2014

The Effect of Self-Monitoring on Academic Engagement of Students with Emotional Disturbance

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97 Pages May 2014

Students with emotional disturbance (ED) demonstrate educational needs in the domains of behavior and academics. Self-monitoring has been determined to be an effective learning strategy for addressing both of these crucial domains for students with ED. However, the characteristics associated with ED lead to a diverse population of these learners. As a result, further replication of self-monitoring studies are needed to determine the effectiveness based on characteristics of students (e.g., gender, age, and ethnicity). The goal of this study was to determine the effect of self-monitoring on the academic engagement of secondary students with ED. In addition, the accuracy of self-monitoring by said students was analyzed. Finally, the generalizability of self-monitoring to differing conditions, such as a teacher's absence and other academic subjects, was analyzed for further conclusions. Analysis of the gathered data allowed the researcher to conclude that self-monitoring led to higher means of academic engagement.

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A Thesis Submitted in Partial
Fulfillment of the Requirements
for the Degree of

MASTER OF SPECIAL EDUCATION

Department of Special Education

ILLINOIS STATE UNIVERSITY

2014

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CHAPTER I

PROBLEM AND BACKGROUND

Statement of the Problem

Students with emotional disturbance (ED) display academic deficits far below grade level in the areas of reading and mathematics (Lane, Carter, & Pierson, 2006; Lane, Barton-Arwood, Nelson, & Wehby, 2008; Nelson, Benner, Lane, & Smith, 2004; Wagner, Kutash, Duchnowski, Epstein, & Sumi, 2005) while simultaneously exhibiting social and behavioral deficits rated significantly lower than same-age peers with other disabilities (Lane et al., 2006; Wagner et al., 2005). The behavioral characteristics associated with the disability, including external and/or internal behaviors, create this hindrance on academic achievement for these students (Nelson et al., 2004). Achievement scores in reading, writing, and mathematics all fall below the 25th percentile for students with ED when compared to same age peers (Lane et al., 2008). Their social skills compared to the same group of peers falls between the 30th and 35th percentile. For these reasons, students with ED are in dire need of effective academic and behavioral interventions.

Further support for intervention need is proven by the fact that, as students with ED age, their academic abilities become more concerning because the gap between their abilities and their peers' abilities widens (Wagner et al., 2005). Also, as students with ED transition to the secondary level, they demonstrate a larger variety of behaviors, which leads to more challenges for teachers (Nelson et al., 2004). Compounding this

issue, many teachers do not view this population of students as having the ability to lead one's life with success given their average academic abilities and behavioral characteristics (Black & Leake, 2011).

Compared to same-age students with ED in previous decades, these students are receiving more support in school; however, their exposure to general education, including effective academic instruction, is not sufficient compared to peers with other disabilities (Wagner & Davis, 2006). These teacher concerns and lack of growth lead to the need for instruction in specific skill sets that will allow students with ED to be successful in multiple settings (e.g., different types of classrooms, the home environment, community environment, etc.). Because of the needs of these students, overall programming and support should be highly individualized and include instruction in skill sets that will allow students to close achievement gaps (Simpson, Peterson, & Smith, 2011).

While researchers have identified effective practices such as cross-age peer tutoring and same-age peer tutoring (Ryan, Pierce, Mooney, 2008) for addressing academic performance and teacher praise, correct response opportunity, and student choice (Niesyn, 2009) for behavior, most of the concerns related to these and other interventions focus on the lack of connection between said research and practice (Lewis, Hudson, Richter, & Johnson, 2004; Simpson et al., 2011). One of the practices that continues to receive emphasis is self-management, specifically self-monitoring (Gage et al., 2010). Attention has been given to this strategy because, with correct use, it can address both academic and behavioral concerns at the same time (e.g., Rock, 2005). The convenience of this strategy in addressing both domains of concern may influence teachers to use it within their classrooms more often.

Self-monitoring is categorized as a cognitive training strategy that enables a student to become more cognizant of his or her actions (Kauffman & Landrum, 2009). This cognition about one's own behavior allows the individual to take more control of his or her responses. The process typically involves the identification of a specific behavioral concern, training of the self-monitoring process using direct instruction, and implementing self-monitoring after successful practice (Kauffman & Landrum, 2009). This strategy has been shown by many researchers to be successful in reducing disruptive behavior and increasing academic engagement of students with ED (e.g., Blood, Johnson, Ridenour, Simmons, & Crouch, 2011; Bruhn & Watt, 2012; Harris, Friedlander, Saddler, Frizzelle, & Graham, 2005; Rafferty & Raimondi, 2009; Rock, 2005).

In addition, some research has furthered the information available on self-monitoring by differentiating the effectiveness between self-monitoring of attention (SMA) and self-monitoring of performance (SMP). Harris et al. (2005) found that students were more academically engaged during the use of SMA for students with attention-deficit hyperactivity disorder (ADHD) while Rafferty and Raimondi (2009) found that SMP procedures were more effective for on-task behavior for students with ED. These findings support Kauffman and Landrum's (2009) statement that self-monitoring can and should be adapted for the variety of behaviors and settings present within education.

The process of self-monitoring has been widely studied and supported through careful analysis of its procedures (Gage et al., 2010). The strategy has been identified as an evidence-based practice (e.g., Gage et al., 2010; Wolgemuth, Cobb, & Dugan, 2007). Despite this support, there exist many gaps where research does not specifically address

certain characteristics of students. For example, much of the research on self-monitoring includes participants at the elementary and middle school level (e.g., Blood et al., 2011; Harris et al., 2005; Rafferty & Raimondi, 2009; Rock, 2005). There are also studies to support the use of self-monitoring with secondary students, but far fewer (e.g., Carr & Punzo, 1993; Freeman & Dexter-Mazza, 2004) focus specifically on students with ED as the primary target group. Age is an important factor to consider when identifying practices for students with ED as some of their deficits, such as those in the area of mathematics, are shown to become larger as students transition to the secondary setting (Nelson et al., 2004). In their study, Lane et al. (2006) identifies a gap in the research by stating there is a lack of academic interventions for secondary students with ED (Lane et al., 2006). Lane et al. (2006) found that there is a need to implement effective academic interventions for this specific population of students; however, they also pointed out that the quantity of these interventions available is limited. This lack of academic intervention may be the result of a focus on behavior at this age level (Lane et al., 2006).

Self-monitoring is a strategy that has been deemed effective in helping students increase on-task behavior during academics, leading to higher levels of productivity (Harris et al., 2005). However, in their analysis of education for students with ED, Gage et al. (2010) stated further research in all interventions and practices for this population of students is needed to demonstrate its effectiveness in reducing disruptive behaviors, even if this research is replication. Replication of the research on self-monitoring, though, should be done to address the broad nature of students with ED and the associated characteristics of the disability.

Much research on self-monitoring does not include evidence for its generalization or maintenance (Bruhn & Watt, 2012). As Kauffman and Landrum (2009) identified, self-monitoring has not been shown to produce positive generalization results for students. One of the suggestions presented by Gage et al. (2010) in their evaluation of current practices for students with ED is the generalization of behavioral and academic strategies. Other researchers have also noted how replication of practices across settings is necessary to support its use for students with ED (Blood et al., 2011). In their study on the differences between students with ED in a self-contained classroom compared to students with ED in a self-contained school, Lane et al. (2005) found that differences in the domains of academics and social skills do exist between students in differing settings. As a result, further research focusing on the generalization of practices, such as self-monitoring, is needed to support its claim of versatility and adaptability to many settings and students. Based on this analysis of current literature, the primary purpose of this study is to further examine the effectiveness of self-monitoring on the academic engagement of students with ED.

One aspect of any setting that cannot be controlled because of public policy is teacher absences. There are a growing number of teacher absences throughout the United States with 36% of all teachers taking 10 or more sick days a year (Miller, 2012). When teachers are absent from school, student achievement in the areas of mathematics and English-language arts decline (Miller, Murnane, & Willett, 2008). A high frequency of teacher absences within a school leads to low scores by students on state achievement tests (Clotfelter, Ladd, & Vigdor, 2009). For students with ED who already demonstrate

deficits in all academic areas, this high rate of teacher absences is concerning because it only compounds these deficits.

When a teacher is absent from the classroom, a substitute teacher is used as the primary instructor of the students. In a survey by Tannenbaum (2000), superintendents in the state of New Jersey reported that 5,320 substitute teachers were used on a weekly basis to fill teachers' roles. Based upon Clotfelter et al.'s (2009) findings that increased use of substitute teachers leads to lower achievement scores, this temporary filling of a teacher's position is a clear change in the classroom setting. The rate of teacher absences cannot be changed by public policy (Miller, 2012), so further research on the strategies used during teacher absences to maintain student behavior would be beneficial for practitioners. This gap in research leads to the next purpose of this study, which is to find the effectiveness of self-monitoring on academic engagement of students with ED during a teacher's absence.

The secondary purpose of this study and its focus on generalization is to be further analyzed by determining whether or not self-monitoring can be generalized to a different academic subject. Because students with ED have demonstrated difficulties in reading and mathematics (Lane et al., 2006; Lane et al., 2008; Nelson et al., 2004; Wagner et al., 2005), it is important to identify strategies that can be applied fluidly to said academic domains. In addition, while teachers may use a certain strategy because it is more effective (Kaff, Zabel, & Milham, 2007), there is no guarantee that it is applicable to multiple academic subjects. The successful generalization of self-monitoring to a different academic subject may motivate practitioners to further use self-monitoring.

Purpose Statement and Research Questions

The primary purpose of this research is to analyze the effectiveness of self-monitoring on the academic engagement of secondary students with emotional disturbance, extending the current research on the self-management strategy. The secondary purpose is to analyze the effectiveness of the same self-monitoring strategy under different classroom conditions, specifically when the teacher is absent and during a different academic subject. Together these purposes address some of the limitations that currently exist in regards to evidence-based practices for students with ED. The specific research questions to address these limitations are:

1. Are secondary students with ED able to accurately self-monitor their behavior in the classroom?
2. How does self-monitoring affect the same students' academic engagement?
3. How does this same self-monitoring strategy affect the academic engagement of secondary students' with ED when the teacher is absent?
4. How does teacher absence affect the same students' self-monitoring accuracy?
5. Are secondary students with ED able to generalize the same self-monitoring strategy to a different academic subject area?
6. Do secondary students with ED perceive self-monitoring as an effective and efficient way to increase academic engagement?

Importance of Study

Though the current knowledge base on self-monitoring strongly supports its use, further research is needed to identify its effectiveness under various conditions and settings (Gage et al., 2010). As a current practitioner, the author of this study has observed the difficulties in maintaining academic engagement and classroom management during his absence from a classroom for students with ED. Some researchers suggest that the best way to ensure maintenance of consistency during a teacher's absence is to train substitute teachers (Tannenbaum, 2000) and offer higher pay for serving in low-performing schools (Gershenson, 2012). These alternatives are not always feasible, though, due to the financial concerns present in school and the lack of address towards student achievement (Gershenson, 2012). As a result, focus on actual classroom strategies during teacher absences may be of more value to current practitioners.

In addition to teacher absences, the generalizability of self-monitoring to other academic subjects was a focus of this study. One may assume that a strategy deemed effective during one academic course would easily be translate to its successful use in a different course. However, no research was found by the researcher on the generalization of self-monitoring to this alternate condition. Evidence on the transferability of self-monitoring to a different subject may influence teachers to use it as a behavioral or academic tool more often in their classrooms.

The information from this study is of highest value to individuals working with adolescents with ED in special education settings. First, the analysis on the effectiveness of self-monitoring may influence some teachers to implement the strategy within their

own classrooms and lead to revisions of procedures of teachers already using the strategy. Also, with much concern and questions surrounding a teacher's absence and its effect on student achievement, based on the limited results of the study the use of self-monitoring may be a solution to the lack of structure during this manipulation of the setting.

Delimitations

Several delimitations are anticipated throughout the course of this study; however, these delimitations are consistent with other studies in the fact that they narrow the focus of the findings to further support the use of the strategy. In addition, all of the delimitations identified are the due to the nature of single-subject research and are accounted for prior to experimentation. The limitations are as follows:

Participant Age and Grade-Level

All participants in this study are between the ages of 14 and 21 and enrolled in grades 9 through 12. This specific selection of participants limits the generalizability of its findings to students within the adolescent age range and at secondary grade levels. However, current research provides much evidence on the effectiveness of self-monitoring for younger ages (e.g., Blood et al., 2011; Bruhn & Watt, 2012; Harris et al., 2005; Rafferty & Raimondi, 2009; Rock, 2005), thus decreasing the influence of this limitation.

Number of Participants

The number of participants in the study is going to be kept between two and five. This low number reduces the generalizability of the findings because the participants may not accurately represent the population of students with EBD. Based on the study's

single-subject design though, this low number of participants allows for implementation of the intervention with fidelity.

Setting

The setting used for the study is a self-contained, secondary classroom designed for students with ED to address their academic and social needs. Students with ED are able to be educated within a spectrum of settings ranging from residential living and self-contained schools to full inclusion in general education. This limitation to only one setting again impedes the generalizability of the results.

Definitions

Terms used throughout the study that may need further clarification are defined as the following:

Academic engagement – A student's academic engagement includes the student (a) looking at the self-monitoring sheet, book, or assignment; (b) writing on the self-monitoring sheet, book, or assignment; (c) verbalizing topics relevant to the lesson; (d) refraining from the use of electronic devices not being used for the lesson; and (e) making eye contact with peer or teacher while they verbalize comments or questions about the lesson.

Disruptive behavior – Disruptive behavior is an action exhibited by the student that includes (a) talking to a peer without direction from the teacher, (b) walking around the room without direction from the teacher, (c) drawing a picture not related to the lesson, or (d) using an electronic device for activities that are not teacher directed.

Substitute teacher – A substitute teacher is defined as the individual hired by the school district who receives compensation to work in a classroom during a teacher's absence.

This definition does not include or refer to the classroom paraprofessional or a student teacher.

