

The Effects of Self-Monitoring on On-Task Behavior in ADHD Students

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Submitted in Partial Fulfillment of the Requirements for the  
Degree of Master of Education

July 2018

Graduate Programs in Education

Goucher College

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## **Abstract**

This study explores the effects of self-monitoring on on-task behavior on a group of 7<sup>th</sup> grade students diagnosed with Attention Deficit Hyperactivity Disorder (ADHD). This study followed a pre-experimental design. It began with a 10-day baseline period in which the researcher collected data on task-attentiveness. It followed with explicit instruction and guided practice on how to engage in self-monitoring, followed by a 24-day intervention period. Data were collected through the use of teacher and student reflection tools, designed for assessing on-task behavior in each individual student at three designated times throughout a 90-minute instructional block. When comparing the baseline period to the intervention period, the results showed a notable increase in on-task behavior among ADHD students. Hence, the null hypothesis, that there would be no statistically significant difference between on-task behavior scores for ADHD students during a weighted baseline period and a treatment period, was rejected. Further research on the effect of self-monitoring on students in more and diverse categories may be warranted.

# CHAPTER I

## INTRODUCTION

### Overview

In this study, the researcher attempted to determine whether or not the teaching and implementation of self-monitoring strategies by students diagnosed with Attention Deficit Hyperactivity Disorder (ADHD) would affect those students' on-task behavior in a 7<sup>th</sup> grade Language Arts/Reading Intervention classroom, as well as the students within the entire classroom, in a suburban Maryland middle school. The idea that precipitated this study is one that holds that often, many ADHD students fail not because they are less capable than their non-ADHD peers or lack the necessary skills, but because they more often lack the ability to regulate their behaviors and attend to their own relationship with a classroom task. Research shows that for these students, self-monitoring techniques can be a simple and effective solution (Reid, 1999).

Many students with ADHD have the ability to access, even master, grade-level curriculum, but do not do so because of issues of attentiveness. If these same students can be taught simply and formulaically to check in with themselves throughout a lesson, they are ostensibly more likely to engage with the lesson material. This researcher has frequently seen bright, capable students fail to meet academic standards due to issues related to inattentiveness to task(s), and was interested as to the possible benefits of teaching and engaging in self-monitoring for students with ADHD, especially about how these strategies would affect every student in the classroom.

## **Statement of Problem**

The purpose of this study was to determine the impact of classroom wide self-monitoring strategies on students in a middle school English Language Arts classroom and particularly in a subset of students with ADHD.

## **Hypotheses**

The first null hypothesis is that there will be no statistically significant difference between on-task behavior scores during a weighted baseline period and a treatment period in which children engage in regular self-monitoring through the instructional block among students in a 7<sup>th</sup> grade Language Arts/Reading Intervention classroom. The second null hypothesis is that there will be no statistically significant difference between on-task behavior scores during a weighted baseline period and a treatment period in which children engage in regular self-monitoring through the instructional block among a subset of students with an ADHD diagnosis.

## **Operational Definitions**

### ***Self-Monitoring***

For the purpose of this study, *self-monitoring* can be defined as the strategy in which students stop and observe their own behavior for the purpose of recording data; in this case, data that reflects whether they are on-task.

### ***On-task Behavior***

*On-task behavior* is operationally defined as the way in which a student's behavior matches the expectations and requirements of classroom instruction. In the case of both direct instruction and small-group instruction, *on-task behavior* is operationally defined as the degree to which a student engages in specific attentive behaviors, which, for the purpose of this study, are listed as the following: tracking the teacher/speaker during instruction, recording required

notes, participating in discussion as warranted, and the frequency of attention to written work, evidenced by observable “pencil-to-paper” contact.

