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Students With Special Needs and Their Ability to Self-monitor Goals

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STUDENTS WITH SPECIAL NEEDS AND THEIR ABILITY TO SELF-MONITOR GOALS

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Abstract

Self-monitoring behavior is one way students can be involved in their learning. Research shows that desired behaviors increase, and academic performance improves, when students monitor their behavior during class. This action research project reviews self-monitoring literature and examines how accurately fifth-grade male students who are receiving services for Autism Spectrum Disorder can self-monitor their Individualized Education Program (IEP) goals and how self-monitoring affects their progress toward their IEP goals. The results suggest these students were able to accurately self-monitor and show progress toward their IEP goals.

Keywords: Autism Spectrum Disorder, Individualized Education Program, MotivAider, Self-Monitoring, Special Education

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Chapter I: Introduction

Students who qualify for special education services have been found to have a disability (PACER Center, 2020). The purpose of this project is to examine the ability of students receiving special education services to self-monitor their goals and the effects self-monitoring has toward their progress. Evaluators then write goals for these students based on their educational needs. The goals are specific, measurable, achievable, relevant, and time bound. Evaluators include general education teachers, special education teachers, or paraprofessionals; they collect data throughout the school year and report progress toward these goals. Typically, students do not monitor their own goals, but research shows that self-monitoring can increase desired behavior such as focusing on a task, completing work, and staying academically engaged (Sheffield & Waller, 2010). Therefore, the purpose of this action research project is to examine the results when students with special needs self-monitor their goals.

Rationale for the Study

Different methods can be used to self-monitor a target behavior such as paper and pencil and various types of technology. However, some limitations are worth noting. Hunter et al. (2017) examined the effects of self-monitoring on decreasing off-task behaviors and increasing writing assignment scores. The students were able to increase their on-task behavior but the students' scores on their writing assignments were not satisfactory. Otero and Haut (2015) conducted a study that involved three students self-monitoring their on-task behavior with 1-minute intervals, for 20 minutes, using an electronic device called MotivAider. Otero and Haut asserted that it would be difficult to conclude the intervention's effectiveness when different people administered the intervention. They also called for more research on the accuracy of students recording their behaviors. Ennis et al. (2018) led a study, at the end of the school year,

involving three students in fifth grade who self-monitored their behavior every 2 minutes, for 40 minutes, using MotivAider. Ennis et al. called for more research in data collection methods. Rosenbloom et al. (2019) directed a study that involved students self-monitoring with I-Connect, an application that is downloaded onto a smartphone. The students monitored their behavior every 30 seconds, but their markings were never assessed for accuracy and the type of task was not varied. Each of these four studies called for more research that obtains maintenance; that is, studies that gradually phase out the intervention to ensure that students can maintain the desired behavior. The researchers also called for generalization, student performance in other domains (Hunter et al., 2017). This project will further examine students with special needs self-monitoring their behavior throughout general and special education classes and the effects on the amount of progress they make toward their special education goals.

Special Education Context

Special education is the individualized program, curriculum, and instruction used when students are found to have a disability. Special education aims to set students with special needs up to perform to their fullest potential. Schools can provide services to students through 13 different categories in special education. The category discussed in this paper is Autism Spectrum Disorder (ASD). ASD is a new category in the Diagnostic and Statistical Manual (DSM-5). ASD classifies people with impairments in social communication and interaction and the presence of restrictive and repetitive behaviors, and interests, or activities. Some examples of difficulties include reduced sharing of interests, a lack of facial expressions, difficulties in sharing, problems with imaginative play, and extreme distress over small changes. Special education and ASD have complex histories.

History of Special Education

According to Bicehouse and Faieta (2017), *Brown v. Board of Education* (1954) was a court case that changed the opinions of many on "equal citizenship." This court case focused on equal rights for people of different races; it also started discussions for equal rights of people with disabilities. After *Brown v. Board of Education* (1954), the federal government passed laws that provided funds to service people with cognitive disabilities. The government also started funding "states for vocational education, assessment, teacher training, and special education services" (Bicehouse & Faieta, 2017, p. 39). Funding was also made available to have facilities for people with cognitive disabilities to be educated and train individuals to work with them. Even with these advances, until the 1970s, most states excluded students with any level of disability were told not to attend school; the reasoning varied for every state (Bicehouse & Faieta, 2017).

The rights of individuals did start to increase in the 1960s. Congress passed the Elementary and Secondary Education Act (ESEA) in 1965. ESEA established funds so that schools could provide students with disabilities a free and appropriate public education. It was amended in 1967 to provide more services to students with special needs. One year later, Congress passed the Handicapped Children's Early Education Act, which funded programs for preschool children with disabilities. Congress found problems in the 1970s when it wanted to mandate special education services nationally. First, to get a student identified and placed in special education was inappropriate and never the same. Second, schools placed some ethnic children in special education disproportionately. Third, parents were discouraged from being involved in their children's education. Fourth, schools used special education to avoid disruption

in the general education classroom. Finally, special and general education teachers competed for the same funds (Bicehouse & Faieta, 2017; Rothstein, 2013).

Two court cases in the 1970s changed the states' practices and changed special education: *Pennsylvania Association for Retarded Children (PARC) v. Pennsylvania* and *Mills v. Board of Education.* These two court cases concluded that schools could not deny students an education without the law's due process. *Mills v. Board of Education* laid the groundwork for what due process (labeling, placement, and decision-making) was required so that students with disabilities would get a free and appropriate public education. Both court cases cited the safeguards and equal protection under the 14th Amendment of the Constitution and established that states must provide quality education to all students.

Congress passed the Education for All Handicapped Children Act (EHA) in 1975 in response to *Pennsylvania Association for Retarded Children (PARC) v. Pennsylvania* and *Mills v. Board of Education.* EHA required the states - to serve all students by meeting the following requirements: "a free and public education, due process, nondiscriminatory assessment, and an Individual Educational Plan (IEP) for every child. It also stipulated that as much as possible educational services should be provided in the least restrictive environment" (Keogh, 2007, p. 67). Congress amended EHA and formed the Individuals with Disabilities Education Act (IDEA) in 1990. IDEA included some changes: changed the language of handicapped student/child to student with a disability, added autism and traumatic brain injury as categories students could receive services under, and provided transition plans and services by the age of 16 (Kauffman et al., 2017). In 2004, IDEA was reformed, including some of the following changes: eligibility requirements, emphasizing the requirements of special education, dispute resolution system, and

disciplinary process (Kauffman et al., 2017). Similar to special education, ASD has had many changes throughout its history.

History of Autism Spectrum Disorder

The definition of autism has changed over time. Eugen Bleuler, a Swiss psychiatrist, first used the word autism in 1911 to describe the "isolated self" symptom of childhood schizophrenia (Zager et al., 2017). In 1952 and 1968, when the American Psychiatric Association (APA) published the DSM-I and DSM-II, autism was used only in reference to childhood schizophrenia. Autism was thought to be a result of parenting and not biology. American psychiatrist Leo Kanner thought differently, though.

Leo Kanner and Hans Asperger, Austrian pediatricians, worked with patients with similar characteristics throughout the 1940s. Kanner's patients shared symptoms of "withdrawal, echolalia, the need for sameness/resistance to change, atypical sensory responses, and repetitive behaviors such as spinning and rocking" (Zager et al., 2017, p. 2). Asperger's patients had the same symptoms as Kanner's, except they were higher functioning cognitively, and their deficits were more social (Zager et al., 2017). Kanner and Asperger showed that autism is a behavioral disorder, not the product of parenting, and it was no longer thought of as part of childhood schizophrenia.

When the APA published DSM-III in 1980, the separation of autism and childhood schizophrenia was made. Infantile autism was now its own disorder. According to Zager et al. (2017), infantile autism consisted of "lack of responsiveness to others, severe impairments in language development, and 'bizarre responses' to aspects of the environment" (p. 3). To distinguish from schizophrenia, infantile autism had the absence of delusions and hallucinations. In 1994, the APA published DSM-IV, and Asperger's Syndrome was now a subtype of autistic

disorder. Asperger's Syndrome stayed a subtype until ASD became its own category in DSM-V in 2013. It replaced diagnoses, including Autistic Disorder, Pervasive Developmental Disorder (PDD) – Not Otherwise Specified, and Asperger's Disorder (Zager et al., 2017). The context of special education is the basis for this project's research questions.