CHAPTER II

REVIEW OF RELATED LITERATURE

Introduction

Students with ED have been shown to have academic deficits in all content areas, including mathematics, reading, and writing (Lane, Carter, & Pierson, 2006; Lane, Barton-Arwood, Nelson, & Wehby, 2008; Nelson, Benner, Lane, & Smith, 2004). According to the definition of an ED provided by the Individuals with Disabilities Education Improvement Act of 2004 [IDEA] (2004), these academic deficits are a result of the behavioral difficulties exhibited by this population of students. Successful practices for students with ED need to be identified in the areas of academics (Lane et al., 2006; Wagner, Kutash, Duchnowski, Epstein, & Sumi, 2005) and behavior (Lane et al., 2006; Lane et al., 2008; Lewis, Hudson, Richter, & Johnson, 2004). One strategy proven to increase student success in both of these areas is self-monitoring (Blood, Johnson, Ridenour, Simmons, & Crouch, 2011; Bruhn & Watt, 2012; Harris, Friedlander, Saddler, Frizzelle, & Graham, 2005; Rafferty & Raimondi, 2009; Rock, 2005). Self-monitoring is considered one of the five main types of self-management interventions, which also include (a) self-evaluation, (b) self-instruction, (c) goal-setting, and (d) strategy instruction (Mooney, Ryan, Uhing, Reid, & Epstein, 2005). The main purpose behind all five of these interventions is to have the student manage his or her own behavior (Mooney et al., 2005).

Self-monitoring has been shown by researchers to be a widely successful strategy for students with ED (e.g., Lewis et al., 2004; Niesyn, 2009; Ryan et al., 2008). Despite the large research basis for self-monitoring, there continues to be a need for in depth study of its use because students with ED is a diverse population with individual needs varying greatly from student to student. This variance in behavior and academic achievement of students with ED leads to the need for research specifically addressing critical components of a student's education. One change in routine that negatively impacts student achievement and offers promise for the use of self-monitoring is during a teacher's absence.

Mooney et al. (2005) reported on the effectiveness of academic interventions for students with ED. In this report they summarized the five types of self-management interventions and identified previous literature that supported each of these strategies' uses. In addition to these positive findings, the researchers identified that there is a need for more generalizability of the strategies (Mooney et al., 2005). This generalization of self-monitoring includes application in differing settings (e.g., general education classroom and conditions of classroom) and across different populations of students with ED (e.g., female participants, minority participants, etc.). They based this finding on the fact that of the 22 studies included in their report only 2 had generalization data other than maintenance (Mooney et al., 2005). Gage et al. (2010) supports this finding by stating that further research is needed across settings as well as further generalizability knowledge. In their report on strategy use across settings, Evans, Weiss, and Cullinan (2012) found that there continues to be a need to use self-management strategies, including self-monitoring, in all academic settings. As a result, the primary focus of this

study is to analyze the effectiveness of self-monitoring on the academic engagement of students with ED.

In addition to the varying needs of students with ED and the need for further generalizability, self-monitoring's effectiveness needs further analysis due to the many limitations found by researchers in previous studies. For example, in a study by Bruhn and Watt (2012) that paired self-monitoring with an academic intervention, no generalization or maintenance data were collected on the effectiveness of the self-monitoring. In another study, self-monitoring was paired with other behavioral strategies, so the researchers could not conclude on the sole effect of self-monitoring (Blood et al., 2011).

While the primary focus has been researched in previous studies (e.g., Lane et al., 2006; Lane et al., 2008; Lewis et al., 2004; Wagner et al., 2005), the study has a secondary focus on the use of self-monitoring during a teacher's absence and students' generalizability of the strategy to other courses during the school day. Many studies exist that call for government and school district action towards reducing the number of absences taken by teachers (e.g., Clotfelter, Ladd, & Vigdor, 2009; Gershenson, 2012; Tannenbaum, 2000). The increasing number of teacher absences is having a negative impact on the academic achievement of students (Miller, Murnane, & Willet, 2008), which includes those with ED. However, change in public policy will not necessarily remediate the issue because teachers will always be given some sort of leave for illness or bereavement (Miller, 2012). With teacher absences not being immediately changed by public policy, there is a need to address the academics and behaviors of students with ED in order to retain academic achievement. This study intends to primarily study the

effectiveness of self-monitoring while secondarily focus on its effectiveness during a teacher's absence and its application to other academic courses. This secondary focus aligns with the call by researchers for further generalizability of self-monitoring to differing settings and conditions (Evans et al., 2012; Gage et al., 2010; Mooney et al., 2005)

Because of its versatility and specific training prior to full implementation, self-monitoring may be a successful strategy for increasing academic engagement and reducing disruptive behaviors for students with ED, including those days in which a teacher is absent from the classroom. In addition, many key considerations in its implementation allow for practical use by a substitute teacher when proper training and direction are provided. However, no research has been found that specifically indicates whether self-monitoring continues to be a successful method during a teacher's absence. This can be attributed to the fact that teacher absenteeism is difficult to control, and contriving situations in the name of rigorous research in which a teacher must be absent is a potentially unethical strategy.

Search Procedures

The author used the electronic database ERIC (EBSCOhost) to find articles related to the main purpose of this report. Using this database, he searched the following terms: teacher absences, teacher absences AND emotional disturbance, teacher absences AND disabilities, teacher absences AND classroom management. The author found these search terms applicable to the initial focus of substitute teacher training and classroom management. Inclusions used for these search terms were that the articles had to be peer-reviewed and dated from 2002 to 2013. These inclusions ensured that the

articles being reviewed were current and had credibility from professional review. During the next search session, he used the same inclusions but searched the following terms: classroom management AND substitute, disability AND substitute, substitute teachers, substitute AND education, classroom management AND emotional behavioral disorders, and substitute teachers AND training. From these two sessions he found minimal articles covering the exact topic. While many articles were related to substitute teachers and students with ED, these articles did not fall within the inclusion criteria. Around this time, the author began to also reconsider the research question and reframed the focus towards student self-management during teacher absences.

After reframing this focus, the author again used ERIC (EBSCOhost) to search for articles. He kept the same inclusion criteria as his previous searches, but search terms were more geared towards students with ED and self-monitoring. Over the course of one week the database was used to search the following terms: emotional disturbances, self-monitoring, self-monitoring AND emotional disturbances, emotional behavioral disabilities, self-monitoring AND emotional behavior disabilities, self-management, self-monitoring of performance, self-monitoring of attention, and Lane. He chose to include this last search term because of familiarity with research on students with ED. He was aware that Lane had many works covering the state of education for students with ED, so a search using "Lane" under the search field of author was done. From these searches, enough information was gathered to adequately analyze the topics of teacher absences, characteristics of students with ED, and self-monitoring.

Once all articles were collected and saved to a computer, they were organized into topics and a comparative analysis was completed to provide a synthesis of the findings.

During the draft of the literature review, the author found he had sufficient information for the topics of self-monitoring and students with ED, but there was a need for more information on teacher absences. Because the academic database provided very few studies on the topic, the search engine Google was used to find scholarly reports on teacher absences. This search led to a report funded by the Center for American Progress that included substantive information for the draft.

After preparing a draft literature review, the main purpose of the research was again visited with the help of an advisor. The author and advisor ultimately decided that focusing on teacher absenteeism would potentially present unethical practices. As a result, the research question was reframed to a focus on the effect of self-monitoring with a secondary purpose of its generalizability to days when the teacher is absent. Because the research question was reframed, the author continued the search for information using ERIC (EBSCOhost). The was a need to expand the review to include more on the theoretical basis of self-monitoring while also including information on self-management strategies as a whole. The following terms were searched to find relevant information: self-management, self-management AND emotional disturbances, self-management AND emotional behavioral disorders, self-monitoring AND emotional behavioral disorders, theories of self-management, and theories of self-monitoring.

After finding and reading through many articles, the author found that some researchers' names that were reappearing throughout many articles. Further information was sought from these authors by using their last names in searches, which included the following: Mooney, Kauffman, Landrum, Lane, Rachlin, Kanfer, Nelson, Hayes, and Wagner. Many articles and journals were found from all of these authors that were

highly relevant to self-monitoring. After reading these articles and journals, another comparative analysis of the information was completed along with a major edit of the review.

Characteristics of Students with Emotional Disturbance (ED)

Definition of Disability

A student with an ED exhibits behavioral characteristics that negatively affect the student's academic achievement (IDEA, 2004). These characteristics may include (a) an inexplicable inability to learn, (b) inability to maintain interpersonal relationships, (c) display of inappropriate behavior, (d) a depressive mood, and (e) display of physical symptoms due to school (IDEA, 2004). The academic achievement of this population of students has been found to be extremely low compared to students without disabilities and students with other types of disabilities (Lane et al., 2005; Lane et al., 2006; Lane et al., 2008; Nelson et al., 2004; Wagner et al., 2005). These students are not exempt from the impact of teacher absences either because they may receive their education in a variety of settings, such as a self-contained classroom or the general education setting (Lane et al., 2005). By identifying the characteristics of students with ED, successful strategies and interventions can be developed to address the two critical domains of academics and behavior. Also of importance, one may determine the exact needs of these students that warrant attention during a teacher's absence.

Academic Characteristics

In a study focusing on the impact of behavioral deficits on the academics of students with ED, Nelson et al. (2004) found that these students demonstrated deficits in all content areas. Lane et al. (2006) more clearly defined these areas as mathematics and

reading. In most cases, students with ED were far below grade level in both of these areas (Lane et al., 2006). The academic achievement of students with ED was similar to students with specific learning disabilities (Lane et al., 2006). However, one concerning difference is that students with ED demonstrate a broadened deficit in mathematics overtime; that is, the older students with ED get the more they demonstrate differences between same age peers without disabilities (Nelson et al., 2004).

Students at the secondary level had mathematics skills lower than their peers when compared to students at the elementary level (Lane et al., 2008). In the area of reading, students demonstrate an increase in oral reading fluency from the elementary to secondary level, but they also demonstrate a decrease in comprehension skills (Lane et al., 2008). Compared to same age peers, students with ED fell below the 25th percentile on the *Woodcock-Johnson III Tests of Achievement* in the areas of mathematics, reading, and writing (Lane et al., 2008). In a study comparing the setting's impact on student achievement, Lane et al. (2005) found that students in a self-contained classroom fared better in multiple content areas than students a in self-contained school; regardless, students in both settings demonstrated concerning academic achievement scores.

In conjunction with the definition of an ED by IDEA (2004), Nelson et al. (2004) found that these students' behavioral characteristics are the reason for poor academic outcomes. The academic achievement of students with ED was noted to be even more concerning when a student exhibits externalizing behaviors as compared to students exhibiting internalizing behaviors (Nelson et al., 2004). Regardless of the reason for poor academic outcomes, there is an obvious need for some form of academic intervention for students with ED (Lane et al., 2006; Wagner et al., 2005).

Behavioral and Social Characteristics

Because of their impact on academics, the behavior and social skills of students with ED is a key point of discussion (Nelson et al., 2004). Many of the studies done by researchers include a synthesis of both academics and behaviors of students with ED (e.g., Lane et al., 2006; Lane et al., 2008; Nelson et al., 2004; Wagner et al., 2005). This population of students has been found to have high rates of incident reports, disciplinary contacts, and absences (Lane et al., 2006; Lane et al., 2008). In their data analysis from several national studies, Wagner et al. (2005) found that only 6% of students with ED demonstrate competent social skills comparable to their peers without disabilities. In comparison, 25% of peers with other disabilities demonstrate social skills to a level that is similar to peers without disabilities (Wagner et al., 2005).

In their study comparing learning environments for students with ED, Lane et al. (2005) found that students with ED in self-contained classrooms and self-contained schools demonstrated similar social skills, which was below average compared to peers without disabilities. Students with ED typically fall between the 30^{th} and 35^{th} percentile in the area of social skills when compared to all peers (Lane et al., 2008). More specifically, these students were found to have low levels of self-control, cooperation with others, and assertion (Wagner et al., 2005). Researchers acknowledged that there is much need for evidence-based behavioral practices and social skill instruction to guide students towards success (Lane et al., 2006; Lane et al., 2008; Lewis, Hudson, Richter, & Johnson, 2004).

Educational Settings

Based on the guidelines outlined by IDEA, all students, including those with ED, must be educated in the least restrictive environment that meets the students' educational needs (IDEA, 2004). As a result, students with ED are placed into a continuum of settings ranging from residential schools to full inclusion in general education. Their placement within these settings is contingent upon the behavioral and academic needs of the student. In most cases, schools place students with ED into a specific setting based on problem behavior and not necessarily deficits in social skills (Wiley, Siperstein, Forness, & Brigham, 2010). This placement brings into question whether or not placements for students with ED are appropriate, but that topic draws research of its own and diverges from the focus of this study.

Promising to the education of these students, more than 65% of them are educated in their residential, general education school (Wagner et al., 2006). Most students are also gaining access to behavioral and academic supports by receiving education in both general and special education settings. Despite this alignment to IDEA, elementary and middle school students with ED spent more time in the special education setting than any other group of students with disabilities. Also, though most students (i.e., 92.3%) took classes in the general education setting, only 71.3% of all students with ED took a core academic course. Most researchers call for further analysis of appropriate placement and support of students with ED in the general education setting (Wagner et al., 2006). This further research on effective strategies needs to occur in all settings, not just the general education environment (Wagner et al., 2005).

This need for further research based on educational setting is supported by the findings of Lane et al. (2005). Students with ED in all settings are perceived fairly similar according to teachers surveyed by Evans et al. (2012). Lane et al. (2005) provides statistical findings, though, that show differences do exist between students in different settings. Researchers in the study found that students with ED in self-contained classrooms (i.e., self-contained classroom within a general education school) had higher academic skills in reading comprehension, oral reading fluency, oral language, written language, broad mathematics, and broad reading compared to students with ED in self-contained schools (Lane et al., 2005). In terms of social skills, students with ED in self-contained classrooms and students with ED in self-contained schools showed comparatively similar deficits. Students in self-contained classrooms showed slightly more internalizing behavior than those students in self-contained schools (Lane et al., 2005). The amount of variance in academics and social skills was deemed enough to show difference between the two groups of students (Lane et al., 2005).