In the case of independent work, *on-task behavior* is operationally defined as the engagement with the task assigned to the student in the way that the task requires. Within the lessons on self-monitoring strategies, students were taught to ask themselves the following in regards to their engagement with a task: *Am I reading a prompt? Am I actively thinking about the prompt? Am I skimming or rereading a text in order to find an answer?* When monitoring on-task behavior, teachers evaluated students based on whether their eyes were on text (either within the paper activity or on a published text to which they were referring), and/or their pencils were on paper, actively writing a response.

## **CHAPTER II**

### **A REVIEW OF THE LITERATURE**

According to the American Psychiatric Association (APA), attention deficit hyperactivity disorder (ADHD) is estimated to affect “from 3 to 5 percent of school-age children in the United States,” (Schnoes, Reid, Wagner, & Marder, 2006, p. 483). Contextualized further, and according to the APA, this computes to there being at least one student with ADHD present in “most general education classrooms in North America,” (Murphy, 2015, p. 83). The increasing prevalence of students diagnosed with ADHD in classrooms across the country warrants a closer examination of the strategies and techniques that benefit these students. This literature review seeks to investigate the topic of ADHD students, and what teachers can do to respond effectively to their learning styles and needs. The first part looks at current trends. The second section explores characteristics of the ADHD student. The third section examines and considers effective instructional techniques. Finally, the fourth section will look at reading scores among ADHD students.

#### **Current Trends in Teacher Training/Attitudes Regarding ADHD Students**

Educating students with ADHD begins with understanding them. Experience in teaching these students can certainly add to a teacher’s repertoire of techniques; however, it is imperative that teachers have access to explicit instruction as to the nature of ADHD, how it manifests in the classroom, and best practices. In a study conducted by Jerome, Gordon, and Hustler (1994), 89% of an American sample of teachers reported receiving no instruction or “only a cursory mention” of ADHD in their preservice training or embedded professional development (PD) (as cited in Bussing, Leon, & Wilson Garvin, 2002, p. 328).

PD focused on the ADHD student is an appropriate response to the results of a study conducted by Bussing, et. al., (2002) in which teachers reported low confidence levels in teaching ADHD students. Sixty four percent of teachers reported little to no confidence in managing stress caused by ADHD students in the classroom, while 46% of teachers reported the same level of confidence in their ability to adjust lessons and materials for students with ADHD. Given their unique characteristics and the differentiated instruction they need, it's important to take a closer look at how ADHD manifests in the classroom.

### **Characteristics of the Adolescent ADHD Student in the Inclusive Classroom**

There are a number of characteristics associated with ADHD in general, yet there are also specific traits that manifest in adolescents with ADHD. This section will explore both the general characteristics and those found to emerge in the adolescent years.

The characteristics associated with ADHD are inattention, distractibility, impulse control, and overactivity. Where sustained effort is required, a child with ADHD will often have difficulty maintaining attention to task. They may appear to be easily distracted with the appearance of not listening. Without teacher supervision and check-ins, work completion is often sparse. The impulsive nature of ADHD students lends to calling out, a struggle with turn-taking and interrupting teacher and peers. Sometimes but not always, over activity is present among the other characteristics, and this manifests in students making noise(s), leaving their seats without permission, or talking during inappropriate times (Montague & Warger, 1997).

A study conducted by Ross and Randolph showed that “non-ADHD students demonstrated more effective task vigilance than students with ADHD....In addition, non-ADHD students demonstrated shorter time periods of being off-task...as compared to students with ADHD” (2014, p. 5). Along with the characteristics that often present negatively, children with

ADHD have a wealth of positive attributes as well, with research pointing to high levels of “curiosity, empathy, energy and enthusiasm” (Murphy, 2014, p. 67).

Children with ADHD tend to have unique challenges in the school setting, namely due to the dissonance between classroom expectations and an ADHD student’s individual traits (Rogers & Meek, 2015). According to Ruschko, 60 to 80% of students with ADHD exhibit “learning problems,” attributed not to a lack of intelligence but to a “lack of successful interventions” (as cited in Brim & Whitaker, 2000, p. 57).

