” (p.359).

Attention Deficit Hyperactivity Disorder also affects students’ social skills. Rock (2005) states that ADHD students “function well below level on national normative levels in measure of cooperation, assertion and self-control while demonstrating elevated scores for externalizing behavior problems” (p. 3). Additionally, Reynolds & Fletcher-Jansen (2007),

report that ADHD students demonstrate poor interpersonal relationships. They state that “approximately 50 percent of children with ADHD experience peer rejection and have difficulty establishing and maintaining friendships” (p. 201). Because these children misinterpret social cues, they tend to demonstrate aggressive behaviors against their peers.

Strategies and Interventions

Several research-based strategies or interventions have yielded positive results in helping students control behaviors associated with ADHD such as impulsivity, inattention, and hyperactivity. One strategy, researched by Ardoin and Martens (2004), involved training students to monitor their attention while doing seat work. Then students were required to monitor their attention and rate themselves on a 4-point scale. The premise of this research is that involving students in their treatment is more effective than teacher-managed interventions.

Research by Harris et al. (2005) on students’ use of self-monitoring also yielded positive results. This research involved students monitoring their attention and their academic performance. Both strategies had positive results; however, the self-monitoring of attention yielded higher results in helping students improve academically than the self-monitoring of academic performance. Additionally, a study by Rock (2005) also supported the use of self-monitoring intervention to help enhance students’ academic engagement, productivity and accuracy. The study investigated the effect of the ACT-REACT self-monitoring intervention on students’ academic performance. The ACT-REACT self-monitoring invention is a six-step mnemonic device which combines self-monitoring of performance and self-monitoring of attention. The research indicated that this intervention was effective in helping students with ADHD type behaviors improve academically.

School-home notes is another intervention that has yielded positive results in helping students control ADHD behaviors. Reynolds and Fletcher-Jansen (2007) support the use of home-school contingencies. They state that this intervention is one of the most widely used with children who have ADHD. Jurbergs et al. (2007) showed that students who were evaluated by teachers on a daily basis and who received school-home notes were able to improve ADHD behaviors. The study investigated the effect of school-home notes with and without response cost. This means students could simply receive a note home or students could receive a note and a consequence for inappropriate behaviors. The research showed both conditions were effective, although students and parents preferred the school-home notes with response cost. In this study, the use of response cost did not show additional improvement over school-home notes without cost. However, a study by Zaghawan, Ostrosky, and Al-Khateeb (2007) “indicated that home-school notes with response cost were more efficacious than notes without response cost” (p. 51).

Another common and effective intervention for managing ADHD is medication. One medication that is used on a daily basis is Wellbutrin. Wellbutrin is used to manage anxiety and attention in students with ADHD (Stahr, Cushing, Lane, & Fox, 2006). Besides Wellbutrin, Reynolds and Fletcher-Jansen (2007) also list Ritalin, Concerta, Focalin, Metadate, Methylin, Adderall, Dexedrine, Dextrostat, Cylert, Strattera and Imipramine as medications that are currently used to effectively treat ADHD. They also state that “stimulant medication has been reported to be the most effective single treatment of reducing the core symptoms of ADHD” (p. 202).

A fourth intervention used to help students control behaviors associated with ADHD is consultation. According to Jitendra et al. (2007), consultation is when teachers work collaboratively with others such as school psychologists in planning and creating specific data-

based treatment strategies for students. This approach is geared towards helping to improve educational outcomes for students with ADHD. They report that some literature shows large positive results for the decision-making consultation model.

In addition, Xin and Forrest (2002) also conducted research on the collaborative/consultation approach. Their research focused on the effect of collaboration by general education teachers, special education teachers, parents, and students on ADHD behaviors. This study involved contract agreements by student, teacher, parent, and special educator. The contract lists responsibilities by all parties involved in the contract. The study showed that “a collaborative approach involving teachers, students, and parents provides a positive way to manage behavior” (p. 244).