The varying nature of the disability is also present when comparing the academic and behavioral characteristics of elementary/middle school students with ED to secondary students with ED (Lane et al., 2008). In the area of academics, both elementary/middle school students showed achievement scores in reading, writing, and mathematics below the 25^{th} percentile (Lane et al., 2008). Though both groups had below average scores, the students with ED at the secondary level showed more concerning academic deficits. This group of students demonstrated a lower skill set in the area of mathematics. They also showed a decrease in their comprehension skills based on the achievement of elementary/middle school students. In the behavioral and

social domain, students at both levels fell between the 30th and 35th percentiles. However, the behavioral support for secondary students with ED were less frequent than for students with ED at lower levels (Wagner et al., 2006). The below average achievement scores in academics and social skills within both levels demonstrates that there is a need for more research in effective academic and behavioral practices for students with ED (Lane et al., 2006; Lane et al., 2008; Lewis et al., 2004; Wagner et al., 2005).

Teacher Views and Effective Practices

Students with ED may receive their education in a variety of settings depending on an individual student's academic and behavioral achievement (Lane et al., 2005). Students in all settings, however, demonstrate similar patterns of low academic achievement and behavior management (Lane et al., 2005). Using group interviews, Black and Leake (2011) found that teachers of students with ED agreed with statistical findings and viewed these students as lacking self-determination. In most cases this lack of self-determination was thought to be heavily influenced by the culture and home lives of students (Black & Leake, 2011).

Students with ED were found by Wagner et al. (2005) to usually live in homes with a considerable amount of economic stress. This economic stress is defined by having many risk factors associated with poverty (Wagner et al., 2005). In addition, many of these students lived in the same home as other individuals with a disability (Wagner et al., 2005). Teachers viewed this financial stress as the number one cause for the lack of self-determination of students with ED (Black & Leake, 2011). As a result, programming for these students needs to encompass both academics and behavior in

order to promote success in the home, school, and community settings (Wagner et al., 2005).

The groundwork of a program for students with ED should include (a) qualified professionals, (b) utilitarian environmental supports, (c) community support, (d) family involvement, (e) academic support, (f) social skills instruction, and (g) behavior management (Simpson et al., 2011). While all of these areas are crucial to student success, the program should be individualized to fit the students' academic and behavioral needs (Simpson et al., 2011). This individualization requires identifying specific, evidence-based practices.

Though not deemed evidence-based, Lewis et al. (2004) identified the following as best practice when working with students with ED: (a) teacher praise and reinforcement, (b) student interaction during instruction, (c) positive behavior support, (d) function-based interventions, (e) specific social skills instruction, (f) self-management strategies, and (g) school-wide positive behavioral support. Teachers should actively use these practices in all settings to assist students in the areas of academics and behavior (Lewis et al., 2004).

More recent research has further identified what specific instructional strategies and practices are beneficial for students with ED. For example, in an article by Ryan et al. (2008) the researchers analyzed previous literature to compare the effectiveness of different types of strategies. Based on categories, the most effective interventions are those that involve peer-mediation, such as tutoring. Ryan et al. (2008) found that these interventions had an average effect size of 1.875. However, self-mediated interventions had a very similar average effect size of 1.80. In regards specifically to self-monitoring,

it was rated as one of the most beneficial strategies with an effect size of 1.90. The lowest of all strategies were those that are teacher-mediated; they had an average effect size of 1.05 (Ryan et al., 2008). These findings demonstrate that self-monitoring is more effective compared to other strategies deemed successful for academics and behavior of students with ED.

Despite the very positive findings of peer-mediated, self-mediated, and teacher-mediated strategies by Ryan et al. (2008), less than 40% of all students with ED had instruction in learning strategies such as organizational and/or study skills. Based on national data surveys, there is an evident need for more learning and behavioral supports for students with ED, especially at the secondary level (Wagner et al., 2006). Though the programming for students with ED has improved since the 1980's, students with ED are receiving less access to general education curriculum and best practices than students with other disabilities (Wagner & Davis, 2006). There is an obvious need for continued research focusing on best practices for students with ED (Gage et al., 2010).

Summary of Characteristics of Students with Emotional Disturbances

In the area of academics, students with ED demonstrate academic deficits in all content areas, including mathematics, reading, and writing (Lane et al., 2005; Lane et al., 2006; Lane et al., 2008; Nelson et al., 2004; Wagner et al., 2005). In the area of behavior, these students demonstrate appropriate social skills far below peers with other disabilities and peers without disabilities (Lane et al., 2006; Wagner et al., 2005). As a result, there is a need for more effective interventions in academics (Lane et al., 2006; Wagner et al., 2005) and behavior (Lane et al., 2006; Lane et al., 2008; Lewis et al., 2004). In addition, to enhance the frequency of evidence-based interventions for students

with ED, researchers should determine which strategies are generalizable to differing conditions, such as different academic subjects or during a teacher's absence. One specific strategy that is being used to address both behavior and academics of students with ED is self-monitoring (Harris et al., 2005; Rafferty & Raimondi, 2009; Rock, 2005).

Self-Monitoring

Definition of Self-Monitoring

Self-monitoring is considered a cognitive training strategy that helps a student manage one's academic and social responses (Kauffman & Landrum, 2009). Historically, self-monitoring has been used in other fields, such as psychology, as a means of data collection on specific behavior. Professionals initially viewed self-monitoring as an adequate process for collecting data on private behaviors, such as marital conflicts (Nelson & Hayes, 1981). Within the field of education the procedures are similar because the process of self-monitoring includes the student self-recording one's behavior at an indicated cue or set of intervals. Prior to implementation, a target behavior or area of academics is identified and defined by the teacher and student. A self-monitoring form is then designed to provide the student with clear routine on self-recording. The student is provided with direct instruction on how to accurately self-monitor, and then the entire process is implemented within the natural context of the classroom (Kauffman & Landrum, 2009). After completion of self-monitoring, the teacher may provide a form of reinforcement (Freeman & Dexter-Mazza, 2004).

Theoretical Basis of Self-Monitoring

The theoretical basis of self-monitoring is grounded in Bandura's (1971) social learning theory. Within this theory, behavior is not a manifestation of internal forces or

impulses; rather, behavior is an interaction between the cognitive abilities of an individual and his or her environment. In essence, behavior is learned through the observation of other peoples' and one's own behavior. Bandura (1971) theorized that a human's unique abilities to make observations and process said observations using cognitive sequences allow him or her to act in a certain way.

In his 1991 theoretical paper on self-regulation, Bandura connected his theory of social learning to self-management processes including self-monitoring. He stated that future events are not and cannot be motivators for current behaviors. Instead, humans are able to cognitively self-regulate and represent the future in the present (Bandura, 1991). For example, a student will not simply work for a cookie knowing he will receive it after completing his assignment. What allows the student to work towards the cookie is the constant self-initiated reminder during his homework that he will receive a cookie after completion. The process of self-monitoring in education allows students to create a tangible representation of these cognitive processes using prescribed forms or other mediums. This form or medium allows students with ED to be successful identifying patterns of behavior, which may be difficult considering their academic achievement and social skills are well below average (Wagner et al., 2005).

In their work analyzing multiple theoretical viewpoints on self-monitoring, Nelson and Hayes (1981) aligned their theory with Bandura's (1971) by stating that the process of self-monitoring and self-recording is what leads to students' success. The training of self-monitoring and constant self-recording makes one more aware of the behavior and work towards change in frequency (Nelson & Hayes, 1981). Rachlin's (1974) theoretical basis is similar to Nelson and Hayes (1981), but it does not take into

account the training process of self-monitoring. In both cases however, self-monitoring is seen as an interaction with the immediate environment to manipulate consequences (Nelson & Hayes, 1981; Rachlin, 1974). In education, a student self-monitors an identified behavior (i.e., interaction) in a specific environment to acquire a predetermined reinforcement (i.e., consequence).

Use of Self-Monitoring

Many studies have found the use of self-monitoring to be beneficial towards reducing negative behaviors and increasing academic engagement (Harris et al., 2005; Rafferty & Raimondi, 2009; Rock 2005). In a study focusing on teachers' use of behavioral management strategies, special education teachers stated they are more likely to use a strategy if it is effective in controlling or reducing a problem behavior and minimally intrusive within the learning environment (Kaff et al., 2007). Teachers indicated that the most effective strategies included establishing routines, providing verbal praise, and giving attention to positive behavior (Kaff et al., 2007). Self-monitoring employs all of these strategies by providing the student with responsibility for managing academics or behaviors while receiving praise for completion of the strategy and display of appropriate behaviors (Kauffman & Landrum, 2009).

In addition, self-monitoring may be used with other behavioral strategies to more concretely teach positive behaviors (Blood, Johnson, Ridenour, Simmons, & Crouch, 2011). This packaging of strategies may be beneficial when considering the function of the behavior being self-monitored. Turton, Umbreit, and Mathur (2011) found that behavioral interventions for students with ED were very successful during intervention, generalization, and maintenance when the function of the behavior was considered as part

of the intervention strategy. For example, Blood et al. (2011) used a single-subject design study to determine the effect of video modeling and self-monitoring on the on-task behavior of a young male with an ED. The researchers found that this package of strategies was more successful together than just video modeling in increasing the student's on-task behavior (Blood et al., 2011).

Benefits

The benefits of self-monitoring were clearly described in a study by Bruhn and Watt (2012) that focused on the academic engagement and disruptive behaviors of two middle school females with academic and behavioral difficulties. Using an ABAB withdrawal design, the researchers implemented a self-monitoring strategy into the already existing curriculum within the students' classroom. The process of self-monitoring included (a) using a pre-made form to self-record at given intervals, (b) receiving feedback from the teacher after each session, and (c) being provided reinforcement based on the completion of self-monitoring. The researchers found that the use of self-monitoring increased the academic engagement and reduced the disruptive behaviors of both female students (Bruhn & Watt, 2012). The disruptive behaviors of the students decreased to a frequency lower than the average number of external behaviors of a middle school female (Bruhn & Watt, 2012). Bruhn and Watt's (2012) findings were replicated when Freeman and Dexter-Mazza (2004) used self-monitoring to effectively reduce challenging behaviors of a male adolescent with multiple disabilities.

Self-management training in general is beneficial for students with ED because they typically lack the necessary skills to manage themselves within the school environment, leading to changes in educational placements. In addition to the benefit of

managing one's own behavior, self-monitoring is successful for students with ED because the procedures and process can be changed to accommodate the individual needs of students (Mooney et al., 2005). Students with ED demonstrate variability from grade to grade (Wagner et al., 2006) and setting to setting (Lane et al., 2008), so this flexibility makes it a convenient intervention for a diverse population. Even more inviting to its use in school settings, Mooney et al. (2005) found that students with ED who used self-management skills increased their academic achievement compared to baseline conditions.

Self-monitoring has also been found to be easy to implement into an existing academic curriculum or classroom (Bruhn & Watt, 2012). Teachers in the study also indicated that the use of the strategy was socially valid (Bruhn & Watt, 2012). In another study, students indicated that the use of self-monitoring was beneficial and provided them with focus on academics or behavior (Rafferty & Raimondi, 2009). One of the most standout benefits of self-monitoring, though, is its versatility. The strategy can be individualized to fit a student's academic level, personal needs, or types of behavior (Kauffman & Landrum, 2009). Because of its array of uses, some studies have been completed to determine whether self-monitoring should focus on academic performance or behavior, defined more specifically as attention to task (e.g., Harris et al., 2005; Rafferty & Raimondi, 2009; Rock 2005).

Self-Monitoring of Performance and Self-Monitoring of Attention

The self-monitoring of performance (SMP) includes the student using a pre-designed form to self-assess progress and achievement after completion of an academic task. The self-monitoring of attention (SMA) includes the student using a pre-designed

form to self-record one's on-task behaviors during completion of an academic task (Harris et al., 2005; Rafferty & Raimondi, 2009). The two methods for self-monitoring can even be combined to include self-recording during the task and self-assessment after the task (Rock, 2005).

In their comparison of SMA and SMP, Rafferty and Raimondi (2009) found that SMP was more effective in increasing academic and on-task behavior for three third-grade students with ED. In contrast, Harris et al. (2005) found that SMA engaged elementary students with attention-deficit hyperactivity disorder longer than SMP. However, in both of these studies both SMP and SMA were found to be effective in increasing on-task behavior and academic engagement (Harris et al., 2005; Rafferty & Raimondi, 2009). In their study, though, Harris et al. (2005) did not measure the effect of the strategy on academic achievement. Also, students in both studies stated that they preferred SMP over SMA, but were willing to use either strategy because they increased success in the classroom (Harris et al., 2005; Rafferty & Raimondi, 2009).

Instead of comparing the two methods of self-monitoring, Rock (2005) combined them and evaluated the effectiveness on students with disabilities and students without disabilities. Rock (2005) found that the combined use of SMA and SMP was successful in increasing the academic engagement and productivity of all students. Nine students were included in the study, and each student used a form of combined self-monitoring that was individualized to his or her needs. The main finding from this study demonstrated that self-monitoring can be used to benefit all students as long as it is individualized to the students' needs (Rock, 2005).

Considerations for Self-Monitoring

Along with individualization of the self-monitoring process, other considerations need to be made when implementing the strategy. Plavnick, Ferreri, and Maupin (2010) found that behavioral interventions were most effectively implemented when a checklist for fidelity was provided to the staff member. There is a direct correlation between the implementation of an intervention and its effect on students' academic readiness (Plavnick et al., 2010). A checklist should be created by and for the teacher when using self-monitoring to increase the effectiveness of the intervention for the student.