At the elementary level, the display of the aforementioned traits can make for challenging conditions for both teacher and students. However, as students transition into adolescents, new and perhaps more troubling problems can emerge. Because of physical and social maturation, “adolescents [with ADHD] encounter new sets of problems such as automobile accidents [due to inattention], traffic tickets, difficulty in romantic relationships, vocational problems, and substance use” (Evans, Zewelani, Schultz, & Pastor, 2007, p. 257). Furthermore, adolescents with ADHD are more likely to demonstrate deficiency in reading comprehension, which culminates statistically in an increased likelihood of dropout (compared to non-ADHD peers) (Brim & Whitaker, 2000).

### **Instructional Techniques and the Classroom Environment**

Strategies, techniques and other factors that have proven advantageous for adolescents with ADHD are small group instruction, self-regulation, and the intentional aiding of executive functioning.

A study conducted by Lauth, et. al., (2006) reported an “exacerbation of off-task behavior during whole-class teaching...as compared to group and individual work conditions [in students with ADHD]” (as cited in Imeraj, et. al., 2013, p. 488). Several possible causes are at the root of

this finding. First, whole-class instruction does not typically allow teachers to check-in with students individually for understanding. It is typical for a student with ADHD to increase in his/her distractibility and inattention the longer the student is left alone without accountability for attention to task. The further the gap between understanding of instructional material and competent completion of related tasks, the more likely the student with ADHD is to become disengaged entirely. Whole-class instruction, therefore, lends to a cyclical pattern of inattention to task and misunderstanding of content requirements for students with ADHD (Nowacek & Mamlin, 2007). Overall, higher levels of teacher supervision significantly predicts a longer on-task span in students with ADHD. On the contrary, small-group instruction allows for increased teacher supervision, which has shown to increase accurate task completion and decrease off-task behaviors in students with ADHD (Imeraj, et. al., 2013). In a study conducted by Hart, Massetti, Fabiano, Pariseau, and Pelham (2011), “higher on-task behavior was found in children with ADHD...during cooperative learning in small groups,” and, “although small group work yielded the highest levels of on-task focus in all children, it seems that children with ADHD benefit especially from this specific class group structure” (as cited in Imeraj, et. al., 2013, p. 495).

Self-regulation is another method useful in teaching students with ADHD. According to Reid:

Many children with ADHD have the skills to perform the desired behaviors but are not able to perform the behaviors consistently or maintain performance over time because of a lack of self-regulation skills. For these students, [self-regulation] techniques...are simple and effective with students who have attention problems. (1999, p. 13)

Self-regulation is a strategy in which students record some aspect of their behavior so they can address and change that behavior (Montague, 1997). More specifically, “This strategy is based on the notion that children can stay on task if they are cued to perform the simple steps and are systematically reinforced for performing the steps” (p. 11). Contained within student self-monitoring could be teacher cues, a student checklist, or a reinforcement chart, which might ultimately serve to gauge students reflection on task-related points. For example, a student might ask, am I listening to my teacher? or, do I know what to do?

Many students with ADHD have weak executive functioning. Executive functioning helps children “control impulses, regulate emotions and actions, determine appropriate behavior, regulate attention, and follow through with a plan” (Murphy, 2014, p. 68). It is important for teachers to support students who have executive functioning difficulties in specific, targeted ways if these students are to succeed in the classroom. Such strategies include establishing eye contact before giving directions, chunking directions, repeating instructions, providing visual cues, chunking large assignments, using declarative language, and metacognitive strategies.

Thus, small group instruction, self-regulation and aiding in executive function can each have a meaningful and tangible impact on students with ADHD.