Research Questions

The research questions guiding this action research project include the following:

1) How accurately are students with special needs able to self-monitor their IEP goals? and

2) How does self-monitoring affect progress toward their IEP goals?

Conceptual Definitions

The following key terms are important to this action research project.

Autism Spectrum Disorder

Autism Spectrum Disorder is a diagnosis that classifies people with impairments in social communication and interaction and the presence of restrictive and repetitive behaviors, interests, or activities (Zager et al., 2017).

Generalization

Generalization is the ability for students to perform the same behavior in different domains (Hunter et al., 2017).

Goal Setting

Goal setting is a self-management intervention that involves the steps that one must take to reach his goal. The goals should be specific, measurable, attainable, realistic, and time-bound (Lawlor & Hornyak, 2012).

Individualized Education Program (IEP)

IEPs are written annually and include present levels of performance, goals, services that will be provided, and how success will be measured. These are written specifically for each student (Bicehouse & Faieta, 2017).

Maintenance

Maintenance is gradually phasing out the intervention to ensure the student can maintain the desired behavior (Vanderbilt, 2005).

Self-Monitoring

Self-Monitoring is a self-management strategy that involves observing and recording one's absence or presence of a target behavior (Bruhn et al., 2016).

Special Education

Special education is programming in the schools that provides specialized instruction to meet the needs of students with a disability (Bicehouse & Faieta, 2017).

Organization of Study

Chapter I provided a rationale for the importance of this action research project, it introduced the special education context, and presented the guiding research questions to be answered. Chapter II will review literature on the topics of special education, Autism Spectrum Disorder, and student involvement in learning. Chapter II will also discuss studies involving self-monitoring and the MotivAider self-monitoring tool. Chapter III will explain the design and operational procedures used to carry out this action research project. Chapter IV will be tied to the research questions and the results will be based on the data analysis plan. Graphs will be used to describe the data. Finally, Chapter V will include limitations and delimitations of the project and will summarize implications for future research.

Chapter II: Literature Review

This chapter reviews the literature related to students with Autism Spectrum Disorder self-monitoring one of their Individualized Education Program (IEP) goals. Databases used to locate resources published between 2005 and present include Education Journals, ERIC, EBSCO MegaFILE, ProQuest, Autism Spectrum Disorder websites, and the Minnesota Department of Education website. The search was narrowed to include only peer-reviewed journals that focused on studies completed about the MotivAider, self-monitoring, and student involvement in the Individualized Education Program (IEP) process. The keywords that were used in these searches included "self-monitoring elementary," "effects of self-monitoring," "MotivAider," "student involvement in IEP," "Autism Spectrum Disorder," special education," and "Individualized Education Program." This chapter's structure reviews literature and explains processes in special education in three sections: special education, Autism Spectrum Disorder (ASD), and self-monitoring. These were chosen because special education and ASD need first to be defined before explaining self-monitoring. The students in this project have been found by the school district to have an ASD disability. The students will then use the MotivAider as a tactile prompting device to self-monitor one of their Individual Education Program (IEP) goals.

Process of Special Education

Special Education is defined as specially designed instruction to meet the needs of a child with a disability. Schools must deliver the education at no cost to the parents. The instruction can occur in the classroom, home, hospital, institutions, and other settings (U.S. Department of Education, n.d.). President Gerald Ford enacted the Individuals with Disabilities Education Act (IDEA) in 1975. IDEA made free and appropriate public education eligible to children with a disability in their least restrictive environment (U.S. Department of Education, n.d.). IDEA ensured children special education and related services. In 2004, IDEA was reauthorized and

amended in 2015 through Every Student Succeeds Act. Congress stated, “Improving educational results for children with disabilities is an essential element of our national policy of ensuring equality of opportunity, full participation, independent living, and economic self-sufficiency for individuals with disabilities” (U.S. Department of Education, n.d, para 6).

According to PACER Center (2020) the school has a specific process for a child to be evaluated and determined to have a disability. The first step is that parents or school staff request an evaluation. The parents must give consent in writing for the evaluation to take place. The school then completes the evaluation, and eligibility is determined. If the student is found to be eligible, a meeting is held, an IEP is developed, and placement is determined. The IEP is a legal document that outlines the special education, related services, accommodations/modifications that the child’s school will provide to the student. The IEP has goals written in the areas where the child was found to have specialized instruction needs. Some of these areas are reading, math, social skills, and executive functioning skills. The parents must agree to the IEP. The date is then set for services to start. A new IEP must be written every year. An IEP meeting must also be held at least once a year. A re-evaluation must be completed every 3 years to determine if the student is still eligible for services.

Autism Spectrum Disorder

One disability category that students can qualify for in the school setting is Autism Spectrum Disorder (ASD). The Minnesota Department of Education explains the core features of ASD are “persistent deficits in social interaction and communication and restricted, repetitive or stereotyped patterns of behavior, interests or activities” (Minnesota Department of Education, n.d. para 1). Every student with ASD has his own combination of characteristics. These characteristics can range from mild to severe. Some examples of difficulties can include the

following: avoiding eye contact and wanting to be alone; having trouble relating to others or not having an interest in other people at all; not playing pretend games; and repeating actions over and over again (Centers of Disease Control and Prevention, 2020). To qualify for special education services in the school, the student must have a qualitative impairment of social interaction and qualitative impairment in communication or restricted, repetitive, or stereotyped patterns of behavior, interests, and activities (see Appendix A).

Prevalence of Autism

The Autism and Developmental Disabilities Monitoring Network (ADDM) releases a prevalence report every 2 years. The most recent one dated March 27, 2020 reported that 1 in 54 children in the United States and 1 in 44 children in Minnesota have ASD. The ADDM also recorded the prevalence of autism at 1 in 34 for Somali children, and 1 in 62 for Hmong children. Boys are also four times more likely to be identified with ASD than girls. Doctors can diagnose ASD as early as age 2. However, the average age of diagnosis in Minnesota is 4 years, 8 months, much later than recommended (Autism Society of Minnesota, 2020). Autism affects all races and socioeconomic groups. The family income or educational level does not affect the chance of having a child with autism (Autism Society of Minnesota, 2020).

Causes of Autism

Autism can develop from a combination of genetic and non-genetic factors; although, genetics are involved in most autism cases. Once a family has a child with autism, their future children have a 2% to 18% chance of having autism; these chances increase with older parents. If an identical twin has autism, the other twin's chance of having autism is 36% to 95%. Whereas, if a non-identical twin has autism, the chances for the other twin having autism is 31%. Pregnancy and birth complications can increase the possibility of a child having autism; for

example, babies born before 26 weeks, low birth weight, multiple pregnancies (twins), and pregnancies less than 1 year apart. Over the past two decades, researchers have conducted studies about whether vaccines cause autism, but findings from these studies suggest they do not (Autism Speaks, 2020).

Student Involvement

Students of all abilities benefit from being involved in their learning and taking ownership (Pounds & Cuevas, 2019). The process begins with teachers. When teachers take the time to help their students take an active role in their learning, student engagement increases and therefore student achievement also increases. Engagement and achievement can lead to student ownership. Student ownership is one way students can meet academic and behavioral goals. When teachers allow students to have an active role in their learning, students benefit from self-determination. Self-determination increases student ownership in setting goals, monitoring progress, and self-assessing performance (Chan et al., 2014). Researchers have found when students can track their progress, the effects on academic performance may have a significant impact.

For students to start to take ownership, teachers need to be clear about students' learning expectations and targets. Well-defined targets inform students what expectations their teachers have for them, and students can begin to self-assess their performance. Such targets are especially important for students with disabilities. Teachers should discuss goals with students, use student-friendly language, share examples of student work, and refer to the learning targets during instruction. For students with IEPs, teachers should familiarize their students with their goals and develop "I can" or "I will" statements related to their goals and objectives to make the learning target clearer (Chan et al., 2014). Students can also take ownership of their learning

through the IEP process by attending their IEP meetings when appropriate, which was mandated by IDEA in 2004. Students can show ownership if they write a paragraph about how the school year is going or if their teachers interview them about goals, which can shape new goals. Teachers can also meet with students on a regular basis to help promote ownership. During these conferences, teachers should ensure that students are aware of their learning targets, involved in collecting data on their performance, and help them accept and act on feedback.