According to Peck et al. (2005), stimulants, although effective in helping students with ADHD control classroom behavior, social interactions, and academic performance, have been found to have negative side-effects for certain children. Therefore, they recommend yoga as an alternative intervention. They claim that the use of yoga shows benefits for children. The benefits include reduction in anxiety, heart rates, tension, and stress, and show a correlation with academic performance. They also claim that yoga is effective in improving students’ time on task with elementary school children with attention problems.

Summary

Attention Deficit Disorder is a disability that affects students’ academic performance from elementary school to college. These students exhibit behaviors that are inappropriate and disruptive to their academic success, interpersonal relationship success, and the classroom environment. Traditionally, medication has been the intervention most commonly used to combat the symptoms of ADHD. However, research has shown that alternative interventions

have had positive impacts on controlling impulsivity, inattention, and hyperactivity, behaviors associated with ADHD.

CHAPTER III

METHODS

The purpose of this study was to investigate the effect of self-monitoring on hyperactive, Attention Deficit Disorder, or Attention Deficit and Hyperactive Disorder behaviors in fourth-grade students.

Design

An experimental design was used to conduct this study. The participants were from a single fourth-grade classroom. They were selected based on their hyperactive, ADD, and ADHD behavioral symptoms. All of the participants received the treatment. Observations of behavior were obtained by pre- and post-measures.

Participants

The participants were students attending fourth grade in a predominantly African-American public school located in a suburban setting. During the time of the study, 3 of the participants were 9 and 1 was 10 years of age; 2 participants received free lunches. The 4 students who experienced significant difficulties with hyperactivity, ADD, and ADHD symptoms as well as academic achievement were selected for the project by their fourth-grade classroom teacher. One participant was diagnosed with ADHD by a physician and was prescribed medication. However, the medication was stopped because of the side effect of insomnia. One participant was recommended for the DuPaul (Jitendra, et al., 2007) in kindergarten, but the test was not administered. One was recommended and took the DuPaul in first grade. The result showed the participant had symptoms of inattentiveness, hyperactivity, and impulsivity. There was no follow up done with this participant. Teacher checklists were

done on the fourth participant. They reflected behaviors that fall under inattentiveness and hyperactivity. All 4 participants were African-American males.

Instrument

The self-monitor checklist instrument used in this study was created by the investigator. Therefore, no formal studies of validity or reliability were available on the instrument. Four behaviors were targeted: looking around, being out of seat, playing with objects, and interacting with peers without permission. These behaviors were the behaviors that were most frequently observed throughout the school year and, therefore, were the behaviors targeted. The instrument was designed in a table format with the four behaviors listed and a place for the students to record the behaviors. The students were to put a plus sign if they did not perform the behavior and a minus sign if they did the behavior. The students were to monitor the four behaviors at the beginning, middle, and ending of reading and science for 10 days.

The observer evaluation form was also created by the researcher. No formal studies on validity or reliability were available on this instrument. The form was designed in table format with the four behaviors tested listed and a place for the researcher to record the behavior for all four students. A plus sign was used to record if the behaviors were observed and a minus sign if the behaviors were not observed.

Procedure

This action research study was conducted over a 30-day period. During the first 10 days of the study, the investigator observed the participants without their knowledge. This was done as the pre-test to establish the baseline or pattern and frequency of the students' behavior. The investigator used the observer evaluation form to observe the participants in the morning during reading for a 60-minute period and in the afternoon during science for the same amount of time.

Observations took place in the beginning, middle, and ending of each reading and science class session. The participants were evaluated with a plus sign if the behaviors were not observed or a minus sign if the behaviors were observed. Participants were not observed on days of special occasions such as state testing, field trips, and assemblies.

Prior to self-monitoring, the participants were trained in how to use the instrument. The participants were also trained in the definitions of the behaviors that appeared on the self-monitor checklist. The definitions were read and behavioral definitions were demonstrated using common examples of the behaviors performed by the students during observation. The participants were given the opportunity to share and demonstrate examples of each behavior. The researcher also pointed out the key that was provided on the instrument to help the participants remember what symbols to use when self-monitoring. A sign was established between the participants and the researcher to remind them to assess their behaviors and record whether or not they performed the behaviors.