### **Reading Scores and Comprehension in Students with ADHD**

According to Murphy (2015), “Studies show that deficits in executive functions, particularly working memory, along with slower processing speeds in many children with ADHD contribute to those difficulties” (p. 84). Furthermore, it is estimated that between 25% and 40% of children with ADHD meet the criteria for reading disorders. More specifically, students with ADHD “have been shown to exhibit weaknesses in text reading rate, accuracy, and

reading comprehension” (Carroll, Maughan, Goodman, & Meltzer; Cain, as cited in Murphy 2015, p. 84).

Students with ADHD are less likely to identify the main idea of expository texts and to comprehend narrative text as the length increases (Cherkes, as cited in Stern & Shalev, 2013). This study aimed at exploring the relationship between sustained attention and reading comprehension in adolescents with ADHD, it was concluded that “participants in the ADHD group had significantly lower performance on both sustained attention and reading comprehension compared to their aged matched normal controls” (2013, p. 437).

Because of their propensity toward a comprehension deficiency, and given their individual characteristics, it is important to employ a body of techniques and interventions for students with ADHD. According to Dunn and Dunn, poor readers’ preferences and learning styles are often uncondusive to classroom expectations in the area of reading, such as silent reading and sustained attention (as cited in Ostoits, 1999). To address this, teachers can allow students with ADHD to read out loud to themselves during independent reading time. Hearing one’s voice enables these students to maintain attention and find meaning. Teachers should provide frequent supervision and implement before, during and after reading strategies if these students are to demonstrate optimal reading performance.

### **Summary**

Tabassam and Grainger (2002) found that students with ADHD are “lower in academic self-efficacy compared with non-ADHD peers” (Martin, Burns, & Collie, 2017, p. 14). Dumas and Pelletier (1999) found that children with ADHD “evinced lower levels of perceived scholastic competence” (as cited in Martin, et. al., p. 14). Students with ADHD have unique needs when it comes to operating within an inclusive classroom. Often, these needs are at odds

with the ways in which typical inclusive classrooms run and the expectations held by the instructor. To teach students with ADHD, it is important to be cognizant of the particular methods we employ, namely those related to executive function, collaborative work, and self-regulation.

### **CHAPTER III**

## **METHODS**

The purpose of this study was to determine the degree to which engaging in self-monitoring strategies increases on-task behavior in in a middle school English Language Arts classroom and specifically among a subset of students with an ADHD diagnosis.

### **Design**

The study had a pre-experimental design in which students served as their own controls in a variant of the one-group pre-test post-test. On-task behavior scores, using time sampling with 30-minute intervals, were generated during a weighted baseline and a treatment condition. The independent variable was whether the self-monitoring intervention was in place. The dependent variable was an on-task behavior score.

### **Participants**

Participants in this study were 20 7<sup>th</sup> grade students who attend a suburban middle school in Maryland, where 32.1 percent of students at this school receive Free and Reduces Meal Services (FARMS) and 34.8 percent receive special education services. The school has a 34.8 attendance rate. Convenience sampling was used in this study.

The classroom in which the research was conducted was one in which all students were enrolled in the Making Meaning reading intervention. 18 of the 20 students enrolled in the course read two or more levels below grade. Twelve students in the class (60 percent) receive special education services. Four students (20 percent) are classified as Limited English Proficiency (LEP). Of the 20 students, nine were Caucasian, six were African American, and five were Hispanic. There were 13 boys and 7 girls. Eleven of the students received special education services, and of those eleven, 7 had ADHD diagnoses.

To simplify data collection, the students were separated into two groups so that the researcher (the general education teacher) and the special education co-teacher could each record the behaviors of 10 students. The children were allocated between the two teachers so that there was a relatively equal number of students in each group with an ADHD diagnosis. However, the two sets of children received the same treatment. The researcher monitored the same group of students throughout the intervention process in a small group structure, while the special education co-teacher monitored the other group, also in a small group structure. Each teacher facilitated the small group that she and he was “assigned.” Each teacher monitored the same set of students during the independent classwork portion of each lesson.