Pounds and Cuevas (2019) assessed whether student involvement in the IEP process leads to a greater mastery of their goals and how this affects academic achievement. The study consisted of three students (one girl and two boys). The students were in first, second, and third grades. Two students received services under Specific Learning Disability and one student received services under Significant Developmental Delay. The students kept a portfolio that contained their IEP goals, progress made, and work samples. At their IEP meeting, the students presented their progress to the attendees of the meeting in the form of a PowerPoint or poster. At the conclusion of the study, Pounds and Cuevas (2019) found "there was an increase in the amount of information each student was able to provide and how they applied it" (p. 39). Pounds and Cuevas also concluded that it is essential for students to get involved in their IEP process as early as possible. Students can learn and understand their strengths, weaknesses, and what helps them learn at an early age. As the students get older, teachers can involve them in setting their goals. The students can develop the skills necessary to be active and effective participants in their learning. One example of students becoming more involved in their learning is self-monitoring or self-recording their behavior during class.

Self-Monitoring

Bruhn et al (2016) explained that self-monitoring "involves students assessing their attention-related behaviors such as being on task or following directions" (p. 157). Sheffield and Waller (2010) defined self-monitoring as "monitoring one's behavior by keeping track of how often a target behavior occurs by making a mark on a form at predetermined times during a designated class period as an intervention strategy to reduce problematic behavior" (p. 7). In a self-monitoring intervention, there are two components used. The first is self-observation; the student needs to know how to identify and monitor his behavior. The second is self-recording; the student needs to know how to record if they are engaging in the target behavior. Examples of different behaviors that can be self-monitored are getting prepared for class, disruptive behavior, following directions, academic engagement, and off-task behaviors. Bruhn et al. (2016) gave examples of off-task behaviors which include sleeping, talking, looking around, and gazing off into space. They added that students with self-regulation deficits can be more successful in school if they self-monitor their behavior. Otero and Haut (2015) defined self-regulation skills as "the ability to manage, monitor, and assess one's own behavior" (p. 91). Ultimately, self-regulation increases socially acceptable behavior, while undesired behaviors decrease (Otero & Haut, 2015).

Students and teachers can use many different strategies to self-monitor. Low-tech strategies require paper and pencil to record the presence or absence of a behavior after a cue such as a buzzer or timer. High-tech strategies use technology as a prompt to let students know it is time to track their target behavior. Examples of technology include kitchen timers, MotivAider, or an iPad with a self-monitoring application. The technology can be set at different intervals; for instance, 5 minutes. Students would then record whether they were on-task when

the timer went off or for the entire interval; this would depend on the intervention's set-up. Some students with ASD have fine motor difficulties and therefore have difficulty with paper and pencil formats of self-monitoring. One solution is to install applications onto devices that can cue and record/store data. The teacher and the student should be familiar with the chosen technology and it should not disrupt classroom flow.

Benefits of Self-Monitoring

Daly and Ranalli (2003) agreed with Moxley (1998) about the benefits of self-monitoring. These benefits include immediate feedback, high motivation, increased student performance, expanded communication with parents, and cooperative versus competitive interactions. According to Sheffield and Waller (2010), self-monitoring can be designed to fit almost any student's problem behavior. Through self-monitoring, students can take responsibility and ownership for their behaviors in the classroom. Self-monitoring has been successful with students with various disabilities, including learning disabilities, attention-deficit hyperactivity disorder, and severe emotional disturbances. The more students self-monitor, the more responsibility and control they have over their behavior.

Studies on Self-Monitoring

Researchers have conducted many studies examining the effects of self-monitoring. Bruhn et al. (2016) described two different studies in which students had to self-monitor their behavior using technology. In Gulchak's (2008) study, a handheld device prompted an 8-year-old male with emotional/behavior disability every 10 minutes. He had to record whether he was on task for those 10 minutes during a one-hour reading block in a self-contained classroom. At the end of the reading block, he ran a summary report of his on-task behavior and then graphed his behavior. His on-task percentage increased from 64% during baseline to 98% during the

intervention. Bedesem (2012) conducted another study where the researcher sent two middle school students a text message via Twitter every 5 minutes for 4 intervals. Once the students received the messages on their cell phones, they marked their behavior. Their on-task percentage increased from 45% during baseline to 71% during the intervention. In both the Gulchak (2008) and Bedesem (2012) studies, the students' on-task percentage increased. These results revealed that technology does not change self-monitoring; students still need to think about their behavior and assess it.

Sheffield and Waller (2010) analyzed 16 studies conducted between 1998 and 2007 that utilized self-monitoring interventions. The most common type of behavior studied was being off-task. Examples of other behaviors studied were academic engagement, following directions, and classroom preparedness. The ages of the students ranged from 8–15 years. Self-monitoring was shown to be effective in 13 out of 16 studies. Sheffield and Waller (2010) concluded that self-monitoring can be an effective intervention to reduce problem behaviors in the classroom and that teachers can implement it with positive effects.

Hunter et al. (2017) conducted a study among three middle school students with Emotional/Behavior Disorder (EBD) in their self-contained reading class. They examined the effects of traditional self-monitoring and technology-based self-monitoring. The researchers focused on decreasing off-task behaviors and increasing writing scores. The intervention followed an ABCD design. The routine of the intervention was the same for every phase. The teacher would give the instructions for the assignment. The students would then have to record how they felt. Every 5 minutes of working on the assignment, the students would have to record how they felt. The assignment consisted of finding grammatical errors in a three-paragraph essay. Phase A comprised baseline data. During Phase B, the students used paper and pencil to

record how they felt. During Phase C, the students used an iPod Touch. During Phase D, the students used paper and pencil again, but the teacher gave a verbal prompt. The intervals for recording on-task versus off-task behavior were 20 seconds for each 30-minute observation. The results showed an overall decrease in off-task behaviors with an increase in correct writing activity responses. All three students had their lowest percentage of off-task behaviors during Phase D. Also, during Phase D, two students showed improvement in finding grammatical errors. There was no strong distinction between either of the intervention phases related to reduced off-task behavior and increased academic scores. Therefore, more research is needed on this topic.

The Rosenbloom et al. (2019) study involved four males with ASD, between the ages of 10 to 17 years, who exhibited off-task behavior while completing an independent academic task. The four students used the I-Connect application that was downloaded onto a Samsung Galaxy X smartphone. While using the application, time intervals were set every 30 seconds. A prompt would ask, “Are you on-task?” and the students marked “yes” or “no.” Each observation took at least 8 minutes and 30 seconds, for a maximum of 10 minutes. Data was collected during independent work time four to five times a week. The researchers calculated the students’ on-task, disruptive behaviors, and task completion during each observation. Rosenbloom et al. used an ABAB design. The participants had five data sessions in the first phase of the intervention followed by five or seven data sessions of withdrawal (no intervention). They were then retrained on the devices and had five or six more intervention sessions identical to the first phase. Two weeks after the second phase finished, maintenance data was collected once a week for 3 weeks. The researchers found that with the I-Connect intervention, the participants’ on-task

percentage and task completion increased, while the participants' disruptive behaviors decreased during the intervention phase.

Steps to Self-Monitoring

Researchers have followed a systematic routine for self-monitoring. Vanderbilt (2005) provided 10 steps for successful self-monitoring and these steps include the following:

1. *Identify the behavior*. Identify the behavior or area of academic concern that is causing the most problems. It is also important to monitor only one behavior/academic concern at a time.
2. *Define the target and develop a replacement behavior*. Write the goal and state the behavior in observable words that the student can easily understand.
3. *Collect baseline data*. Collect baseline data over five school days and five separate occasions.
4. *Schedule a conference with the student*. Point out the positives that the student could do. Address and clearly define the incorrect behavior. Finally, teach correct behavior, so the student knows what to do instead of the incorrect behavior.
5. *Select self-monitoring procedures*. Decide how frequently the student will record behavior. The recording period could be a 10-minute interval or the whole class period.
6. *Teach the student to use self-monitoring procedures*. Teach the student how to practice self-monitoring skills in the classroom setting and how to express any questions. Show the student what to do during every step.
7. *Have the student implement the self-monitoring*. During the intervention period, provide feedback, positive reinforcement, and assistance. The student will gain confidence in continuing to self-monitor.