A checklist for the teacher would allow the process of self-monitoring to remain systematic, meaning it would follow the same successful process each time it is used by the student. Keeping this systematic scheme during implementation is crucial to the success of self-monitoring (Freeman & Dexter-Mazza, 2004). One of the areas that needs to remain systematic is the provision of feedback by the teacher or staff member. Students were found to be most successful in reducing off-task behaviors with self-monitoring when feedback was provided by an adult (Freeman & Dexter-Mazza, 2004). This feedback should be provided immediately after monitoring and be based on the student's accuracy of the strategy (Freeman & Dexter-Mazza, 2004).

Summary of Self-Monitoring

Self-monitoring is a cognitive training strategy that is effective for students with ED in the areas of behavior and academics (Blood et al., 2011; Bruhn & Watt, 2012; Harris et al., 2005; Rafferty & Raimondi, 2009; Rock, 2005). Furthermore, the strategy is easy to implement and is considered socially valid by teachers and students (Bruhn & Watt, 2012). Because the process of self-monitoring involves the teacher working with

students to develop and accurately use the strategy prior to its full use, it can be an effective strategy in classrooms for when a substitute teacher fills in for the regular teacher.

Teacher Absences and Substitute Teachers

A secondary purpose of this research is to determine the effectiveness of self-monitoring on students' academic engagement during a teacher's absence. As a result, research on teacher absenteeism and substitute teachers are included in this review to identify why this purpose is beneficial to the field of education.

Rates and Associated Factors

Miller (2012) suggested that the policies for teacher absenteeism need to be changed by school districts. In his data analysis, he showed that Utah was the lowest in teacher absence rates with 20.9% of its teachers missing 10 or more days of work per year (Miller, 2012). The highest reported state for teacher absences was Rhode Island with 50.2% of all teachers having 10 or more absences during the 2009-2010 school year (Miller, 2012). A comparison of all 50 states showed that 36% of all teachers in the United States were absent for 10 or more days during the school year (Miller, 2012). This high rate of absenteeism is a few percentage points higher than many other professions, creating concern as to what factors lead to high absences (Clotfelter, Ladd, & Vigdor, 2009).

Clotfelter et al. (2009) analyzed data from the North Carolina Department of Public Instruction and the North Carolina Education Research Data Center to determine patterns in the relationship and frequency of teacher absences in North Carolina. The researchers found several correlations between demographics and teacher absences. For

example, female teachers are more likely to take a sick day than male teachers (Clotfelter et al. 2009). Also, teachers with more years of experience are more likely to take a sick day than new teachers (Clotfelter et al. 2009). Of more importance to teacher competence, the researchers found that teachers with master's degrees, National Board certification, high exam scores, or degrees from competitive colleges were less likely to miss work than those without said credentials (Clotfelter et al. 2009). This comparison indicates that teacher proficiency and training directly influences teacher absences. Many teachers are currently educating students with ED but do not have full licensure, meaning their training was not as sufficient (Sutherland, Denny, & Gunter, 2005). Based on the findings of Clotfelter et al. (2009), these teachers are more likely to be absent from the classroom.

In addition, Clotfelter et al. (2009) found that teachers in schools with high populations of students receiving free and reduced lunch were more likely than those not in said schools to take a sick day. Students with ED have a high risk for living in a low socioeconomic home and encountering economic stress, leading to eligibility for free and reduced lunch (Wagner et al., 2005). Teachers of this population are again more likely to take a sick day then Although no existing research specifically examined how teacher absences may impact students' with ED, some researchers investigated the impact on overall achievement of students (Clotfelter et al. 2009; Miller et al., 2008).

Effect on Student Achievement

A secondary purpose of the study conducted by Clotfelter et al. (2009) was to examine the effect of teacher absences on student achievement. The amount of teacher absences was indirectly correlated with the scores achieved by students on state

achievement tests; a high amount of teacher absences was associated with lower test scores (Clotfelter et al., 2009). Similar results were found in a study that focused on one urban school district (Miller et al., 2008).

In their study, Miller et al. (2008) used archival records to investigate the impact of teacher absences within a school district. The researchers found that a teacher's absence negatively affects student achievement in the core areas of mathematics and English-language arts (Miller et al., 2008). Though both subjects were negatively impacted, mathematics showed a greater decrease in achievement than English-language arts (Miller et al., 2008). A measure similar to the analysis done by Miller (2012) was used to determine the exact impact of absences on mathematics scores; this measure was a teacher being absent for 10 or more days (Miller et al., 2008). Ten or more days of teacher absence was associated with fourth-grade students' mathematics scores reducing by at least 3.2% of a standard deviation. This effect becomes even larger when the absence is unexpected (Miller et al., 2008).

Summary of Teacher Absences

Although most of the research for teacher absences was intended to address policy change, the researchers concluded that the amount of teacher absences is significant and having a negative impact on student achievement (Clotfelter et al., 2009; Miller, 2012; Miller et al., 2008). In addition, teachers serving students with ED are more likely to take a sick day than other teachers, as correlated with the school's socioeconomic demographics and teachers' competency in the classroom (Clotfelter et al., 2009). As a result of these absences, students with ED are encountering lower academic achievement similar their peers with disabilities and peers without disabilities (Miller et al., 2008).

Substitute Teachers

Concerns

When a teacher is absent from the classroom, a substitute teacher fills the teacher's role. Based on data from a survey completed by superintendents in New Jersey, Tannenbaum (2000) found that 9,461 substitute teachers were employed within 137 school districts and 5,320 substitute teachers filled teachers' roles every week. In the same survey, superintendents indicated that 93% of their school districts did not provide any training or professional development for these substitute teachers (Tannenbaum, 2000). Contrary to this lack of training, substitute teachers with higher certification and more professional development were associated with less of a negative impact on student achievement scores (Clotfelter et al., 2009). Districts that trained their substitutes prior to classroom work reported the least amount of problems during teacher absences (Tannenbaum, 2000).

In addition to the lack of training for substitute teachers, most substitute teachers reported that they take the job because they do not have to address classroom problems the next day, meaning they are not directly impacted by or responsible for their classroom management (Duggleby & Badali, 2007). Other substitute teachers report that they take the job to make connections with a school district and hope to eventually receive a full-time teaching position (Duggleby & Badali, 2007). No matter the reason for fulfilling a subbing role, substitute teachers have little cohesion with the school district. Along with little to no professional development, substitute teachers reported that there is minimal collaboration with full-time teachers (Duggleby & Badali, 2007).

Relationships are not fostered between substitute teachers and full-time teachers, leading the substitute teachers to isolation within the district. This isolationism leads to self-isolation by the substitute teachers because of the districts' implicitly defined substitute teacher roles (Duggbleby & Badali, 2007). Given student achievement scores are negatively impacted by the absence of a teacher and presence of a substitute teacher, school districts should be provide substitute teachers with more resources to adequately meet the needs of the students (Miller et al., 2005).

Solutions for Concerns Regarding Substitute Teachers

In the study conducted to determine what factors influence substitute teachers' decisions when presented with an offer, Gershenson (2012) found that these teachers prefer working in high-performing schools. As a result, the researcher suggested that substitute teachers should receive higher pay for working in low-performing schools (Gershenson, 2012). This solution specifically addresses student with ED who demonstrate academic deficits in all content areas (Lane et al., 2006; Lane et al., 2008; Nelson et al., 2004; Wagner et al., 2005). While this solution may attract more competent substitute teachers to low-performing schools, it does not provide a comprehensive answer because students with ED are educated in a continuum of settings (Lane, Wehby, Littler, & Cooley, 2005).

Another solution to address concerns related to substitute teachers is for schools to hire career substitute teachers and provide continuous training (Platt, 2000; Tannenbaum, 2000). A career substitute teacher is an individual who serves one school district for a contracted period of time (Tannenbaum, 2000). These career substitute teachers should receive professional development over the course of their substitution

career. Tannenbaum (2000) stated that training could be as simple as providing a handbook of district policies and procedures. Administrators should hold the responsibility of assimilating substitute teachers to the school district by providing training before any substituting, orienting individuals to policies and procedures, and including them in faculty meetings when possible (Platt, 2000). To facilitate the success of substitute teachers, full-time teachers should provide substitute teachers with clear lesson plans and classroom procedures. This collaborative process could also be an opportunity that allows substitute teachers an opportunity to provide feedback on the full-time teacher's provision of plans (Platt, 2000).

Summary of Substitute Teachers

Many concerns arise over the use of substitute teachers during regular teachers' absences because of the assumption that they may not be concerned about maintaining the learning environment (Duggleby & Badali, 2007) or they might not be adequately prepared through training and professional development (Tannenbaum, 2000). Financial changes may enhance the frequency of highly qualified substitute teachers in some schools, but it does not address the issue of low student achievement during teacher absences in all schools (Gershenson, 2012). As a result, training and assimilation to school districts needs to be provided to substitute teachers to ensure that students continue to be academically engaged and behaviorally appropriate during a teacher's absence. This training needs to include methods and strategies that promote academic and behavioral success for students with ED.

Overall Summary and Identified Gap

Students with ED have academic deficits in all content areas, including mathematics, reading, and writing (Lane et al., 2006; Lane et al., 2008; Nelson et al., 2004; Wagner et al., 2005). Compounding this issue in the school setting, students with ED also have below average social and behavioral skills (Lane et al., 2005; Lane et al., 2006; Lane et al., 2008; Wagner et al., 2005). Effective practices for students with ED are needed in the areas of academic performance (Lane et al., 2006; Wagner et al., 2005) and behavior management (Lane et al., 2006; Lane et al., 2008; Lewis et al., 2004). One strategy proven to increase student success in both areas is self-monitoring (Blood et al., 2011; Bruhn & Watt, 2012; Harris et al., 2005; Rafferty & Raimondi, 2009; Rock, 2005). Self-monitoring is a strategy that many researchers and practitioners have deemed evidence based or effective (e.g., Lewis et al., 2004; Niesyn, 2009; Ryan et al., 2008). However, there is still a need to further investigate its use for students with ED due to the varying academic and social needs among students (Evans et al., 2012; Mooney et al., 2005). One particular area that needs additional research is the generalizability of self-monitoring during teacher absences, which is a common occurrence in education where the environment is socially altered and is associated with lower academic achievement (Miller et al., 2008). Another applicable area of generalization, especially for secondary students with ED, is its use in academic subjects other than the academic subject the student initially received training.

Of the 22 studies included in a literature review on self-management, Mooney et al. (2005) found that only 2 of these studies included any generalization data other than maintenance. One area of generalization that is crucial to the on-going success of all

students is academic and behavioral performance during a teacher's absence. Many studies exist calling for governmental and school district action towards reducing the number of absences taken by teachers (e.g., Clotfelter et al., 2009; Gershenson, 2012; Tannenbaum, 2000). The increasing number of teacher absences is having a negative impact on the academic achievement of students (Miller et al., 2008). Students with ED are not exempt from the impact of teacher absences as teachers will always be given leave for illness or bereavement regardless the change in public policy (Miller, 2012).

In addition to teacher absences, an area of generalizability applicable to all students with ED is different academic subjects. Teachers are more likely to use a strategy if it is effective and requires minimal training (Kaff et al., 2007). By determining if a secondary student with ED can generalize it to multiple academic subjects, current practitioners may include self-monitoring more often in their classrooms, thereby increasing the frequency of evidence-based practices with students with ED.

Because of its versatility and specific training prior to implementation, self-monitoring may be an effective strategy for increasing academic engagement for students with ED during a teacher's absence. In addition, many key considerations in its implementation allow for practical use by a substitute teacher with proper training. However, the researcher found no research specifically indicating whether self-monitoring continues to be a successful method during a teacher's absence. The researcher's current role as a special education teacher for students with ED leads to professional interest in self-monitoring as a strategy for addressing academic engagement.

Research Purpose and Question

The purpose of this research is to determine if self-monitoring is an effective strategy for students with ED. As indicated by existing literature, student achievement is a key consideration for students with ED. This achievement becomes an even more concerning issue when the teacher is absent and a substitute teacher leads the class. Based on previous literature, self-monitoring is an effective strategy for students with ED, but no other studies were found indicating whether the strategy continues to promote academic achievement during a teacher's absence. In addition, because of the variability among students with ED, there is a need to identify strategies that are generalizable to multiple conditions, such as different academic areas. A study demonstrating this effect could provide more evidence for the use of self-monitoring if results show that student levels in academic engagement increase. In addition, use of self-monitoring by current practitioners may increase with research supporting a secondary student's ability to generalize it fluidly to other academic subjects.

Within the researcher's own school, he will be able to use the strategy to maintain routine and structure during absences. His informal observations and data have shown decreased levels of students' academic engagement and an increased amount of disruptive behavior. The use of self-monitoring can guide students towards academic success during absences, but no research provides such evidence. As a result, the purpose of this study is to examine the following questions:

1. Are secondary students with ED able to accurately self-monitor their behavior in the classroom?

2. How does self-monitoring affect the same students' academic engagement?
3. How does this same self-monitoring strategy affect the academic engagement of secondary students' with ED when the teacher is absent?
4. How does teacher absence affect the same students' self-monitoring accuracy?
5. Are secondary students with ED able to generalize the same self-monitoring strategy to different a different academic subject area?
6. Do secondary students with ED perceive self-monitoring as an effective and efficient way to increase academic engagement?

CHAPTER III

RESEARCH DESIGN

Participants

Participants included three students enrolled in a self-contained classroom designed to meet the needs of adolescents with ED. All were identified as having ED according to the eligibility requirements of IDEA (2004). This eligibility had been determined prior to enrollment in secondary school and was based on the behavioral, social, and academic needs of individual students. In addition, the following inclusion criteria were used to identify potential participants from this classroom: (a) student must have demonstrated behaviors that allowed for continued success in the current setting (i.e., students did not have documented reports of behaviors that were physically aggressive in nature, threatening to other peers or staff, or self-harming); (b) student must have low levels of absenteeism (i.e., fewer than 10 absences); (c) student must demonstrate a need for self-monitoring according to classroom measures and teacher observations (i.e., student receives less than 90% of points possible on classroom behavior measures); and (d) student must have a signed parent permission form to use student data for research purposes. All students' parents/guardians within the self-contained program were sent a consent form with information regarding the study; however, only three students' parents signed the form. These same students also signed an assent form, so they were the only participants whose data were used for analysis.