### **Instruments**

The instrument used for data collection was the *Teacher Data-Tracking Tool for Student On-Task Behavior*, which is a tool that two classroom teachers used to track on-task behavior for each student that was part of the sample. The instrument was designed by this researcher and there is no reliability or validity data.

The *Teacher Data-Tracking Tool for Student On-Task Behavior* uses time sampling in which the teacher awarded 1 point for on-task behavior or 0 points for not on-task for each individual student three times throughout class, or every thirty minutes during a 90-minute instructional block. The course in which the research was conducted led to each check-in being conducted at or around 8:30, 9:00, and 9:30, during whole-group instruction, small-group guided practice, and independent classwork, respectively. A point was awarded—or not awarded—at each juncture based on how a student demonstrated on-task behavior throughout the 30-minute chunk of time. From 8:00 to 8:30, teachers monitored students for attentiveness/engagement approximately 70% of the time, based on factors like tracking the teacher/speaker, recording

required notes, and participating in class discussions as warranted. For the 8:30 to 9:00 chunk of time, teachers noted similar behaviors in small group. For the last chunk of class, which was dedicated to independent work, teachers evaluated students for behaviors such as actively reading a prompt or text, and having pencil-to-paper in an effort to record responses. Again, teachers awarded points if these behaviors were noted about 70% of the time.

### **Procedure**

On February 21, 2018, the researcher and her special education co-teacher began using the *Teacher Data-Tracking Tool for Student On-Task Behavior* to gather baseline data for on-task behavior. The baseline period continued until March 6<sup>th</sup> for a total of 10 class periods. The number of points earned, pro-rated to adjust for absences and multiplied by two to adjust for the fact that the baseline was half the length of the treatment period, produced the on-task behavior score for the baseline period. The maximum number of points available in the weighted baseline period was 60.

On March 8, the two teachers co-taught a lesson in order to define *self-monitoring* for students, explain its documented benefits, and allow students time for guided practice. On March 9, additional time was allotted for students to independently practice self-monitoring. Teachers informed students that beginning the following day, they would continue self-monitor three times throughout class. The students were shown how to use the *Student Self Monitoring Tool*, designed by this researcher, on which they rated whether or not they were on task at the same checkpoints as the *Teacher Data-Tracking Tool for Student On-Task Behavior*, but in a slightly different format. The students were asked to consider the same behaviors and to consider the same percentage of time engaged in on-task behaviors as the teachers were using in their data collection.

The students were given an incentive to provide accurate self-monitoring. If a student's ratings matched completely the ratings of the teacher, he or she received a RAMS Pride (tickets in the school's token economy). Each Friday students could trade in 3 RAMS Prides for a prize (piece of candy, pencil) or they could save up a bit more and for 10 RAMS Prides this researcher would buy them Chick-fil-a breakfast. The researcher emphasized that they would not be receiving these rewards for being on task but for honesty and sincerity in their reflections on their own engagement with classroom tasks.

Each day from March 12 – April 19, 2018, students used the *Student Self-Monitoring Tool* to record whether they were on-task at three checkpoints throughout the instructional block. The teacher paused at or about 8:30, 9:00, and 9:30 and asked students to update their self-monitoring tool by writing a check (√) or X at each checkpoint. For each day during the first five days of the intervention, the teacher(s) reiterated what types of behaviors they were looking for, and that the students should consider when evaluating themselves. During this period, teachers continued to use the *Teacher Data-Tracking Tool for Student On-Task Behavior*. The points from the Teacher form, prorated for absences, were added together to produce the on-task behavior score. The maximum number of points available was 60.

The on-task behavior score from the weighted baseline period and treatment period for the entire class of students was compared using a non-independent samples t-test. The on-task behavior scores from the two conditions of the subset of children with ADHD was also compared using a non-independent samples t-test.