8. *Use specific verbal praise*. Use specific verbal praise; that is, use the student's name, state the correct behavior, and give positive feedback.
9. *Monitor student progress*. Monitor the student's behavior to ensure the intervention is working. Also, to ensure accuracy in the student's self-monitoring.
10. *Maintenance and follow up*. Maintenance is gradually phasing out the intervention to ensure that the student can maintain the desired behavior. Maintenance can be done by increasing the time interval, tracking behavior every couple of weeks, and occasionally provide verbal praise (pp. 21-23).

Overall, teachers must remember to state behaviors in terms students will understand, teach self-monitoring before implementing the plan, and provide the amount of support the students need. (Vanderbilt, p. 24)

MotivAider Self-Monitoring Tool

One tool students can use to self-monitor is called the MotivAider. The MotivAider is a pager-like device that is worn on a belt or waistband of pants. It vibrates at a set variable or fixed-interval schedule. The length and intensity of the vibration can also be adjusted. The MotivAider can replace audio cues; for example, the teacher prompting students to a task. Other benefits of the MotivAider include breaking bad habits, building and practicing new habits, and privately working on behavior changes (Behavioral Dynamics, 2020). There have been studies completed examining the benefits and the effectiveness of the MotivAider.

Amato-Zech et al. (2006) examined the effectiveness of the MotivAider. In this ABAB reversal design study, three students (two males and one female) participated in the study based on their off-task behaviors. Two received services for speech/language impairment and specific learning disabilities, and one received services for emotionally disturbed and speech/language

impairment. The intervention took place during independent seatwork during Reasoning and Writing for 15 minutes, two or three times a week. The students used paper and pencil to record whether they were paying attention or not. “On-task behavior was defined as the student actively or passively attending to instruction” (Amato-Zech et al., 2006, p. 213). Amato-Zech et al. split the off-task behaviors into three categories: off-task motor (turning pages in a book or out of seat), off-task verbal (talking to peers or blurting), and off-task passive behavior (looking around the room).

Before students could implement the intervention, they were trained on how to use the MotivAider. Students were taught the difference between on- and off-task behaviors; they practiced self-monitoring with audio cues first and then with the MotivAider in class until no assistance was needed. Once students completed their training, the intervention began. During the first week of the intervention, the MotivAider was set to 1-minute intervals. The teacher thought this was too frequent, so the interval length was changed to 3 minutes for the remainder of the first intervention phase and through the second intervention phase. Generalization was checked during Math one time during each experimental phase. The students did not use the MotivAider during generalization. When students used the MotivAider, their on-task behavior increased from an average of 55% to more than 90% (Amato-Zech et al., 2006).

Legge et al. (2010) extended Amato-Zech et al.’s research to include three male students: one sixth-grader and two fifth-graders. Two students had a diagnosis of ASD, and one student had cerebral palsy. The students collected data for 20 minutes, four days a week during math independent work times in their special education classrooms. When the students’ MotivAider vibrated at 2-minute intervals, they recorded whether they had “eyes on work,” “in my seat,” and “doing work.” They had to mark “yes” for all three categories to be able to say they were on-

task. The experimenter checked the students' work. If a student had more than 80% accuracy, he received a reinforcer. If a student had less than 80% accuracy, the experimenter gave feedback, and the student did not receive a reinforcer.

There were four phases to the Legge et al. (2010) study: baseline, intervention, fading, and maintenance. During the baseline phase, the experimenter set the MotivAider to vibrate every 2 minutes. During the intervention phase, the student and experimenter both set their MotivAiders to vibrate every 2 minutes. During the fading phase, the experimenter set the MotivAider to 2-minute time intervals, while the students' MotivAider was programmed at increased time intervals for two students and set at 4 minutes for one student. During the maintenance phase, data was collected for 3 weeks. The students did not have self-recording materials. The results provided "immediate and substantial increases of on-task behavior upon initiation of the self-recording intervention" (Legge et al., 2010, p. 49). On-task behavior increased from an average of 52% to 95% (Legge et al., 2010).

Boswell et al. (2013) designed an ABAB withdrawal study that extended the work of Amato-Zech et al. (2006) and Legge et al. (2010). Boswell et al. wanted to examine the effects of self-monitoring on on-task behavior and academic performance while using the MotivAider. They also wanted to examine if a student with a mild intellectual disability could accurately self-monitor own on-task behavior. This study involved an 11-year-old male with a moderate intellectual disability. The student had to self-monitor his behavior during 15 minutes of math independent work time. He had to mark yes/no on a form titled "Am I working?" when the MotivAider vibrated at 3-minute intervals. The teacher gave him a visual aid that showed examples of on/off-task behaviors. Two of the student's IEP goals were related to the study-

asking for directions/staying on-task and solving addition/subtraction problems with a calculator and/or manipulatives.

During the intervention phase, the student and instructional assistant both recorded his on- and off-task behavior. The instructional assistant then verified his answers for accuracy. If the student and assistant agreed 80% of the time, he did receive an edible reinforcer. He was given a 2-minute pre-test during the first baseline of the study to study the impact of on-task behaviors on academic performance. He was given a post-test during the last intervention condition. During the baseline condition, he averaged 29% of on-task behaviors; it increased to 100% during the last intervention phase of the study. The student also showed a 100% increase in math fluency (Boswell et al., 2013).

Otero and Haut (2015) used an alternating treatment design (ATD) involving three male general educational students nominated by their teachers for having difficulty maintaining on-task behaviors during class. The students recorded their on-task behavior every minute for 20 minutes, during instructional periods and after being prompted by the MotivAider. The observer also recorded on-task behavior to check for accuracy. The recording period was considered accurate if the observer and student matched 80% of the intervals. If the students matched at least 80% of the intervals, they received reinforcement for half of the self-monitoring sessions.

The students received three sessions of training. During those sessions, the students role-played on- and off-task behaviors, chose rewards for reinforcement, were taught how to use the MotivAider, form, visual self-prompt, and practiced. The intervention had 12 sessions: six sessions with reinforcement and six sessions without reinforcement. If the session was with reinforcement, the observer would have a conference/feedback session with the student. If the session was without reinforcement, the observer would collect the students' materials. There was

not a maintenance period, due to time constraints in the school year. When the students were not self-monitoring or being observed, they still had difficulty staying on-task. The researchers found that self-monitoring without reinforcements was effective for two students. Self-monitoring with reinforcements was effective for all three. The accuracy of the students' recording of their on-task behavior also increased with reinforcements (Otero & Haut, 2015).

Ennis et al. (2018) designed an ABAB withdrawal study that also extended the work of Amato-Zech et al. This study involved three fifth graders (two males and one female) with a grade of C or lower on their report card in reading and had inattentive behaviors in the general education and special education classrooms. Two received services under Other Health Impairments (OHI) category and one received services under Specific Learning Disability (SLD) in the reading category. The Ennis et al. study involved a special education teacher and a student teacher. The student teacher was responsible for implementing the intervention and instruction during the study. The intervention took place during the students' reading and vocabulary block. During this time, the students had to read short passages, answer comprehension questions, and discuss reading strategies. Once the MotivAider vibrated at 2-minute intervals, the students marked on their checklist if they were working or not working. The students monitored for 40 minutes of the 50-minute class period. At the end of the monitoring period for the day, the students colored in the number of intervals they were on-task. They self-monitored every day except Fridays. The student teacher would check for completion and accuracy and would give each student individual feedback. The student teacher gave the students a reinforcer of 10 minutes of free-time on Fridays if they met their goal of 80% on-task behaviors and if they were honest in their answers on their checklist. Ennis et al. found a functional relationship between self-monitoring and academic engagement and work completion for all three students.

Chapter II reviewed literature on the topics of special education, Autism Spectrum Disorder, and student involvement in learning. Chapter II also discussed studies involving self-monitoring and the MotivAider self-monitoring tool. Chapter III will explain the design and operational procedures used to carry out this action research project.