The participants self-monitored for 10 days during reading in the morning for a 60-minute period and during science in the afternoon for a 60-minute period. When the sign was shown by the researcher, the participants self-assessed their behaviors. The participants assessed and recorded their behaviors during the beginning, middle, and end of each reading and science class session. The researcher also observed and recorded students' behaviors during the first two days to make sure students were accurate in the self assessments.

For the final 10 days, the researcher used the observer evaluation form to observe the students' behavior without the participants' knowledge in order to determine if there was a change in the frequency and pattern of the same four behaviors after using the self-monitoring

checklist. The same procedure that was used during the pre-test observation period was used during this post-test observation period.

CHAPTER IV

RESULTS

The purpose of this study was to investigate the impact of self-monitoring checklists on hyperactive, attention deficit disorder, or attention deficit and hyperactive disorder behaviors in fourth-grade students.

Reading Results

Between the pre-test and the post-test, there were dramatic declines in all behaviors addressed at the beginning of class. The same is true for the end of the class period, frequency of behaviors decreased for all. In review of the student observations, the out of seat behavior was not an issue at pre-test and remained so at the conclusion of the observation following the intervention.

At pre- and post-test, the three most frequent behaviors, regardless of the observation period during a reading class were playing with objects, looking around, and peer interactions. The following table shows that while these behaviors remained the most frequent behaviors at post-test, the range of the reported behaviors decreased dramatically. Playing with objects, looking around, and peer interaction were most frequent at the beginning and middle of the class period. The participants were rarely out of their seats during the study. In all instances at post-test, two students had ceased the observed behaviors by post-test across the class period observation, with the exception of looking around at the end of class where only one student ceased the behavior.

Table 1
Behavior Ranges during Reading

Behavior during Reading	Range		Range		Range	
	Beginning of Class Period		Middle of Class Period		End of Class Period	
	Pre	Post	Pre	Post	Pre	Post
Playing with Objects	10% - 60%	0%-25%	10%-90%	0%-38%	20%-100%	0%-50%
Looking around	10% - 80%	0%-20%	30%-70%	0%-30%	10%-50%	0%-20%
Peer Interaction	10% - 40%	0%-10%	10%-30%	0%-38%	0%-40%	0%-50%

Science Results

Table 2
Behavior Ranges during Science

Behavior during Science	Range		Range		Range	
	Beginning of Class Period		Middle of Class Period		End of Class Period	
	Pre	Post	Pre	Post	Pre	Post
Playing with Objects	30% - 100%	0%-75%	0%-10%	0%-38%	20%-90%	0%-63%
Looking around	10% - 30%	0%-13%	20%-80%	0%-30%	20%-40%	0%-30%
Peer Interaction	0%-50%	0%-38%	10%-40%	0%-25%	0%-30%	0%-50%

Declines were seen across the behaviors between pre- and post-test for all observation periods. Out of seat behavior ceased in all study participants by post-test for class observation periods at the middle and end. By post-test, one student had ceased all behaviors. An additional participant had eliminated all behaviors except for playing with objects.

Regardless of the class, behaviors at pre-test escalated through the end of the class period. This was not true at post-test. In science, with only one exception for one behavior, all students greatly decreased or eliminated unwanted behaviors. A similar pattern holds for reading.

Behaviors were much more frequent at pre-test in the reading class than in science. This could be based on the interactive nature of science. However, at post-test the rates of behaviors were very similar.

CHAPTER V

DISCUSSION

The purpose of this study was to investigate the effect of self-monitoring on hyperactive, attention deficit disorder, or attention deficit and hyperactive disorder behaviors in fourth-grade students. The null hypothesis that behavior of hyperactive, attention deficit disorder, or attention deficit and hyperactive disorder fourth-grade students who use the self-monitoring checklist is significantly different than the behavior of the same fourth-grade students when not using the self-monitoring checklist was not rejected.