## CHAPTER IV

### RESULTS

In this study, the researcher attempted to determine whether or not the teaching and implementation of self-monitoring strategies by students diagnosed with Attention Deficit Hyperactivity Disorder (ADHD) would affect those students' on-task behavior in a 7<sup>th</sup> grade Language Arts/Reading Intervention classroom. The researcher also sought to determine the effect of self-monitoring on the class as a whole, including non-ADHD students.

#### **Results for On-Task Behavior Scores for the Entire Class**

For the entire class, the mean on-task behavior score during the self-monitoring intervention (Mean = 42.45, SD = 12.49) was significantly higher than during the weighted baseline period (Mean = 33.00, SD = 11.45) [ $t(19) = 8.42, p \leq .001$ ] (see Table 1).

#### **Results for On-Task Behavior Scores for ADHD Students**

Among the subgroup of children with an ADHD diagnosis, the mean on-task behavior score during the intervention (Mean = 39.71, SD = 8.38) was also significantly higher than during the weighted baseline period (Mean = 29.14, SD = 8.47) [ $t(6) = 8.58, p \leq .001$ ] (see Table 2).

Consequently, the null hypothesis, that there will be no statistically significant difference between on-task behavior scores during a weighted baseline period and a treatment period in which children engage in regular self-monitoring through the instructional block among students in a 7<sup>th</sup> grade Language Arts/Reading Intervention classroom, was rejected for the class as a whole. The second null hypothesis, that there will be no statistically significant difference between on-task behavior scores during a weighted baseline period and a treatment period in

which children engage in regular self-monitoring through the instructional block among a subset of students with an ADHD diagnosis, was also rejected.

Table 1

*Means, Standard Deviations, and t-test Results for On-Task Behavior Scores for Entire Class*

Condition	Means	Standard Deviations	t-statistic
Baseline	33.00	11.45	8.42*
Intervention	42.45	12.49	

\*Significant at  $p \leq .001$

N = 20

Table 2

*Means, Standard Deviations, and t-test Results for On-Task Behavior Scores for ADHD Students*

Condition	Means	Standard Deviations	t-statistic
Baseline	29.14	8.47	8.58*
Intervention	39.71	8.38	

\*Significant at  $p \leq .001$

N = 7

## **CHAPTER V**

### **DISCUSSION**

The purpose of this study was to determine whether or not the teaching and implementation of self-monitoring strategies would affect the students' on task behavior in a 7<sup>th</sup> grade Language Arts/Reading Intervention classroom. This study was particularly interested in the impact of the intervention on a subset of students diagnosed with ADHD.

#### **Implications of the Study**

The null hypotheses that there will be no statistically significant difference between on-task behavior scores during a weighted baseline period and a treatment period in which children engage in regular self-monitoring through the instructional block among students in a 7<sup>th</sup> grade Language Arts/Reading Intervention classroom were rejected for the class as a whole and for the subgroup of ADHD children.

Since on-task behavior significantly improved as a result of students engaging in self-monitoring throughout a lesson, then it would stand to reason that teachers—especially those in an inclusive classroom—could meaningfully influence student learning and success through explicit instruction in self-monitoring for both ADHD and non-ADHD students.

Students who struggle with inattention to task may particularly benefit from having their attention guided to a specific measure, at a specified time, for a specified purpose throughout instruction. One of the important differences between the way the class operated before and during the research period was that during the research period, the students were required to pause at designated points and reflect on the degree to which they were on task. Students were taught what to look for and when. It would seem that clear and specified guidelines in connection

with self-monitoring could benefit students, particularly those with ADHD or who struggle with inattention.

Feasibility of the intervention, namely in terms of any instructional costs associated potential disruptions is a factor teachers will need to take into account when considering implementation. In this study, disruptions to instruction were minimal due to a couple of factors. First, once students got a handle on how and when to complete their entries, transition time from activity to log completion to activity was quite minimal. Second, most students seemed overall motivated to complete the log and continue with required instructional tasks.