Chapter III: Methodology

The Individualized Education Plan (IEP) is a legal document that provides direct services to help students with special needs succeed. The IEP is written specifically for each student; it comprises goals and objectives, as well as accommodations and modifications for classroom instruction and testing. Currently I teach special education at a charter school in Minnesota. My case load includes 13 students in Grades 3-6. They are receiving services under the categories of Autism Spectrum Disorder (ASD), Emotional/Behavior Disorder (EBD), and Other Health Impairments (OHI). Throughout my day, I teach social skills, executive functioning, and math. Often, students do not realize they are receiving special education services, or they do not understand their IEP goals. Therefore, the purpose of this action research project is to examine the results when students with special needs self-monitor their goals. Specifically, to determine how accurately my students with special needs can self-monitor their IEP goals and how self-monitoring affects their progress toward their IEP goals.

Research Design

I designed this action research project after the work of Amato-Zech et al. (2006), Boswell et al. (2013), and Ennis et al. (2018). In each of these studies, students wore a device called a MotivAider on their hip. When the MotivAider vibrated at set intervals, students knew to evaluate their on-task behavior. Amato-Zech et al. examined self-monitoring effectiveness for three fifth-grade students in a self-contained classroom for on-task behavior during independent work time. Amato-Zech et al. found that with the MotivAider, on-task behavior increased from an average of 55% to more than 90%.

Boswell et al.'s study implemented self-monitoring with one student with a moderate intellectual disability by mirroring studies by Amato-Zech et al. and Legge, et al. (2010). Legge

et al. investigated the effectiveness of three middle school students, two students with ASD and one with cerebral palsy. The researchers then wanted to extend the work of Amato-Zech et al. and Legge et al. by examining the effects of a student with a moderate intellectual disability self-monitoring his on-task behavior using a MotivAider. They also wanted to examine the impact of on-task behavior due to self-monitoring on academic performance (math fluency). Math fluency and staying on-task were two of the student's IEP goals. Boswell et al. found an increase in on-task percentage and math fluency skills.

Ennis et al. (2018) extended Amato-Zech et al.'s (2006) work which implemented self-monitoring with three fifth-graders with a grade of C or lower in reading on their report card. The students also exhibited inattentive behaviors in both the special education and general education classrooms. Ennis et al. met with the special education teacher and student teacher at each step of the study; they had considerable input into how the study was conducted. The student teacher was responsible for instruction during the baseline and instruction phases. The students' MotivAiders were set at 2-minute intervals, and they would monitor their on-task behavior for 40 minutes of the 50-minute class period. The student teacher checked for accuracy and completion. Ennis et al. found a functional relationship between self-monitoring and students' academic engagement and work completion. I used these studies to guide the design of my action research project.

Similar to Amato-Zech et al. (2006), Boswell et al. (2013), and Ennis et al. (2018), I used an A-B-A-B design which measures the baseline (the first A), the treatment (the first B), withdrawal of treatment (the second A), and reintroduction of treatment (the second B). Instead of using the MotivAider to track on-task behavior, I used it to track three different activities: on-task behavior, warning of transition, and reminder to initiate a conversation.

My students used the MotivAider, which vibrated at set intervals, and they filled out checklists (see Appendix B; Amato-Zech et al., 2006; Boswell et al., 2013; Ennis et al., 2018). My students monitored one of their IEP goals related to Social Skills/Executive Functioning while they were in various general education classrooms (Boswell et al. 2013). General education teachers also tracked my students' behaviors for accuracy (Boswell et al., 2013; Ennis et al., 2018).

Participants

The context for this project is a K-12 public charter school in Minnesota that serves 1,394 students. The school's mission is to provide students with a traditional, classical education that challenges them to attain their highest potential. The school also aims to instill in students a lifelong passion for learning, prepare them to be knowledgeable citizens, and to value self-discipline, respect, and perseverance. The participants in this action research project included three fifth-grade students (Amato-Zech et al., 2006; Ennis et al., 2018) with special needs and their pseudonyms are Chris, Ryan, and Danny.

Chris is a fifth-grade male receiving services under the category of Autism Spectrum Disorder. He receives 75 minutes a week in the resource room for Social Skills and EFS instruction and has been receiving services since early childhood. He tracked his Social Skills goal of initiating conversations with others. His goal states: "Through small group instruction, Chris will increase his peer relations and assertiveness from initiating a conversation an average of 1 out of 5 times to initiating with peers an average of 3 out of 5 observed incidences as measured by all staff, by next IEP meeting." Chris has difficulty initiating conversations without being prompted. He tends to let others start the conversation, and then he will continue the conversation. He used the MotivAider as a reminder to initiate a conversation with peers. He set

the MotivAider at an interval of ten minutes. He marked on his checklist whether he initiated at least one conversation during class.

Ryan is a fifth-grade male receiving services under the category of Autism Spectrum Disorder. He receives 225 minutes a week for Social Skills and EFS instruction and has been receiving services since fourth grade. He tracked his EFS goal of accepting transitions from one class to another. His goal states: “Ryan will increase his executive functioning skills by accepting transitions from an average of 2 out of 5 occurrences to an average of 4 out of 5 occurrences, as measured by special education staff, by the end of the IEP term.” Ryan has difficulty accepting that one activity is over, and he must move to another. If he does not find the class favorable, he will lay down in the back of the room and refuse to transition to the next class. He used the MotivAider as a reminder that a transition was about to occur. He set the MotivAider to 5 minutes before a transition. He marked on his checklist whether he transitioned to the next class.

Danny is a fifth-grade male receiving services under the category of Autism Spectrum Disorder. He receives 100 minutes a week for EFS instruction and has been receiving services since kindergarten. He tracked his EFS goal of staying on-task during independent work time. His goal states: “Danny will increase his self-regulation skills during work time in the classroom from being on task for 10 minutes an average of 1 out of 5 observed incidences to an average of 4 out of 5 observed incidences, as measured by staff, by the end of the IEP term.” Danny has difficulty remaining on-task during independent work times. He needs multiple reminders to get back to work. He often loses focus, and his mind will wander. He used the MotivAider to track whether he was on- or off-task. He set the MotivAider at an interval of 1 minute and marked on his checklist whether he was on-task during the intervals.

Operational Procedures

Before I began this action research project, I sent a form to each student's parents/guardians that requested consent for their child to participate. I received consent from all the students' parents/guardians with-in a week. This project took place during the COVID-19 pandemic. During class, discussed what goal setting is and how we accomplish goals.

During class, we had been working on understanding goal setting. The first week of the study while gathering baseline data, I introduced the individual goals they tracked. I also explained how they were going to be tracked, taught them how to use the MotivAider and explained their checklists (see Appendices B and C). I chose the MotivAider because intervals can be set for a student's specific timing needs. The MotivAider is worn on the hip and vibrates when the interval is over; it does not make a beeping sound when time is up, which can distract classmates and teachers. With classroom budget money, I purchased from Amazon three MotivAiders at a cost of $64.50 each.

The timeline for this A–B–A–B study will be as follows:

- Week 1: Baseline
- Week 2: Treatment (self-monitoring)
- Week 3: Withdrawal (no intervention)
- Week 4: Treatment (self-monitoring)
- Weeks 5–6: No intervention or data collection
- Week 7: Monitor for Maintenance

During Week 7, I observed the participants in their general education classrooms and monitored for maintenance. There were four data points during each phase. During the week of withdrawal, I collected observational data on their goals. The students met with me daily to

check progress. We discussed what went well and what did not go well. At the end of the 7 weeks, the collected data included progress on IEP goals through checklists and observations.

Analysis of Data

I analyzed the data related to progress toward IEP goals through checklists and observations. Each student had individual goals to track, so pre- and post-assessments could not be given. Each student was in a different stage of their IEPs. The IEP dates range from November to April. To determine if students made growth toward IEP goals, I recorded each student's progress on their most recent progress report. To show progress on their goal, I completed a graph for each student. Chris and Ryan's graph show the number of times per day of initiating conversations or transitioning successfully. Danny's graph shows how long he was on-task during class for the day. During self-monitoring weeks, the graphs display the students' data. During withdrawal weeks, the graphs display my data.

Checklists

Each student filled out a checklist while they were in their general education classrooms. Students have paraprofessionals who worked with them throughout the day and checked for accuracy. Their general education teacher also tracked my students' behaviors for accuracy.

Chris and Ryan used Appendix B to track their goals in five classes: math, reading, history, English, and science. They wrote a (+) for yes and a (-) for no. Chris's goal was initiating conversation during classes. He marked if he began a conversation at least once during class. Chris wore a MotivAider as a reminder to initiate a conversation, with intervals set at 10 minutes. Ryan's goal was transitioning from class to class. He marked if he transitioned to class on time. The MotivAider was a reminder that a transition was coming. The time interval was set to 5 minutes before the transition.