The participants ranged in age from 14 to 18 and were enrolled in grades 9 to 12. Two participants, John and Nate, lived in the residential district of the school; one participant, Eric, enrolled in this specific setting from a neighboring district to meet his behavioral needs. However, all potential participants lived in the same county, with each city demonstrating relatively similar demographics. All participants received free and reduced lunch. Gender and ethnicity were not target characteristics of the participants; however, efforts were made to include a variety of such characteristics. Unfortunately, at the time of study, little variety in characteristics was present within the classroom.

Within the self-contained setting, participants received daily instruction in academic and social skills. All participants demonstrated a need for management of behavior based on previous Individualized Education Program (IEP) records and classroom observations. In addition, all participants had completed a form of self-monitoring at the beginning of the school year. This type of self-monitoring included daily reflection on earned points according to the behavioral system and did not focus on academic engagement or use of the forms within this study. One student, Eric, also had previous instruction in the use of the MotivAider for self-monitoring of a disruptive behavior during the prior school year; this use was not for academic engagement measurement though.

John

John was a 15-year-old White male and had been enrolled in the self-contained setting since the beginning of the school year. He received all of his academic courses within the setting. His mathematics course during this school year had been algebra. He maintained a passing grade in the course; however, he frequently engaged in behaviors

that impeded his academic engagement. These behaviors were usually the result of frustration with the provided assignments. They included John putting his head on his desk, throwing his pencil on the floor, and cursing very loudly until a staff member provided him with redirection.

John's IEP included a Behavior Intervention Plan (BIP) and one annual goal. This BIP focused on John's participation and maintenance of externalizing behaviors in the classroom environment. For example, the BIP stated that John was to apply coping strategies such as breaks from the environment when frustrated or angry. His only annual goal focused on his maintenance of positive behavior and did not relate to academics.

Eric

Eric was an 18-year-old White male and had been enrolled in the program for three years. He received all of his academic courses in the self-contained setting but, in prior semesters, had been enrolled in a few general education courses. He was enrolled in geometry during his mathematics period. Eric did not display any academic deficits; however, he failed mathematics courses in previous semesters due to a lack of assignment completion. During academics, Eric typically engaged in attention-seeking behavior, such as verbalizing inappropriate comments to peers. Despite classroom guidelines, he also frequently used his personal electronics during instruction and independent work.

Eric's IEP included a BIP and two annual goals. The BIP was to help Eric maintain his attention-seeking behaviors in the classroom environment through provision of verbal reinforcement or other tangible reinforcers. His annual goals were targeted towards his interpersonal communication and recognition of others' emotions and perspectives; they did not relate to academics.

Nate

Nate was an 18-year-old White male and had transitioned into the setting one month into the school year. He received all of his courses in the self-contained program. Nate began the year in an algebra course but began taking geometry during the semester of the study in order to obtain the necessary graduation credits. Nate had been managing passing grades in academics throughout the entire school year, but his behavioral coping strategies had been impeding on his academic time. For example, Nate would remove himself to the special education office for an extended period of time rather than using the in-class break room, resulting in the loss of academic time.

Nate's IEP indicated that he had a BIP that focused on his self-removal from the learning environment if he was feeling angry or frustrated. This removal would include him proceeding to the office after giving notice to the classroom teacher. He also had one annual goal; however, this goal focused on his behavior and not academics.

Research Team

One teacher, who also served as researcher, collected and analyzed data in this study. This teacher was a White male with three years of teaching experience; all three years had been in the current self-contained classroom. He possessed teaching licenses in K-12 special education for mild to profound disabilities and K-8 general education.

One paraprofessional collected data but did not complete any visual or statistical analyses. This paraprofessional was a White female with 7 years of paraprofessional experience in the self-contained classroom for students with ED. She possessed all appropriate licensure as a paraprofessional in her state.

Setting

The study took place in a Midwestern, public school district that consisted only of a high school. Other school districts in the surrounding community included the elementary and middle schools that transition into the secondary school. This high school included 1,249 students with the following racial/ethnic backgrounds: (a) 84.9% White, (b) 1.7% Black, (c) 10.7% Hispanic, (d) 0.9% Asian, (e) 0.1% Native Hawaiian/Pacific Islander, (f) 0.4% American Indian, and (g) 1.3% Multiracial. Of all students, 10.9% of them had an IEP.

The study occurred in a classroom located within an adjunct building on the school's main campus. This classroom was located on the third floor near one other classroom for drivers' education. Other facilities located within the building included vocational classrooms and a gymnasium. The classroom included a small room that is accessible to students when distractions may negatively affect emotions or assignment completion. This break room included an open ceiling and window in the door; it was not used as an exclusionary "timeout" room. Instructional resources within the classroom included four iPads, eight desktop computers, one LCD projector, and a copious amount of printed materials. Other individuals who regularly visited the environment include an associate principal and the participants' social worker.

Students in the setting are referred by their respective schools within the county to the program based on behavioral and academic needs. As a result, all students within the setting were in need of extensive assistance in the areas of behavior management and social skills development. Students received all academic courses along with one hour of social skills instruction per day in the classroom. A behavioral system consisting of a

token economy and goal-setting was used to assist students in managing behavior and academic development. This behavior system centers around students earning points each hour based on academic and respect-based behaviors. Using these points, students make short-term goals towards predetermined reinforcement. At the time of the study, nine students were present in the classroom and self-monitoring was used during intervention phases by all but one of the students because said student was not in mathematics.

The specific course targeted for data collection was mathematics. This course occurred on a daily basis during second hour, which was 8:55 AM to 9:45 AM. Students were enrolled in specific mathematics courses based on their previously passed courses and grade level; students at the freshmen level were usually enrolled in algebra, students at the sophomore level were in geometry, and students at the junior or senior level were in algebra II or pre-calculus. On most days, the least advanced courses (e.g., algebra) were taught before the more advanced courses (e.g., geometry). If students have previously failed mathematics courses, they will retake said courses in their junior or senior years of school. At the time of the study, John was enrolled in algebra while Eric and Nate were enrolled in geometry.

All students received their instruction from the special education teacher with assistance from the paraprofessional. The lessons followed a direct instruction format of modeling, guided practice, and independent practice. The modeling and guided practice portions of the lessons took 15 to 20 minutes allowing for 30 to 35 minutes of independent work. Independent work was provided using a textbook, board problems, or printed material. Students completed the assignments individually or in small groups

according to students' needs. During the duration of independent work, the teacher and paraprofessional walked around the classroom to assist students on individual problems.

Dependent Variables and Measurement

Academic engagement. Academic engagement for all participants in the study was defined as follows: (a) looking at self-monitoring sheet, book, or assignment; (b) writing on self-monitoring sheet, book, or assignment; (c) verbalizing topics relevant only to the lesson; (d) using an electronic device for the lesson only; or (e) making eye contact with peer or teacher while they verbalize comments or questions about the lesson. The following actions were considered non-examples of academic engagement: (a) looking at the self-monitoring sheet, book, or assignment; (b) writing on the self-monitoring sheet, book, or assignment; (c) verbalizing topics relevant to the lesson; (d) refraining from the use of electronic devices not being used for the lesson; and (e) making eye contact with peer or teacher while they verbalize comments or questions about the lesson.

In addition to these factors, the researcher assumed participants may have needed to break engagement at momentary times. These breaks in engagement included: (a) looking away to think for no more than 3-seconds or (b) raising one's hand to garner the teacher's attention for no more than 5-seconds. The teacher responded to a raised hand by asking the participant what the purpose is for raising his hand and subsequently addressing the participant's need. These factors were adapted from the definition of academic engagement by Bruhn and Watt (2012). The definition of academic engagement and its individual factors relate to the tasks assigned by the teacher. This definition is applicable to all participants because they all needed to be engaged

academically during the mathematics lesson. Variations to the definition from Bruhn and Watt (2012) include the use of electronic devices; this variation was made based on the teacher's anecdotal recordings and observations of participants' behavioral needs.

The researcher collected all academic engagement data during all conditions except for generalization data that occurred during teacher absences. Using an Excel document, the researcher recorded the duration of the participant's academic engagement based on the number of intervals marked with "+" and the percentage of intervals academically engaged (i.e., number of recordings indicated on task divided by 20 then multiplied by 100).

Self-monitoring accuracy. The accuracy of self-recording across varying conditions (i.e., intervention and generalization during intervention) was collected to determine the participant's fidelity of recording their academic engagement across varying conditions (i.e., mathematics with teacher present, mathematics with teacher absent, and another academic subject). The accuracy of each participant's self-recording was calculated and analyzed to provide feedback on whether or not the use of self-monitoring was the factor leading to a change in academic engagement.

The researcher used Microsoft Excel to record the self-monitoring data collected by the participant and the self-monitoring data collected by the teacher. The mean for each participant and phase of intervention was calculated for comparative analyses. Accuracy was specifically measured by comparing the percentage of intervals of academic engagement as recorded by the participant to the percentage of intervals of academic engagement as recorded by the teacher or paraprofessional.

Treatment Fidelity. To ensure that behavior change was the result of the self-monitoring intervention, treatment fidelity was evaluated using the self-monitoring training, baseline, and intervention checklists. Checklists used by the teacher or staff improve the accuracy of intervention implementation (Plavnick et al., 2010), providing more validity to the strategy's effect on participant behavior. As the teacher completed a step of the intervention, the paraprofessional used the checklists to mark completion of the corresponding step. By having the paraprofessional assess fidelity during instruction instead of the teacher himself, a more objective measure of fidelity was obtained. In addition, all self-monitoring and teacher-recording forms were kept as a permanent product of treatment fidelity.

In addition, the checklists include a portion on prompting during the self-monitoring process. If the teacher observes that a participant has not recorded on his form after a cue, the teacher may elect to provide a verbal reminder (i.e., "[name of student], your accuracy was low today; please remember to use the definitions of academic engagement on your form."). The teacher also may elect to use a physical prompt (i.e., pointing at the self-monitoring form) to guide the student to self-record. Use of these prompts will be monitored by the teacher and paraprofessional and recorded on the fidelity checklists.

Social Validity

All participants were provided with the "Social Validity Survey" (Appendix E) at the end of the study to assess the participant satisfaction of self-monitoring. The survey included 12 statements and an open-ended section for optional comments to gather participants' perspectives on their training, implementation, and outcome of self-

monitoring. A 5-point Likert-scale rating was used in conjunction with the descriptive statements (i.e., 1=strongly disagree to 5=strongly agree). Statements were written with the intent that the choosing of "agree" or "strongly agree" indicates positive opinions regarding the factors and process of self-monitoring. Social validity was collected to determine the extent that which participants find the use of self-monitoring an effective intervention and the extent to which they would want to use self-monitoring in the future.

Interobserver Reliability

To ensure interobserver reliability for treatment fidelity and data collection of academic engagement, the paraprofessional was trained by the teacher in MTS recording and the use of fidelity checklists. The training included (a) the explanation of the operational definition of the behavior, (b) instructions on how to use the monitoring form and checklists, (c) review of the MotivAider device, and (d) practice sessions until a minimum of 90% agreement was reached for the recording of academic engagement.

For 100% of sessions during all phases of treatment, except for generalization data, the paraprofessional collected data on the fidelity of treatment by completing the necessary fidelity checklists. Also during this time, the teacher completed a copy of the fidelity checklist while he completed each step of the process. Using the checklists completed by the paraprofessional and the teacher, interobserver agreement was calculated by dividing total number of agreements by total checklist steps and then multiplying by 100. Across all participants and phases of the ABAB design, interobserver agreement was calculated to be 100% for treatment fidelity.

To account for interobserver agreement of participant self-monitoring accuracy, the paraprofessional and teacher both used MTS to measure the academic engagement of

participants across 100% of sessions, with the exception of teacher absence generalization sessions, during baseline and intervention conditions. Interobserver agreement was calculated for each session by dividing agreements by total agreements and disagreements of academic engagement. For John, Eric, and Nate the mean interobserver agreement was respectively the following for each participant for all phases: (a) 99.52%, (b) 98%, and (c) 99%.

Materials and Data Collection

Self-Monitoring Form

This form (Appendix A) was used by participants to self-monitor their own behavior during intervention phases. Participants were provided with direct instruction on how to use this form and momentary-time sampling (MTS), as described in the procedures. MTS involves portioning a given amount of time into equal intervals and recording occurrence of behavior at the end of each interval (Saudgras & Zanolli, 1990). This recording method provides an estimation for the actual duration of a behavior (Saudgras & Zanolli, 1990). Participants recorded their behaviors for 10, 2-minute intervals. While MTS using shorter intervals (i.e., 15-seconds to 1-minute) may have been more representative of actual academic engagement, the process of self-monitoring using longer intervals (i.e., 2-minutes) allowed the participant to remain engaged in his or her academic tasks. The purpose of self-monitoring was still achieved with these longer intervals because thoughts are still being aligned to future consequences; that is, cues were still provided that reminded the participants of the future consequences for their behavior (Nelson & Hayes, 1981).

The form (Appendix A) for the participant also included examples and non-examples of academic engagement for immediate reference at each interval. The definition of academic engagement was based on the following actions of the student and should have prompted the student to write a "+" for the interval: (a) looking at self-monitoring sheet, book, or assignment; (b) writing on self-monitoring sheet, book, or assignment; (c) verbalizing topics relevant only to the lesson; (d) using an electronic device for the lesson only; or (e) making eye contact with peer or teacher while they verbalize comments or questions about the lesson. The following actions were considered non-examples of academic engagement and should have prompted the student to write a "-" for the interval: (a) talking to a peer about topic other than lesson; (b) walking around the room; (c) drawing picture not related to the lesson; or (d) using an electronic device for activities that are not teacher directed.