Based on the findings, it would be recommendable that teachers teach and implement self-monitoring strategies particularly for students with ADHD. The results were also favorable for non-ADHD students, which would show that self-monitoring is beneficial for students with and without disabilities. Since this intervention was not overly disruptive and provided benefits to the non-ADHD students as well, it may be particularly effective when used with the entire class since the ADHD children will not feel singled out, which can be particularly problematic for children at the middle school level. This study does not show whether or not self-monitoring makes a difference in students who are reading at or above grade-level, as participants in this study—whether ADHD or non—were reading slightly to moderately below grade level at the time of the intervention.

### **Theoretical Consequences**

The findings of this study paint an optimistic and positive view of the potential and capabilities of ADHD students, many of whom are often reading below grade-level and/or receive academic services within an Individualized Education Plan (IEP). As noted earlier in this study, self-monitoring techniques have been shown, in previous research, to benefit students with

attention problems (Reid, 1999). Students with ADHD are shown to have weak executive functioning, a characteristic which necessitates explicit instruction not in curriculum content alone, but in how to access content, how to manipulate and go about tasks, and, most important to this study, how and what to pay attention to.

If on-task behavior significantly improved as a result of students engaging in self-monitoring throughout a lesson, then it would stand to reason that teachers—especially those in an inclusive classroom—could meaningfully influence student learning and success through explicit instruction in self-monitoring. An implication of the results may be that students who struggle with inattention to task may benefit from having their attention guided to a specific measure, at a specified time, for a specified purpose throughout instruction. This is consistent with the theories about the importance of addressing executive function deficits in children with ADHD (DuPaul, Weyandt, and Janusis, 2011).

### **Threats to Validity**

One threat to validity in this study was the nature of the sample and how it was chosen. The participants were selected based on convenience sampling based on the course taught by the researcher and its respective student enrollment of seven ADHD students. Consequently, participants were all around the same age, with similar academic and cognitive abilities, and therefore it could be difficult to generalize the results of this study to another group(s) elsewhere.

Another threat to validity is contained in the researchers' awareness of the full particulars of the study. Unintentional bias could result from both classroom teachers knowing that research was being conducted. An example of how this could manifest is through the possibility of teachers being more attentive to student on-task behavior than they typically are, due to the specific lens they adopt for the purposes of the research. It is also possible that since a degree of

subjectivity was involved in making the ratings of on-task behavior, which is a threat to validity in and of itself, that teachers may have judged behaviors differently based on their awareness of whether it was the baseline or intervention period. This could be intentional or unintentional, but does pose a threat to validity.

Other threats to validity are concerned with individual/innate differences between and among students. There are multiple factors that could influence child's ability to focus, including, but not limited to, past and present attitudes toward school and learning, whether or not there is a history of physical or emotional trauma, influences brought on by the home environment, individual differences in development or maturation among students, and any external influences brought forth by matters concerned with the time of year at which the intervention was conducted, i.e., early spring, when the PARCC test looms near. Since there was no control group, there were no controls for maturation or historical factors.

### **Connections to Previous Studies/Existing Literature**

The results of this experiment are consistent with those of previous studies and existing literature. The positive effects of self-monitoring on on-task behavior have been widely noted in various studies, several of which are outlined below.

Harris, Friedlander, Saddler, and Graham concluded that self-monitoring of attention had a favorable effect on students' on-task behavior in their 2005 study. Noted in the literature is that, "explicit development of self-regulation abilities may enhance the on-task and academic performance of [ADHD] students" (p. 146). In this particular study, subjects were enrolled in grades three through five, so the age differences between the participants in the two studies could be a factor in outcome; however in both studies, ADHD students benefited from engaging in self-monitoring, suggesting that the intervention is useful for a relatively broad age range. Also

similar to the two studies are the socioeconomic backgrounds of each set of participants (low to middle class income), suggesting that this is a valuable intervention for children from this demographic background. Both studies used similar observational methods used to record on-task data, (i.e., the researchers' monitoring of student on-task behavior at designated intervals) suggesting that observed behaviors are responsive to the intervention.