Danny used Appendix C to track his goal of being on-task during a specific class, on a particular day for 10 minutes, during independent work time. He was given a MotivAider for time intervals of 1 minute. He wrote a (+) for yes and a (-) for no, as to whether he was on-task or not. At the end of the 10 minutes, he totaled the number of times he was on-task.

Observations

I observed the students during the withdrawal weeks and completed the same checklists that the students did (see Appendices B and C). I also completed the checklists during Week 7, when monitoring if the students maintained the desired behavior.

Chapter III explained the design and operational procedures used to carry out this action research project. Chapter IV will be tied to the research questions and the results will be based on the data analysis plan. Graphs will be used to describe the data.

Chapter IV: Results

The purpose of this study was to determine how accurately students with special needs can self-monitor their Individualized Education Plan (IEP) goals and how self-monitoring affects progress on their goals. Three fifth-grade boys receiving special education services for an Autism Spectrum Disorder disability self-monitored their Social Skills/Executive Functioning goals. The three students, whose names are pseudonyms, each wore a MotivAider device that vibrated at set intervals and completed a checklist pertaining to their IEP goals.

Chris' Results

Chris' IEP goal states: "Through small group instruction, Chris will increase his peer relations and assertiveness from initiating a conversation an average of 1 out of 5 times to initiating with peers an average of 3 out of 5 observed incidences as measured by all staff, by next IEP meeting." Chris has been working on this goal since October 2020. His most recent progress report reported that he was able to initiate a conversation with peers an average of 2 out of 5 observed incidences. Chris set the MotivAider to vibrate every 10 minutes which reminded him to initiate a conversation.

Baseline data showed that Chris initiated conversations with a peer an average of 2.5 times out of 5 observed incidences. The first week that Chris self-monitored his goal, he initiated a conversation an average of 3 out of 5 observed incidences. The first week of withdrawal, Chris was able to initiate a conversation an average of 2.75 times out of 5 observed incidences. The average was a decrease from the week before, but an increase from baseline data. In the second week of wearing the MotivAider, Chris was able to initiate a conversation an average of 4 out of 5 times. Two weeks later, the result was the same. Chris was able to maintain initiating a conversation an average of 4 out of 5 times.

History and reading were the two classes that Chris initiated a conversation most often. He enjoys history and is confident in his knowledge. Therefore, when talking to his neighbor about a question that the teacher proposed, he would immediately share his answer. Reading class allowed for more class discussions based on its structure. During this time, the class read *Little Women* and discussed in small groups what they read the previous night at home. Chris initiated 12 conversations in science, 20 in history, and 20 in reading. Chris initiated nine conversations in math and eight in English. Chris did not initiate many conversations during English because of its structure. The teacher taught the lesson, and if time allowed students engaged in independent work time. Initiating conversations in math was more difficult because after every five lessons the class would have a test. Therefore, the opportunities to initiate a conversation were limited. Even with these difficulties, Chris initiated a conversation in four classes four days and two times in all five classes.

Figure 1

Chris Initiating Conversations

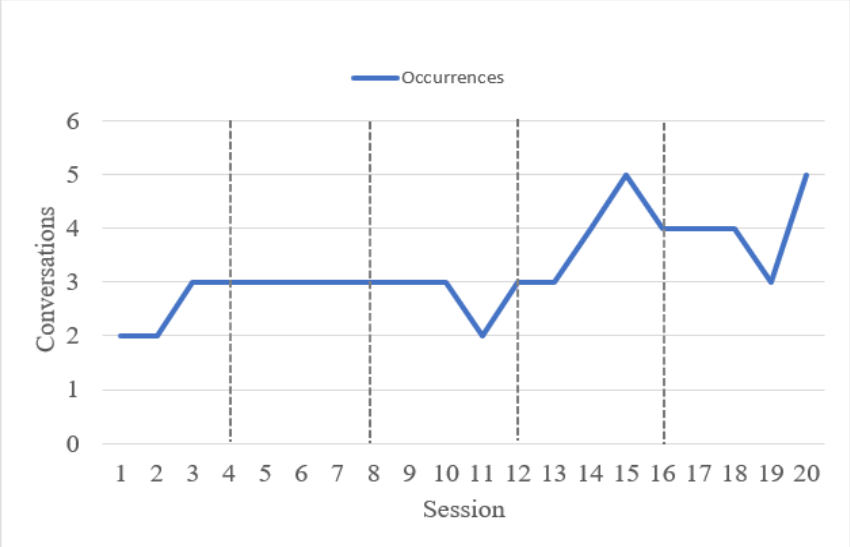

Figure 1 illustrates the average number of conversations Chris initiated each day throughout the course of the study. Chris wore the MotivAider for sessions 5-8 and 13-16. Each session shows how many conversations he initiated in one day out of the five classes he self-monitored.

Ryan's Results

Ryan's IEP goal states: "Ryan will increase his executive functioning skills by accepting transitions from an average of 2 out of 5 occurrences to an average of 4 out of 5 occurrences, as measured by special education staff, by the end of the IEP term." Ryan has been working on this goal since April 2020. His most recent progress report reported that he was able to accept transitions an average of 2 out of 5 occurrences. Ryan set the MotivAider to vibrate with 5 minutes left in class, which reminded him that a transition was about to occur.

Baseline data showed that Ryan accepted transitions an average of 2.25 times out of 5 occurrences. The first week that Ryan self-monitored his goal, he accepted a transition an average of 3.25 times out of 5 occurrences. The first week of withdrawal, Ryan accepted transitions an average of 2.25 times out of 5 occurrences, which was the same as baseline data. In the second week of self-monitoring, Ryan accepted transitions an average of 3.5 times out of 5 occurrences, which was an increase from his first week of self-monitoring. Two weeks later, when maintenance was monitored, Ryan accepted a transition an average of 3 times out of 5 occurrences.

Ryan accepted the transition for reading class 20 times. He enjoyed the novel the class was reading; therefore, he was motivated to be on time. He accepted the transition 13 times for history and 16 times for science. Ryan enjoys the topics and activities that the class completes. Ryan struggled to be on time for math and English. He was never on time for math class. Math is a trigger for Ryan; he feels like he is not good at it. He tries to avoid it every day. Ryan accepted

the transition to English eight times. English is after recess. Ryan would rather continue to play outside than go inside for class. He also does not like writing tasks.

Figure 2

Ryan Accepting Transitions

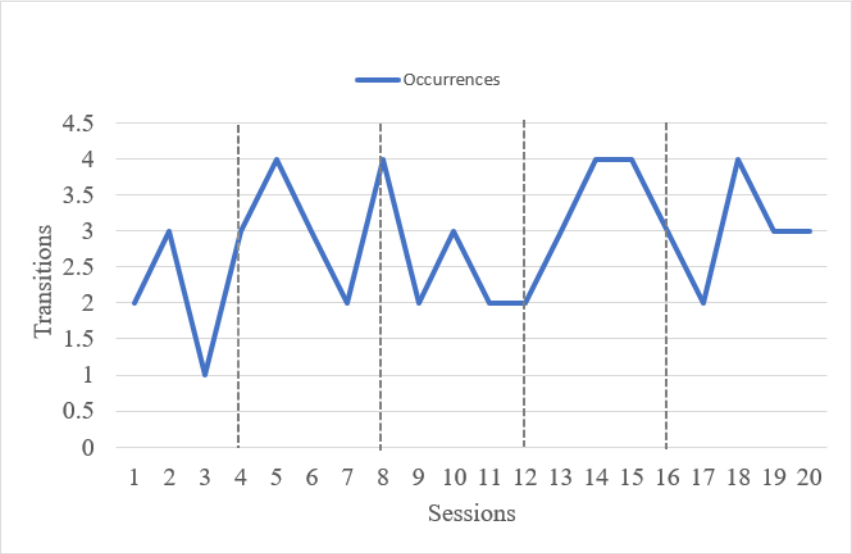

Figure 2 illustrates the average number of transitions Ryan accepted daily throughout the course of the study. Ryan wore the MotivAider for sessions 5-8 and 13-16. Each session shows how many transitions he accepted in one day for five classes he self-monitored.