A similar form (Appendix B) was used by the teacher and paraprofessional to record the academic engagement of each participant. This form included a series of 20, 1-min intervals to allow for more accurate data collection using MTS. The use of MTS was a practical recording strategy for this study because the teacher was also supposed to carry out instruction at this time. The form included an operational definition of academic engagement and non-examples of academic engagement to provide consistency for recording. The form followed the same premise as previous studies focusing on self-monitoring (e.g., Harris et al., 2005; Rafferty & Raimondi, 2009); the participant was provided a cue using an external source (i.e., MotivAider) to self-evaluate on the behavior and marked a form based on this self-evaluation. Because this study focused on students with ED at the secondary level, this form included symbols (i.e., + and -)

allowing the student to reflect on multiple factors of engagement rather than just a single statement.

MotivAider

One critical component of the training was the use of the MotivAider as a tool to remind the participants to self-record. A MotivAider is a small pager-like device that clips onto a student's waistband or other piece of clothing. The device provides a small vibration at a set interval to remind the student to self-monitor without interruption to the learning environment. This device has been shown to be successful as a tool for self-monitoring and is socially valid for use (Amato-Zech, Hoff, & Doepke, 2006). All of the participants were previously trained on use of the MotivAider for previous self-monitoring activities in the area of behavior, so these participants only needed further reminder of its purpose.

Fidelity Tools

The following materials were designed to ensure the validity of the intervention through consistent implementation training and all phases of the study.

Self-monitoring training checklist. This checklist (Appendix C) was used during the direct instruction of self-monitoring to ensure that all participants were properly taught the procedures. The use of a checklist by a teacher or staff member to self-monitor their actions when implementing an intervention improves the accuracy of implementation (Plavnick et al., 2010). The checklist included steps that are analogous to previous self-monitoring studies (e.g., Harris et al., 2005; Rafferty & Raimondi, 2009). In addition, these procedures were similar to the recommendations of Kauffman and Landrum (2009).

Baseline and intervention fidelity checklists. This checklist (Appendix D) was used during baseline and intervention phases to ensure fidelity of treatment. This form included two sections, with each section designed for a different phase of the intervention; the first box was for collection of baseline data and the second box was for implementation of self-monitoring and collection of intervention data. Baseline fidelity data were collected to ensure that the academic engagement of each participant was measured using the same procedures across each session. The checklist ensured that all materials were gathered and the research team was prepared for data collection prior to and throughout the session. A checklist of the steps involved in the intervention was also used to ensure that the teacher and paraprofessional were following the same procedures each session. The use of the checklist again ensured preparedness and consistency throughout sessions and across phases.

Experimental Design

The study used was a single-subject ABAB design (Gast, 2010), with the goal of at least one generalization session (i.e., teacher absence, substitute teacher presence or other academic subject) during each phase. The baseline phases (A) included no use of self-monitoring. The intervention phases (B) included the use of self-monitoring as a tool to enhance academic engagement. The intent was for each phase of the study design to include at least five sessions of data collection until stability and patterns in the data could be analyzed. During the baseline phase and first intervention phase, the teacher was absent during a designated class period (i.e. mathematics) at least once (due to pre-determined professional development task force to which he is a part); this allowed the

researcher to determine whether self-monitoring was generalizable to situations in which the teacher is absent from the classroom and a substitute teacher is present.

During the final baseline and intervention phases of the study, data on academic engagement were collected during a subject other than mathematics. Baseline data were collected during the participants' courses that occurred during the last hour of the school day. During the intervention phase, participants were prompted to self-monitor and data were collected by the teacher and paraprofessional following the same process in previous intervention conditions. Participants were told to self-monitor without any further prompting than what was provided during the regular intervention conditions.

Procedures

Baseline

During baseline, participants were not required to self-monitor academic engagement; that is, they did not have to complete a designated self-monitoring form. During this time, participants followed their normal classroom behavior management model. This system was based on a token economy where participants were expected to follow a set of defined behaviors in which they earn points towards individual goals. If a participant did not comply with the defined behaviors, the teacher provided a verbal redirection and did not provide the point for the behavior.

The teacher used the template labeled as "Teacher Form" (Appendix B) as the primary behavioral data collection tool to record the academic engagement of participants during the designated class period. One-minute MTS was used to measure the academic engagement of the participant. This recording method allowed the teacher to simultaneously instruct and take accurate data. Measurement of the behavior could be

completed without disruption to the academic environment. The teacher monitored and recorded academic engagement every minute for a 20-minute time period.

Training of Self-Monitoring

Direct instruction was used to train participants in the use of self-monitoring after at least five data were collected and a regression from the previous data was observed. The goal was to ensure baseline stability, but a lack of consistent variability in the data led the researcher to implement intervention after at least five data were collected and there was an observed regression in academic engagement. These training steps were similar to previous studies of self-monitoring where the purpose was communicated, a behavior was defined, self-monitoring was practiced in a different time period, and self-monitoring was implemented for data collection (e.g., Harris et al., 2005; Rock, 2005). The following steps were taken to ensure successful use of the intervention:

1. The teacher explained the self-monitoring process and its use in the classroom. This explanation also included the potential benefits and how it can enhance the academic success of the participant.
2. The teacher modeled the use of the self-monitoring form by providing examples and non-examples of how to fill out the form.
3. The teacher asked the participant about the need for further instruction in the use of the MotivAider since it has been used in class before. None of the participants needed further instruction in its use.
4. The teacher had the participant complete the self-monitoring form during a designated class period that is not mathematics (i.e., info processing, American government, or speech). The teacher also completed the form

during the same period. The participant's recording was compared to the teacher's recording. Further guided practice was provided to the participant as needed.

5. The use of self-monitoring was implemented in the intervention phase.

Each participant individually completed the first three steps of training with the teacher during the daily social skills course. The practice phase of training was completed during one of the participant's afternoon courses. All three of the participants had accuracies of self-monitoring above a 90% during the initial training session, so no further training was needed.

Self-Monitoring

During the intervention phase, the participant was instructed to self-monitor at the beginning of each mathematics lesson. The classroom teacher was responsible for ensuring the participant had all necessary materials, including the MotivAider. The participant was verbally provided the time at the beginning of the lesson by the teacher; he marked this time down on the sheet. After writing this time down, the participant pushed the button to begin his MotivAider in sync with the teacher and paraprofessional. At each vibration of the device (i.e., 2-minute intervals), the participant self-recorded on the form according to the definition of academic engagement. A "+" indicated academic engagement at the interval while a "-" indicated a lack of academic engagement at the interval.

Participants turned in their completed self-monitoring forms to the teacher without any identifiable information. The teacher marked the form with the participant's identification number upon receiving the self-monitoring form. After turning in his form,

the teacher provided the participant with verbal praise for the completion of the form. If the form was completed, the teacher provided the participant with two choices of candy as a reinforcement of the behavior. The teacher also immediately checked the accuracy of each participant's recording by comparing the self-recordings of the participant to the teacher's recordings and analyzed the accuracy. This analysis was then verbalized to the participant. If an accuracy of 90% or more was calculated, the participant was again presented with a choice of two pieces of candy for reinforcement of accuracy.

If a participant did not complete the self-monitoring form or if it was not completed with 90% accuracy, then the teacher provided the participant with a verbal notice that completion and/or accuracy is critical to the academic and behavioral success of the participant. This verbal notice was documented on the participant's form from that day's session. If a participant did not complete the form or had an accuracy below 90% again, the teacher would provide a booster sessions on successful self-monitoring. No participant received successive accuracies below 90%, so no retraining of self-monitoring occurred during the study.

During intervention, the teacher collected academic engagement data using the "Teacher Form" in 20 one-minute intervals; this procedure was the same as the tasks carried out by the teacher during baseline. The use of 20 one-minute intervals by the teacher compared to the 10 two-minute intervals by the participant allowed for greater accuracy of the participant's academic engagement. This collection allowed the researcher to determine whether the participant was truly academically engaged during the period and also allowed for calculation of self-monitoring accuracy.

Generalization Data for Teacher Absence

During both baseline and the first intervention phase of the study design, the teacher was absent from the classroom during one class period, and a substitute teacher led instruction. This absence allowed for some analysis of data and provided evidence to analyze the research questions of how the same self-monitoring strategy affects students' academic engagement and self-monitoring accuracy when the teacher is absent.

During baseline conditions, the teacher left explicit instructions for the substitute teacher to inform participants that they were not to self-monitor during the designated class period. During intervention conditions, the teacher left explicit instructions for the substitute teacher to inform participants that they were to self-monitor during the designated class period. These instructions included the use of a script to ensure that self-monitoring was being implemented using the same steps as the regular intervention condition (Appendix F). During this point of self-monitoring, the paraprofessional collected behavior data using the same methods as the teacher during baseline and intervention.

Generalization Data for Other Academic Subjects

During both intervention phases of the study, the participant was provided the prompts to self-monitor during another academic subject area, specifically any subject besides mathematics that included direct instruction as the primary instructional method. All procedures as indicated within the intervention section were followed; the only change is the time and academic area of instruction. The specific academic subject for each student was as follows: (a) John was in info processing (keyboarding), (b) Eric was

in American government, and (c) Nate was in speech. This generalization condition occurred at least once during the second baseline and intervention phases.

Data Analysis

All data were graphed using Microsoft Excel, allowing the researcher to visually analyze the data and determine the existence of a functional relation between self-monitoring and academic engagement. The percent of non-overlapping data (PND) was also used as a synthesis measure of the single-subject data (Scruggs & Mastropieri, 1994). Data were also analyzed for each participant by calculating the mean intervals of self-engagement for each condition and making comparisons to determine the effect of the intervention on the participant's academic engagement.

CHAPTER IV

RESULTS

Academic Engagement: Normal Conditions

John

Figure 1 displays the graphed data of John's academic engagement through the four phases of the ABAB reversal design. Because John is a freshman student, he was enrolled in algebra. This course is the first to be taught during the mathematics hour. For all sessions, the teacher provided direct instruction with time for independent practice. During the first baseline phase, John was academically engaged a mean of 60% of the time (Range=15%-90%). Due to the variability of baseline data, the researcher decided to begin intervention after at least five sessions of data were collected and a decrease in academic engagement was evident from the previous session of data collection.

John was provided with training on self-monitoring during his info-processing course immediately prior to beginning intervention. His accuracy during the training session was 100%. John was then instructed to begin self-monitoring the next day during algebra. His mean academic engagement during the first intervention was 99% (Range=95%-100%), which is 39% higher than the first baseline. The PND between the first baseline and intervention phases was 80%. Visual inspection of the data indicated a level change in academic engagement between baseline and intervention as well as

greater stability in the data. Because increases and stability in AE were evident during intervention, a return to baseline began.

During the second baseline phase, John was instructed not to self-monitor during algebra. During the second baseline phase, John was academically engaged a mean of 82% of the time (Range=70%-95%). This mean was 22% higher than the initial baseline and 17% lower than the previous intervention phase. The PND between the previous intervention phase and second baseline was 80%. Visual analysis showed a decrease in level and stability of academic engagement to the second baseline from previous intervention. Again, due to consistent variability in the baseline data, John was reintroduced to a second self-monitoring phase.

During this second phase of intervention, John was academically engaged for a mean of 95% of the time (Range=90%-100%). The PND from the previous baseline was 33%. Because John achieved an academic engagement of 95% during a session in the previous baseline, this restricted the range for PND to only sessions of 100%. This mean of 95% during the second intervention was greater than both phases of baseline but lower than the initial intervention phase of 99%. The aggregate PND of both baseline phases and interventions phases was 54.5%. Visual analysis of all phases showed increased stability during the intervention phases and high variability during both baseline phases. It is important to note that the second baseline phase resulted in slightly higher levels of academic achievement compares to the first baseline phase; this limits the ability to state the existence of a functional relation between self-monitoring and academic achievement.

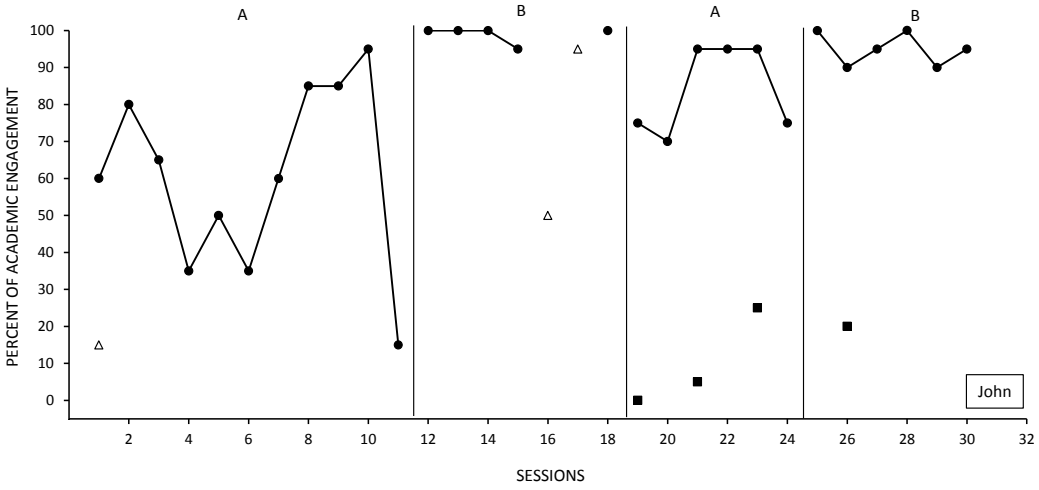

Figure 1. Percent of John's academic engagement across baseline phases (A) and intervention phases (B) with generalization to a teacher's absence (Δ) and generalization to his information-processing course (■).

Eric

Figure 2 displays the graphed data of Eric's academic engagement during the four phases of the study. Eric was taking geometry during the normal conditions of the study, which was taught with direct instruction and included time for independent practice. During the first baseline, Eric was academically engaged for a mean of 59% of the time (Range=25%-80%). Due to a variability in baseline, intervention was introduced after more than five data were collected and a regression in academic engagement was observed.