During the implementation of this study, differences in instructional routines, pacing, motivational strategies, and lesson format or lesson presentations were observed between the teaching of the reading and science classes. The participants in this study were instructed in the average fourth grade reading level grouping with 17 students. The teacher spent 30 minutes giving direct instruction. Visual engagement activities were utilized with an overhead projector machine to spur conversation and motivate students. After direct instruction, the students worked on the skill introduced. Students completed several activities within this time. Occasionally the students were observed looking around, playing with objects, and interacting with peers during individual work time. They were quickly redirected when observed by the teacher.

In the science class, whole class instruction was given to all students in the class. Hands-on engagement activities were used to motivate students and encourage discussion. The students would then work in groups or individually on hands-on-projects. The pacing was directed by the students' ability in completing the activities. During this time, students had given roles to

complete during group activities. They were at times playful and talkative while the teacher worked with individual groups. As in reading, students were quickly redirected.

During the pre-test, there were more incidents of misbehavior in reading than there were in science, which may be due to the interactive nature of science. However, despite the differences observed in the teaching of each subject, the results of the study show that the self-monitoring checklist did have some impact on the behaviors of the students in the study in both reading and science. Therefore, it is reasonable to assume that students with hyperactive, ADD, and ADHD behaviors can benefit from the use of the self-monitor checklist regardless of the subject and lesson implementation differences.

Similarities and Differences to Other Studies

Prior to this action research study, other studies have also shown that self-monitoring checklists do improve students' behaviors. One study result suggested that the checklist had positive effects on the attention and performance in spelling of students diagnosed with ADHD (Harris et al., 2005). Another study's research results showed that self-monitoring and accuracy training decreased disruptive behaviors (Adroin & Martens, 2004). A third study by Rock also showed positive results (2005). Students were able to monitor unwanted behaviors and enhance their academic engagement and productivity with the use of self-monitoring. Also, the students in all of the studies were recommended by their teachers. This means that none of the studies used randomization.

Although the above studies showed that self-monitoring had a positive impact on students, the studies were conducted differently. In this study and the study by Harris et al. (2005), no reinforcements were used. In the Adroin and Martens (2004) study and the Rock

(2005) study, some or all of the students were provided with positive reinforcements for accurately rating themselves on the checklist.

Participants in this study and the Adroin and Martens (2004) study consisted of only males. Rock's (2005) study consisted of 7 boys and 2 girls and the study by Harris et al. (2005) also consisted of males and females participants: 5 boys and 1 girl.

Participants in the other studies were aware of the observation. Students in this study were unaware they were being observed during the pre- and post-tests. Also, students in the other studies were given feedback on the accuracy of self-rating. The students in this study were not.

The main difference between this study and the others is that this study simply assessed the impact of self-monitoring on behavior. It did not assess whether or not academic performance was enhanced as a result of the self-monitoring checklist. It also did not assess the impact of accuracy training plus self-monitoring on the improvement of disruptive behaviors.

Despite the differences mentioned above, all of the studies showed that the use of a self-monitoring checklist has a positive impact on students' behavior.

Potential Threats to Validity

The three most important threats to the validity of this study include selection-treatment interaction, population size, and the length of time of the intervention. The threat of selection-treatment interaction occurs when the participants or intact groups in a study are not randomly selected for treatment. The participants in this study were selected from one fourth grade class and one school because these were the students who were accessible to the researcher.

Secondly, the study population was small and limited in scope. The study population was limited to one class in one school. The sample population included four students who were previously labeled with hyperactive, ADD, and ADHD behaviors.

Finally, the third possible threat involved the length of time of the intervention. The study covered a 30-day period. The pre-test covered a 10-day time period. The self-monitoring checklist intervention lasted for 10-days and the post-test covered a 10-day period. Although the time period was short, post-test result showed that students did benefit from the intervention.

Suggestions for Further Research

Further research with fewer behaviors on the self-monitor checklist would be meaningful in determining whether the rate of extinguishing behavior increases if there are fewer behaviors on which study participants would focus.

A second suggestion includes looking at the long-term effect of the use of the self-monitoring checklist to determine if the extinguished behaviors stayed extinguished or if they returned over time.

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