Another study explored the effects of self-monitoring on on-task behavior in three ADHD students in both independent classwork and small group settings, much like the ones present within this study. The results showed that self-monitoring of academic performance may result in “increased academic productivity and accuracy, as well as improved on-task behavior during independent class work” (Shimabukuro, Prater, Jenkins, and Edelen-Smith, 1999, p. 409). Although the current study did not examine academic productivity and accuracy, it provided evidence consistent with the Shimabukuro et al. study that self-monitoring behaviors improves on-task behavior.

A study by Baheri Eslami, Mahmoud Mirnasab, Malek, and Amiri (2016) sought to determine the effectiveness of a self-monitoring program on ameliorating attention among students with ADHD. The results and conclusion indicate, “...manifestation of off-task behaviors of the students in [the intervention] phase decreased compared to the non-intervention phase... Findings supported the effectiveness of self-monitoring program as a therapeutic cognitive-behavioral technique” (p. 111).

Reid and Harris (1993) conducted a study in order to ascertain the effects of self-monitoring on attention to task. The results of the study showed that self-monitoring can “significantly and meaningfully” increase observed levels of on-task behaviors within a classroom (p. 36). Interestingly, the authors of this study note that the results of their research do

not prove that self-monitoring necessarily has an effect(s) on any other academic area or skill (outside of on-task behavior).

Finally, a 2010 study shows that self-monitoring was effective in improving the on-task behavior of all participants in the study (Graham-Day, Gardner, and Hsin).

### **Implications for Future Research**

To obtain a more reliable set of data, researchers should branch out in their selection of sample groups. Students of varying ages, across multiple contents, under teachers with an array of teaching styles and instructional approaches, engaging in self-monitoring, should be studied to determine its effects across the board. Furthermore, both the baseline and intervention periods might be longer than 10 and 20 days, respectively, to possibly discard any notion of a “honeymoon period” phenomena (one in which participants are motivated by the novelty of a new guideline or approach).

In a future related study, researchers might also take into consideration how accuracy of student ratings can be enforced/validated. This study made an attempt to do so in incentivizing students to give ratings comparable to those assigned by their teachers. Although students were given explicit instruction and guided practice in using self-monitoring strategies, future research could do this more extensively. Future researchers could explicitly compare the student ratings of on-task behaviors with those of adult raters and control for this relationship with considering the impact of self-monitoring on on-task behavior.

### **Conclusion**

In this study, both students with and without ADHD showed a notable increase in their on-task behavior when required to self-monitor, with mean on-task scores increasing by approximately ten points from baseline to intervention period. Most students in the class were

willing to engage with the process, and the few who were initially reluctant seemed to buy-in after noticing that the expectations were clear and simple and that many of their peers were willing to engage and comply. The researcher found that initial instruction on self-monitoring and opportunities for guided and independent practice were necessary in regards to student understanding of the process.

If self-monitoring strategies were more widely taught across inclusive classrooms, it could very well have observable benefits for all students. If on-task behavior is linked to academic achievement, and academic achievement to both self-concept and success beyond school, then starting with something as clear and simple as curriculum-embedded self-monitoring could have far-reaching impacts among children and adolescents with ADHD.

A child with an ADHD diagnosis has some innate characteristics that could mean less success in a classroom when compared to peers without those same characteristics, e.g., inattention, distractibility, and/or impulse control. However, instructional and behavioral strategies can be put in place in the classroom for the proven and documented benefit of ADHD students. Self-monitoring may be one of those methods. With clearly-taught, consistent parameters related to self-monitoring, students with ADHD can find a means to direct and guide their attention.

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**APPENDIX B**

**Student Self-Monitoring Tool**

<b>Check-in</b>	<b>Am I on-task?</b>
Check-in #1	
Check-in #2	
Check-in #3	
Number of checks:	
Number of checks from my teacher:	