Immediately prior to intervention, the teacher provided Eric with self-monitoring training. Eric achieved 100% accuracy during the training, so no further training sessions were needed. Eric was told he would begin self-monitoring during geometry the next day.

Within the first intervention phase, Eric was academically engaged for a mean of 99% of the time (Range=95%-100%). This is a 40% increase from mean baseline data collected. The PND from the first baseline to this intervention was 100%. Visual analysis of data from baseline to intervention showed an increase in the level of academic engagement as well as more stability in the data. Stability was reached with five data sessions, so Eric was returned to baseline and instructed not to self-monitor.

During the second baseline, Eric's academic engagement decreased from intervention to a mean of 79% (Range=40%-100%). However, this was 19% higher than the initial baseline mean. The PND from the previous intervention phase to this baseline was 0%; Eric had one session of 100% academic engagement, making it impossible for any data to not overlap. Visual analysis of the second baseline showed instability and zero trend among the data, but the level of academic engagement had decreased from the previous intervention phase. Baseline data were variable, so the researcher collected over at least five sessions with a regression of academic engagement between the last two sessions.

Self-monitoring was reintroduced to Eric after this decrease in academic engagement during baseline. Data collected during the second intervention showed that Eric was academically engaged for a mean of 97% of the time (Range=90%-100%). The PND from the previous baseline to this second intervention was 0%. However, one session of data collection during the second baseline was at 100%, making it impossible for any data during the sequential intervention to not overlap. This mean academic engagement was higher than both baseline phases but 2% lower than the initial intervention phase. The aggregate PND of both baseline and intervention phases was

50%. Visual analysis of all phases showed instability and zero trend during baseline conditions but an increase in duration and stability of academic engagement during intervention,

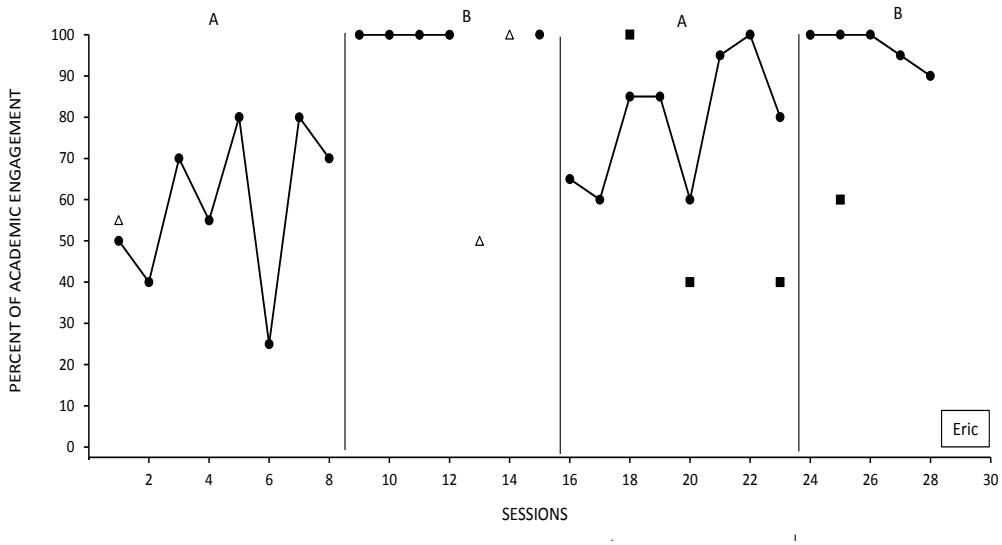

Figure 2. Percent of Eric's academic engagement across baseline phases (A) and intervention phases (B) with generalization to a teacher's absence (Δ) and generalization to his government course (■).

Nate

Figure 3 displays Nate's graphed academic engagement through the four phases of the ABAB reversal design. During these phases, Nate was enrolled in geometry with two peers. He received direct instruction and independent work after other students in the program were provided with algebra instruction. During the first baseline, Nate was academically engaged for a mean of 52% of the 20-minute recording period (Range=0%-85%). Stability among the data could not be reached, so training of self-monitoring was introduced after at least five sessions of data were collected and a regression in academic

engagement was evident. During training, Nate achieved 95% academic accuracy during an afternoon history course so no further instruction was provided.

The day after training, Nate began self-monitoring during geometry. His mean academic engagement during this first intervention condition was 96% (Range=80%-100%), which is a 44% increase from the baseline mean. The PND between these two phases was 83%. Four of the six data collected during the intervention phase indicated an academic engagement of 100%. Visual analysis showed instability and zero trend during the first baseline phase, but the intervention demonstrated a change in level and increased stability in academic engagement. After stability was reached with the intervention, Nate was returned to baseline and instructed to not self-monitor.

During the second baseline phase, Nate was academically engaged for a mean of 68% of the time (Range=40%-85%). This mean was 16% higher than the first baseline mean but 28% lower than the previous intervention mean. The PND from the previous intervention to the second baseline was 83%. Visual analysis showed a decrease in the levels of academic engagement from the previous intervention. Again, Nate demonstrated high variability among baseline data, so self-monitoring was reintroduced after at least five data were collected and there was a decrease from the previous session.

During the last intervention phase, Nate used self-monitoring during four sessions. The researcher's intent was to collect at least five sessions of data, but due to external factors near the end of the study, collection of a fifth data session was not possible. However, the four sessions of data collected demonstrated stability of academic engagement with the use of self-monitoring. Nate was academically engaged for a mean of 91.3% of the time (Range=65%-100%). He demonstrated 100% academic

engagement during three of the four sessions; the first data of the intervention phase was 65%. The PND from the second baseline phase was 75%. The aggregate PND for the entire study, both baseline phases and intervention phases, was 80%. A visual analysis of all phases showed an increase in levels of academic engagement during intervention phases and lower levels of academic engagement with high variability during baseline phases.

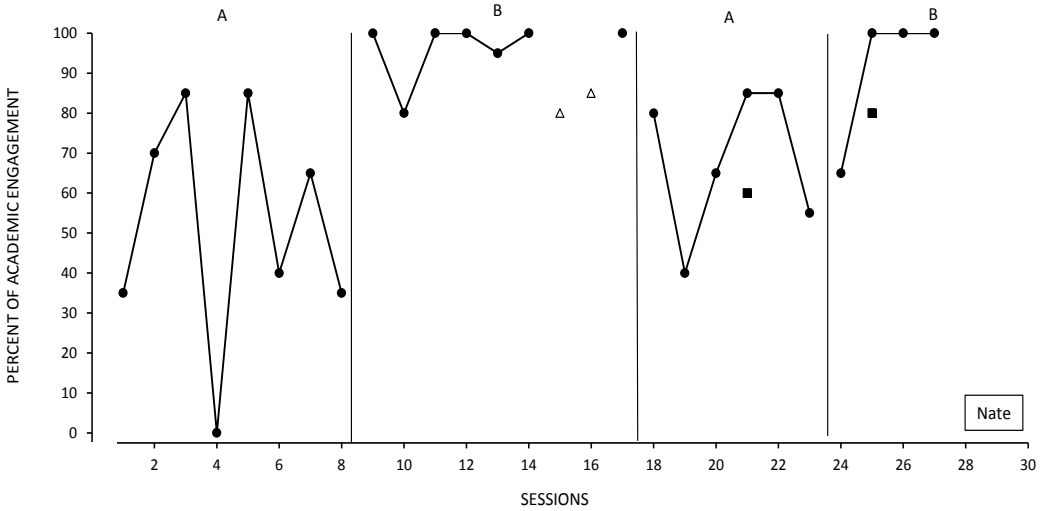

Figure 3. Percent of Nate's academic engagement across baseline phases (A) and intervention phases (B) with generalization to a teacher's absence (Δ) and generalization to his speech course (■).

Academic Engagement: Teacher Absences

John

There was one opportunity to collect baseline data on John's academic engagement during the teacher absence generalization condition. During this session, John was academically engaged for 15% of the time. This sole data was lower than all but one data collected during both baselines under normal conditions. During the first intervention condition, the teacher was absent on two separate occasions. John's mean

academic engagement across these two generalization sessions was 72.5% (Range=50%-95%), indicating increased academic engagement when compared to his baseline teacher absence data. In addition, this mean is lower than the means of both intervention phases under normal conditions (i.e., 99% and 95%).

Eric

The paraprofessional collected data during one session of a teacher's absence within the first baseline. Eric was academically engaged in geometry 55% of the time, which is lower than the two means of academic engagement under normal conditions (i.e., 59% and 79%). Two more data sessions were collected during the first intervention phase; these data showed a mean academic engagement of 75% (Range=50%-100%). This mean is lower than the two means of intervention under normal conditions (i.e., 99% and 97%).

Nate

Nate was absent during the only available day of data collection during a teacher's absence due to standardized testing. Due to ethical considerations, the teacher was not able to be absent from the classroom during any of the other baseline conditions. However, two sessions of data were collected during the first intervention. The mean academic engagement recorded by the paraprofessional during these two sessions was 82.5%. This mean is greater than both baseline means during normal classroom conditions (i.e., 52% and 68%) but lower than both intervention means during normal conditions (i.e., 96% and 91.3%).

Academic Engagement: Other General Education Courses

John

Data were collected twice during the second baseline on John's academic engagement during his info-processing course. These data, 5% and 25% academic engagement respectively, had a mean of 15%. During the second intervention phase, it was only possible to collect generalization data in John's info-processing class for one session, which was 20%. The mean of the baseline data and the data collected during intervention was lower than the means of all baseline phases and intervention phases under normal conditions.

Eric

Data were collected on Eric's ability to generalize self-monitoring to his American government course, the last course of his school day. Data on his academic engagement were collected for two sessions during the second baseline condition; the mean academic engagement was 40% (Range=40%). During the second intervention phase, data were collected once and indicated that Eric had 60% academic engagement, a higher academic engagement than the baseline mean.

Nate

During the second baseline, one session of data was collected during the last course of Nate's school day, which is speech. The data from this session indicated an academic engagement of 60%. Another session of data was collected during the same course and time within the second intervention condition; academic engagement was found to be 80% with the use of self-monitoring. The increase from baseline to

intervention was 20%, which is similar to the increase from the normal conditions of the second baseline to the normal conditions of the second intervention.

Self-Monitoring Accuracy

John

Self-monitoring accuracy was determined by comparing John's self-monitoring form to the even numbered intervals on the teacher's self-monitoring form. During the first intervention, under normal conditions, John accurately self-monitored during all sessions 100% of the time. John self-monitored during the second intervention with a mean accuracy of 98% (Range=90%-100%). In both phases of intervention, though, John was able to obtain at least 90% accuracy during all sessions, so he did not require any verbal notices of low accuracy or retraining.

During both conditions of generalization (i.e., teacher absence and other academic subject), John self-monitoring with 100% accuracy. Overall, throughout the study John had one session that was lower than 100% accuracy (i.e. 90%), which occurred during the second phase of intervention.

Eric

Like John, Eric's self-monitoring form was compared to the even numbered intervals on the teacher's self-monitoring form to determine his self-monitoring accuracy. Within the first intervention phase, Eric self-monitored with a mean accuracy of 96% (Range=90%-100%). Eric's self-monitoring accuracy during the second intervention phase was a mean of 98% (Range=90%-100%); this was a slight increase from the first intervention phase.

In the generalization condition of a teacher's absence, Eric's self-monitoring accuracy was a mean of 75%; he achieved an accuracy of 50% during the first session and a 100% during the second session. Eric achieved 80% for the generalization of self-monitoring to another academic subject. The mean for the first generalization condition and the data collected for the second generalization condition are less than the mean accuracy obtained during both normal intervention phases.

After achieving a 50% during the first session of a teacher's absence, the teacher provided him with a verbal reminder at the beginning of the next school day (i.e., "Eric, your accuracy was low yesterday; please remember to use the definitions of academic engagement on your form,"). The second accuracy below 90% was during the generalization condition of a different academic subject, so a similar reminder was provided after the session. After each reminder, Eric was able to achieve accuracy at or above 90% for multiple sessions.

Nate

During the first intervention phase under normal conditions, Nate accurately self-monitored 95% of the time (Range=80%-90%). Within the second phase of the intervention under normal conditions, Nate accurately self-monitored 97.5% of the time, which is 2.5% higher than the first intervention (Range=90%-100%). Due to one session of accuracy at 80%, Nate was provided a verbal reminder on his low accuracy (i.e., Nate, your accuracy of self-monitoring was low today; please remember to use the definitions of academic engagement on form."). Nate did not achieve an accuracy below 90% in the successive sessions.

The mean accuracy of Nate's self-monitoring during a teacher's absence was 85% (Range=80%-90%). This accuracy is below the accuracy of both intervention phases under normal conditions. Within the second intervention phase, one session of data was collected on Nate's accuracy with the teacher's data used as a comparison. This data was 90%, which is less than the accuracy of both intervention phases under normal conditions but still an acceptable percentage according to procedures.

Treatment Fidelity

Treatment fidelity across all participants and all phases was found to be 100%. This was calculated by comparing the fidelity checklist of the teacher with the fidelity checklist of the paraprofessional after each session of data collection. In addition to proper and consistent administration of the treatment during all baseline and intervention sessions, there was 100% IOA in regards to the use of verbal prompting and pointing to remind participants to record during self-monitoring.

During intervention across as phases and conditions, John was provided seven verbal prompts and one physical prompt (i.e., pointing). Eric was provided four verbal prompts and one physical prompt. Nate was provided ten verbal prompts and zero physical prompts. None of the participants were provided with more than two prompts of any type during a single session of self-monitoring.

Social Validity

The social validity survey was provided to participants near the end of the final intervention phase. Participants were given verbal instructions to read all of the directions and answer the questions as honestly as possible. Results of the survey are presented in Table 1 (Appendix G).