Danny's Results

Danny's IEP goal states: "Danny will increase his self-regulation skills during work time in the classroom from being on task for 10 minutes an average of 1 out of 5 observed incidences to an average of 4 out of 5 observed incidences, as measured by staff, by the end of the IEP term." Danny has been working on this goal since December 2020. His last progress report reported that he was able to remain on task for 10 minutes an average of 1 out of 5 observed incidences. Danny set the MotivAider for intervals of 1 minute and then recorded on his checklist if he was on-task or off-task at that moment.

Danny's baseline data showed that he remained on-task for 10 minutes during reading class. The average number of minutes he was on-task was 7 minutes. During the first week that Danny self-monitored his goal, he remained on-task for 10 minutes during math and history. His average of on-task minutes increased to 8.75. During the first week of withdrawal, Danny was able to remain on-task for history. His average number of minutes on-task decreased to 7.75. However, this was still higher than baseline data. During the second week of self-monitoring, Danny remained on-task for 10 minutes in math and science. He remained on-task for 9 minutes in both reading and history. Danny's average number of minutes on-task was 9.5, which was an increase from his first week of self-monitoring. Two weeks later, when maintenance was monitored, Danny could remain on-task for 10 minutes during reading and history. His average decreased to 9 minutes on-task, but this was an increase over baseline data. Overall, Danny remained on-task for 10 minutes two times in math, two times in reading, three times in history, and one time in science.

Figure 3

Danny On-Task

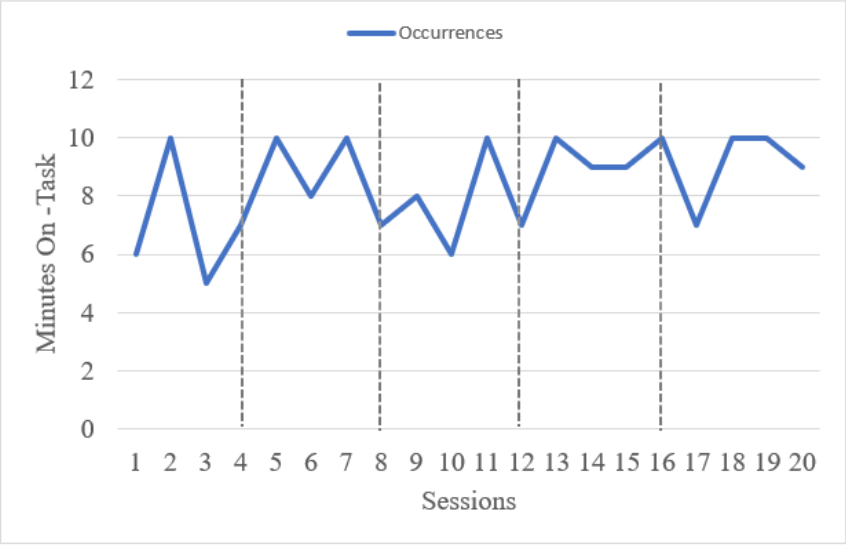

Figure 3 illustrates the average number of minutes Danny remained on-task during one class per day throughout the course of the study. Danny wore the MotivAider for sessions 5-8 and 13-16. Each session shows the number of minutes he was on-task for the class he self-monitored.

Overall Results

Maintenance, generalization, and progress toward achieving their IEP goals was studied. Maintenance is gradually phasing out the intervention to ensure the student can continue the desired behavior. Maintenance was monitored when the students' behaviors were not monitored for two weeks and then when I monitored their behavior. Generalization is the ability to perform the same behavior in different settings. Generalization was monitored throughout general education classes. All three students showed progress toward achieving their IEP goals. Chris exceeded his IEP goal of initiating conversations in 3 out of 5 occurrences and maintenance was achieved. However, Chris did not generalize his ability to initiate conversations in all settings. Ryan made progress toward achieving his IEP goal of accepting transitions after not making progress this school year and maintenance was achieved. Ryan was not able to generalize his ability to accept transitions. Danny also made progress toward achieving his IEP goal. He obtained maintenance during the study. The average number of minutes he remained on-task ranged from 8-8.8 minutes. Danny was able to generalize his ability to remain on-task.

Chapter IV included the results of how effectively three students with special needs self-monitored their Individualized Education Plan (IEP) goals and how this affected progress toward achieving their goals. Graphs were used to display the data results. Chapter V will discuss potential reasons for the students' ability to self-monitor and make progress. The chapter will also include limitations and delimitations of the project, and it will summarize implications for future research.

Chapter V: Discussion and Conclusion

Discussion

The purpose of this project was to examine the ability of students receiving special education services to self-monitor and make progress toward their Individualized Education Plan (IEP) goals. This chapter discusses the results and limitations and delimitations of the project, describes the implications for future research, and provides suggestions for professional application.

Results

Students who qualify for special education services have a disability (PACER Center, 2020). Special education is the individualized program, curriculum, and instruction used when students are found to have a disability. The school has a specific process that it must follow to determine whether a student is eligible for special education services. If a student is found to be eligible, a meeting is held, an IEP is developed, and placement is determined. The IEP identifies goals in the area(s) the student is found to have special needs, and the student will work on these goals over a 1-year period. Areas of need can include reading, math, executive functioning, and social skills. A re-evaluation must occur every 3 years to determine if the student is still eligible for services.

Special education has evolved. The court case *Brown v Board of Education* (1954) focused on equal rights for people of different races. The case also started a discussion on the equal rights of people with disabilities. In the 1960s, Congress passed the Elementary and Secondary Education Act (ESEA) and the Handicapped Children's Early Education Act. These acts provided students with a free and appropriate public education and funded programs for preschool children. In 1975, Congress passed the Education for All Handicapped Children Act

(EHA). EHA gave students more rights, for example, due process, an IEP, and services in the least restrictive environment (Keogh 2007). In 1990, Congress created the Individuals with Disabilities Act (IDEA). Through IDEA, students with disabilities were no longer referred to as handicapped student/child, autism and traumatic brain injury were categories that students could receive services under, and transition plans and services were now being provided (Kauffman et al., 2017). IDEA was reformed in 2004, adding more changes including: eligibility requirements, emphasizing the requirements of special education, dispute resolution system, and disciplinary process (Kauffman et al., 2017). Autism Spectrum Disorder (ASD) has also gone through many changes.

The students participating in this project have an ASD disability. ASD classifies people with impairments in social communication and interaction and the presence of restrictive and repetitive behaviors, and interests, or activities. The American Psychiatric Association (APA) first published DSM-I and DSM-II in 1952 and 1968, respectively. Autism was only used in reference to childhood schizophrenia and a product of parenting. Two Austrian pediatricians, Leo Kanner and Hans Asperger, worked with patients that shared similar symptoms throughout the 1940s. They were able to show that autism is a behavioral disorder and not a product of parenting. Autism was no longer thought of as part of childhood Schizophrenia. In 1980, when the APA published the DSM-III, the separation of autism and childhood schizophrenia was made.

The Minnesota Department of Education explains the core features of ASD are "persistent deficits in social interaction and communication and restricted, repetitive or stereotyped patterns of behavior, interests or activities" (Minnesota Department of Education, n.d., para. 1). Some examples of these difficulties include avoiding eye contact, wanting to be

alone, and repeating actions (Centers of Disease Control and Prevention, 2020). According to the Autism and Developmental Disabilities Monitoring Network's report of prevalence dated March 27, 2020, 1 in 54 children in the United States and 1 in 44 children in Minnesota have ASD. Autism can form from genetic and non-genetic factors; however, genetics are involved in most cases.

Students of all abilities benefit from being involved in their learning and taking ownership (Pounds & Cuevas, 2019). When students take ownership of their learning, it is one way they can meet their academic and behavioral goals. When teachers allow their students to have an active role in their learning, students benefit from self-determination. Self-determination increases student ownership in setting goals, monitoring progress, and self-assessing performance (Chan et al., 2014). Pounds and Cuevas (2019) conducted a study on whether student involvement in their IEP process leads to greater mastery of their IEP goals. At the end of the study, it was found "there was an increase in the amount of information each student was able to provide and how they applied it" (Pounds & Cuevas, p. 39). They also determined that students should get involved in their IEP process as early as possible.

Students can become involved in their learning by self-monitoring their behavior. Bruhn et al. (2016) explained that self-monitoring "involves students assessing their attention-related behaviors such as being on-task or following directions" (p. 157). The self-monitored behaviors in this action research project were on/off-task behaviors, initiating conversations, and accepting transitions. As Sheffield and Waller noted, self-monitoring has been successful with students with various disabilities, including learning disabilities, attention-deficit hyperactivity disorder, and severe emotional disturbances (2010). The more students self-monitor their behavior, the more control and responsibility they have over it.

This action research project reviewed five studies conducted between 2006-2018 that were related to the effects of self-monitoring behavior using a tool called the MotivAider. The MotivAider is a pager-like device that is worn on a belt or waistband of pants; it vibrates at a set variable or fixed-interval schedule. The researchers used the MotivAider during instructional and independent work times. The studies found that the students' on-task percentages, work completion, and academic engagement increased.

Three fifth-grade males receiving services under the ASD category self-monitored one of their IEP goals. The accuracy of their self-monitoring and the effects of self-monitoring toward progress of their goals were studied. The study also monitored maintenance and generalization of the skill. Each student filled out a checklist pertaining to their IEP goal. Chris used the MotivAider to remind him to initiate a conversation. Ryan used the MotivAider to remind him that a transition was coming. In contrast, Danny used the MotivAider to track his on-task percentage. All three students showed progress on their IEP goals and obtained maintenance. Danny was the only student who was able to generalize the skill.

Limitations and Delimitations of the Project

The first limitation of this action research project was the small sample size; therefore the findings cannot be generalized to the population. The second limitation was the students' attitudes toward the class. Chris was able to initiate a conversation in reading and history class every day because he enjoyed the class and the material studied. Ryan's IEP goal focused on accepting a transition. A student accepts a transition when the student stops the activity occurring and gets ready for the next activity. Ryan accepted that history class was over and got ready for reading class every day of the study because he enjoys reading. He could not accept that time was over, and he had to get ready for math class because he does not enjoy math. A third

limitation was the structure of the class. Chris was limited in opportunities to initiate a conversation in English and math due to class structure. A fourth limitation that occurred was the number of participants that participated in the study. The MotivAider was used for three different reasons throughout the study. Only one student used it for each reason. It would have been more beneficial if more students could use it for the same reason.

A delimitation of the project was timing. The project was conducted during the COVID-19 pandemic. The students learned through a variety of learning models. For example, Chris started the year with the blended learning model. He attended school Monday through Thursday one week. The next week he learned from home while logging into his classes, Monday through Thursday. In November, the school had to switch to full-time distance learning from home every week. The school was then able to switch to full-time on-campus learning and Chris came to school every day. The change coincided with the start of the project. Ryan and Danny experienced the distance learning model until they had the option to switch to on-campus learning. Ryan and Danny had to adapt to being at school after being away for a year.

Suggestions for Future Research

The MotivAider can replace audio cues, break bad habits, build new skills, and change behavior (Behavioral Dynamics, 2020). More research is needed on the effectiveness of the MotivAider for different uses Previous studies utilizing the MotivAider for on- and off-task behavior examined academic engagement and work completion. More research is needed on the impact of changing the intervals at which the MotivAider is set. Finally, the participants in this project and in previous studies were elementary-age students. Future research should consider the results of older students self-monitoring their behavior.

Professional Application

Prior to this project, my students knew they were in special education. They came to my classroom to improve their social skills and executive functioning and I taught lessons related to their IEP goals. However, the students did not know what their IEP goals were. At the beginning of this project, I had a conversation about the IEP goals the students would track. The students then understood what they were working on and why they came to my classroom. They became more interested in what I was trying to teach them, and I saw their attitudes toward class improved. In summary, the results of this project suggest that self-monitoring can lead to a deeper understanding of how to meet the needs of students who receive special education services. The results can inform instruction, improve social skills and executive functioning, and thereby narrow the achievement gap that has formed among these students as well as their peers.

Conclusion

Self-monitoring has many benefits. For example, increased positive behavior, task completion, and academic engagement. The participants in this action research project were three fifth-grade males receiving services under the ASD category. All three students showed progress on their IEP goals and obtained maintenance, and one student was able to generalize the skill. Based on the review of literature and the results of this action research project, it is reasonable for me to conclude that my students receiving special education services can accurately self-monitor and make progress toward their IEP goals using the MotivAider.

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Appendix A

Minnesota Department of Education

Autism Spectrum Disorder (ASD)

Student Name: _____ DOB: _____

Building: _____ Reviewer Name: _____

Date of Evaluation Report: _____ Eligible: ____Yes ____ No

____ Evaluation⇨ (Must meet initial criteria)

____ Reevaluation⇨ (Must address criteria components)

Based on the information in the Evaluation Report and the student file, the student must meet requirements in A and B to be eligible for this disability category. The determination must be made by a multidisciplinary team which includes at least one professional with experience and expertise in the area of ASD due to the complexity of this disability and the specialized intervention methods. The team must also include a school professional knowledgeable of the range of possible special education eligibility criteria. The behavior indicators demonstrated must be atypical for the pupil's developmental level. The team shall document behavioral indicators through at least two of these methods: structured interviews with parents, autism checklists, communication rating scales, developmental rating scales, functional behavior assessments, application of diagnostic criteria from the current Diagnostic and Statistical Manual (DSM), informal and standardized evaluation instruments, or intellectual testing.

A. The team must document that the pupil demonstrates patterns of behavior described in at least two of the three subitems, one of which must be subitem (1).

1. Qualitative impairment of social interaction, as documented by two or more behavioral indicators, for example:

_____ limited joint attention and limited use of facial expressions towards others

_____ does not show or bring things to others to indicate interest in the activity

_____ demonstrates difficulty relating to people, objects, and events

_____ gross impairment in ability to make and keep friends

_____ significant vulnerability and safety issues due to social naiveté

_____ may appear to prefer isolated or solitary activities

_____ misinterprets others' behaviors and social cues

_____ other _____

For complete information regarding disability criteria requirements, refer to Minnesota Rule 3525.1325

AND

2. Qualitative impairment in communication, as documented by one or more behavioral indicators, for example:

_____ not using finger to point or request

_____ using other's hand or body as a tool

_____ showing lack of spontaneous imitations or lack of varied imaginative play

_____ absence or delay of spoken language

_____ limited understanding and use of nonverbal communication skills such as gestures, facial expressions, or voice tone

_____ odd production of speech, including intonation, volume, rhythm, or rate

_____ repetitive or idiosyncratic language

_____ inability to initiate or maintain conversation when speech is present

_____ other _____

OR

3. Restricted, repetitive, or stereotyped patterns of behavior, interests, and activities as documented by one or more behavioral indicators, for example:

_____ insistence on following routines or rituals

_____ demonstrating distress or resistance to change in activity

_____ repetitive hand or finger mannerism

_____ lack of true imaginative play versus reenactment

_____ overreaction or under-reaction to sensory stimuli

_____ rigid or rule-bound thinking

_____ intense, focused preoccupation with a limited range of play, interests, or conversation topics

_____ other _____

B. Verification

The evaluation report must include documentation with supporting data in all four areas below that verifies ASD adversely affects the pupil's performance and that the pupil is in need of special education instruction and related services.

_____ Present levels of performance in each core feature identified in A (subitem 1 and either subitem 2 or 3).

_____ Education needs in each core feature identified in A (subitem 1 and either subitem 2 or 3).

_____ Observations of the pupil in two different settings, on two different days.

_____ Summary of the pupil's developmental history and behavior patterns.

Review of Eligibility Determination

To determine compliance with eligibility determination, one of the following MUST be checked.

____ The documentation supports the team decision.

____ The documentation does not support the team decision.

Appendix B: Chris and Ryan's Checklist

Week _____

Goal _____

	Monday	Tuesday	Wednesday	Thursday
Math				
Reading				
History				
Science				
English				
TOTAL				

Appendix C: Danny's Checklist

Week _____

Goal _____

	Monday/Math	Tuesday/Reading	Wednesday/History	Thursday/Science
0:00-1:00				
1:00-2:00				
2:00-3:00				
3:00-4:00				
4:00-5:00				
5:00-6:00				
6:00-7:00				
7:00-8:00				
8:00-9:00				
9:00-10:00				
TOTAL				