Analysis of the surveys shows that the participants mostly agreed with the statement, "The self-monitoring form was easy to understand and use." The mean response for this statement was a 4.67. The second highest mean responses, which were 4.33, were obtained on the statements, "The self-monitoring process supported me in maintaining my attention to a task/assignment when the teacher was in the room." and "I was comfortable using self-monitoring." The lowest mean was 2.67 and in response to the statement, "I would use self-monitoring in the future to manage my behaviors." For this statement, one participant responded with a "strongly disagree" (i.e., 1), which lead to this low mean. The other two participants responded with a "neutral" and an "agree." Besides this one response of "strongly disagree," no other responses on the survey were below the response of "neutral." Most of the statements received a mean response between the two verbal descriptors of "agree" and "strongly agree."

CHAPTER V

DISCUSSION, LIMITATIONS, AND FUTURE RECOMMENDATIONS

Discussion

The academic engagement of all three participants was analyzed under the normal conditions defined as direct instruction during a specified mathematics subject. John was enrolled in algebra during these conditions while Eric and Nate were enrolled in geometry. Mathematics for students with ED is a concerning academic area as students are typically below grade level in this subject (Lane et al., 2006), and their abilities in mathematics compared to same age peers without disabilities becomes worse over time (Nelson et al., 2004). Visual analysis of academic engagement during baseline compared to academic engagement during intervention shows that there is a functional relationship between self-monitoring and the academic engagement of Eric and Nate during mathematics. While the same comparison is relevant for John, a visual analysis of the baseline data indicates much instability during both baseline phases. Despite this analysis, John's mean changes from both baseline phases indicate that self-monitoring led to increases in academic engagement and greater stability in his performance.

In their work on single-subject research, Scruggs and Mastropieri (1998) suggest that ABAB designs employ the use of aggregated PND scores for analysis of results. In this case, the PND raw data from both intervention phases would be combined to form the aggregate PND score. Using this method, John's aggregate PND score would be

54.5%, Eric's would be 50%, and Nate's would be 80%. However, the outlying data from participants' baseline phases bring in to question the use of PNDs as a means of analysis for this study. In most cases, PNDs were calculated from a single outlying point, so the PND measure failed to take into account the other, low baseline data and instability across sessions. As a result, mean comparisons and visual analysis are the basis of the following conclusions and discussion.

Visual analysis of the data allowed the researcher to conclude that there was instability across both baselines for all participants. With the implementation of self-monitoring, though, the academic engagement of all participants became more consistent and higher than baseline. Based on this visual analysis of all graphed data, self-monitoring during mathematics appears to assist secondary students with ED in maintaining a more consistent and higher mean of academic engagement across sessions. In addition, the researcher's analysis of the data showed a carry-over effect when comparing baseline phases of each participant; there was an increase in academic engagement from the first baseline phase to the second. This analysis indicates that the process of self-monitoring in this study may have allowed students to become more cognizant of their behaviors and realize the strategy's positive effect on academic engagement that then carried over into the second baseline phase for students.

These findings contribute to the current research base by extending the findings of self-monitoring to different characteristics of students with ED, specifically male secondary students in a self-contained setting. Previous studies indicate some differences among characteristics of participants (e.g. gender and grade-level) and academic subject (e.g. spelling) during the implementation of self-monitoring (e.g. Bruhn & Watt, 2012;

Harris et al., 2005; Rafferty & Raimondi, 2009; Rock, 2005); however, none of the current literature found focused specifically on high school students with ED in mathematics. The varying academic and behavioral needs of students with ED demand the need of continued research of interventions for these students with clear identification of participant characteristics (e.g. gender, grade-level, ethnicity, etc.) (Evans et al., 2012; Mooney et al., 2005).

In addition, the participants used in this study were all students enrolled at the secondary level in a self-contained environment, which is a setting that has not been heavily researched in recent years (e.g., Freeman & Dexter-Mazza, 2004). The secondary level is also a critical component of this research because students with ED typically show a greater deficit in mathematics than those students with ED at younger grades (Lane et al., 2008). Findings of this study support the use of self-monitoring as a means to increase the academic engagement of secondary students with ED in the subject of mathematics. A greater focus during instruction and independent work may be a part of the solution to closing this gap in mathematics between secondary students with ED and same-age peers. Future research should consider the impact of increased academic engagement due to self-monitoring on the math performance of students with ED. Said research may show that self-monitoring not only increases engagement in academics but also increases student achievement.

Due to the ethical considerations regarding teacher absences, further collection of self-monitoring on academic engagement could not be contrived for this study. The data collected are not sufficient for analysis beyond general and preliminary comparisons. A visual analysis of the data collected, however, shows lower mean levels of academic

engagement during baseline when compared to intervention phases for all participants. However, academic engagement means under all phases of teacher absence were lower than means under the math conditions. A visual analysis of all data collected during the teacher's absence shows that students with ED are not as engaged in academics during a teacher's absence. While self-monitoring did provide an increase in academic engagement, it did not increase to levels similar to the normal math conditions during which the teacher was present.

These findings were associated with the perspectives of the participants as indicated by the results of the social validity survey. Two of the participants thought that self-monitoring helped them monitor their attention better during a teacher's presence than during a substitute's presence while one found that the use of self-monitoring was similar under both conditions. The synthesis of these findings exemplifies the importance of the teacher in the learning environment for students with ED.

Similar to teacher absences, classroom conditions made it difficult for further data to be collected on generalization of self-monitoring to another academic subject. For John, academic engagement was very low during all collected sessions. Informal observations by the teacher note that John would speedily work through the independent practice or refuse to engage in the practice all together, which suggests why such a low academic engagement was observed. There is no specific indication, though, of why John would be deterred from the work. These observations suggest, then, that conditions such as time of day, events prior to a subject (e.g., physical education), or other external factors also affect a student's academic engagement. Similar observations were made in regards to John and Nate; all data during baseline and intervention were lower than

normal conditions. These findings suggest that other factors may have influenced the academic engagement. Further studies could address this observation by comparing self-monitoring use during different times of the school day.

Along with academic engagement, students' ability to self-monitor accurately was a critical component of the study. Findings are congruent with a previous study that includes accuracy of self-monitoring as a piece of the implementation process (i.e., Freeman & Dexter-Mazza, 2004). As evidenced by the data collected, the three participants were able to maintain high means of self-monitoring accuracy across both intervention phases under normal conditions. The following are the means of the participants under normal conditions across phases: John's mean was 99%, Eric's mean was 97%, and Nate's mean was 96%. As compared to both generalization conditions, Eric and Nate had means during normal conditions greater than both of the generalization conditions. John demonstrated 100% accuracy in both generalization conditions, which was 1% greater than the mean under normal conditions. These findings show that students with ED are capable of self-monitoring accurately, indicating that some sort of reflection is occurring regularly by the participants during the self-monitoring process. In addition, the continued accuracy during generalization shows that the process of self-monitoring is transferable for students with ED, even if it does not necessarily effect academic engagement.

A social validity survey was provided to the participants at the end of the study. A seminal paper on social validity by Wolf (1978) suggests that the use of subjective measurement is a necessity in the area of scientific research and applied behavior analysis. The purpose of social validity according to provide feedback on and gauge the

unforeseen paradigms of behavior. In the case of this study, there exists the importance of whether or not a participant views self-monitoring as a suitable fit for increasing academic engagement under normal and generalization conditions.

An analysis of the responses of the surveys shows that John did not rate the use of self-monitoring as high as Eric and Nate. In conjunction with results of the study, John did not require the intervention as much as the other participants because his academic engagement during mathematics was already acceptable. Those participants who demonstrated greater need of the intervention also responded with more approval of it.

In addition, participants provided a higher mean rating for the use of self-monitoring during a teacher's presence than during a substitute's presence. Research already shows that teacher absences can have an impact on student achievement (e.g., Clotfelter et al., 2009; Miller, 2012; Miller et al., 2008). Based on the responses of the social validity survey in this study, the absence of a teacher may also have an effect on a student's use of a behavioral strategy. Further research on the use of strategies and interventions during a teacher's absence may justify this conclusion more.

Limitations and Future Recommendations

There are multiple limitations and further recommendations that can be drawn from this study. The first and most important limitation was that participants in the study were chosen as a convenience sample. Though guidelines were established for the inclusion of participants, they were all chosen from one classroom. Other students within the classroom demonstrated a greater need for self-monitoring based on their academic achievement and behaviors, but consent for use of these students' data was not provided by parents/guardians. The students chosen for the study had higher, but erratic, academic

engagement, limiting the effect of self-monitoring. In addition, this classroom lacked in diversity of ethnicity and gender. Studies in the future should be more proactive in ensuring that students represent a continuum of diverse factors and demonstrate need of self-monitoring.

Second, there was a lack of data obtained during the generalization conditions, both during a teacher's absence and to another academic subject. Due to the nature of the study and ethical considerations, the teacher was not able to be absent consistently or in alignment with the needs of a rigorous research design, therefore limiting the days of data collection without him present in the classroom. Some days of professional development were anticipated prior to the study, and the researcher used these days to the best of his abilities to collect this generalization data. Future research on self-monitoring, or any other behavior management and academic engagement strategy, should include more generalization data to provide acceptable conclusions. Impact from studies that can plan for teacher absences would have a substantial impact on the academic and behavioral progress of students with ED.

Finally, one area of focus during this study was the generalization of self-monitoring to another academic subject. Participants were not immediately prompted to self-monitor during another subject within the first intervention condition because ample time wanted to be provided for the participants to become proficient in its use. Plans were to have the participants self-monitor more frequently during a second course, but due to the conditions of the environment and scheduling conflicts, more data could not be collected. While one may assume that the regular use of self-monitoring in one subject may lead to smooth transition of its use in another subject, results from this study suggest

that this assumption may not be the case. For example, John was able to remain engaged and self-monitor with accuracy during algebra, but his academic engagement during info-processing remained low even with self-monitoring. Future research should focus on generalization to other subjects to provide more evidence on self-monitoring effectiveness.

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APPENDIX A

PARTICIPANT SELF-MONITORING FORM

Date: _____

Course: _____

Identifier: _____

Phase: _____

Lesson Start Time: _____

Intervals	(+) or (-)		
1		**(+)**	Looking at self-monitoring sheet, book, or assignment
2			Writing on self-monitoring sheet, book, or assignment
3			Verbalizing topics relevant only to the lesson
4			Using an electronic device for the lesson
5			Making eye contact with peer or teacher while they talk about lesson
6			
7		**(-)**	Talking to peer about topic other than the lesson
8			Walking around room
9			Drawing picture not related to lesson
10			Using electronic device for activities that are not teacher directed

Lesson End Time: _____

APPENDIX B

TEACHER/PARAPROFESSIONAL ACADEMIC ENGAGEMENT

MONITORING FORM

Date: _____

Course: _____

Identifier: _____

Phase: _____

Lesson Start Time: _____

Intervals	(+) or (-)		
1		**(+)**	Looking at self-monitoring sheet, book, or assignment
2			Writing on self-monitoring sheet, book, or assignment
3			Verbalizing topics relevant only to the lesson
4			Using an electronic device for the lesson
5			Making eye contact with peer or teacher while they talk about lesson
6			
7		**(-)**	Talking to peer about topic other than the lesson
8			Walking around room
9			Drawing picture not related to lesson

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20	

Using electronic device for activities that are not teacher directed

Lesson End Time: _____

APPENDIX C

SELF-MONITORING TRAINING

CHECKLIST

(TO BE COMPLETED BY TEACHER) **Date:** _____

For each statement below, check the corresponding box if applicable.

Statement	Yes	No	
Student was provided with reason to self-monitor			
Student was presented with self-monitoring form			
Student was provided with operational definition of academic engagement			
Student was provided with examples and non-examples of academic engagement			
Student was provided modeling of how to use form			
Student was provided guided practice for use of self-monitoring form (Indicate course)			Course:
Student was provided verbal feedback on self-monitoring			
Student was provided further guided practice in self-monitoring (if necessary)			N/A

APPENDIX D

BASELINE AND INTERVENTION FIDELITY CHECKLISTS

Date:					
Phase (Circle One):	Baseline I	Intervention I	Baseline II	Intervention II	
Checklist Completed By (Circle One):	Teacher (Co-PI)	Paraprofessional			
Lesson Start Time:			**Lesson End Time:**		
USE THIS BOX FOR BASELINE	(For each statement below, check the corresponding box if applicable)				
Statement	**Yes**	**No**	**N/A**		
Student is not provided with any self-monitoring form or directions					
Start of lesson time is indicated on checklist					
Motivaider is set to vibrate at one-minute intervals					
(+) or (-) is recorded at each vibration of the Motivaider (1 minute interval) by teacher/paraprofessional					
End time of lesson is marked on checklist					
No self-monitoring is completed by student					
USE THIS BOX FOR INTERVENTION	(For each statement below, check the corresponding box if applicable)				
Statement	**Yes**	**No**	**N/A**		
Student was provided with self-monitoring form prior to the lesson					
Student was provided with Motivaider prior to the lesson					
Teacher/paraprofessional ensured MotivAider was set to 2-minute intervals					
Start time of lesson is indicated on checklist					
Motivaider is set to vibrate at 1-minute intervals					
Student is verbally provided the lesson start time					
(+) or (-) is recorded at each vibration of the Motivaider (1 minute interval) by					
End time of lesson is provided to student					
End time of lesson is marked on checklist					
Student is provided reminders during lesson to continue self-monitoring:					
Verbal prompt					
Pointing to student form by teacher					
Self-monitoring form is collected from the student at the end of lesson					
Self-monitoring form is marked by teacher using numerical identifier					

APPENDIX E

SOCIAL VALIDITY

SURVEY

Social Validity Survey

Directions: For each statement, circle the response with the number that most closely reflects your opinion.

1. Overall, the self-monitoring process supported me in maintaining my attention to a task/assignment.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

2. The self-monitoring process supported me in maintaining my attention to a task/assignment when the teacher was in the room.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

3. The self-monitoring process supported me in maintaining my attention to a task/assignment when a substitute teacher was in the room.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

4. I received enough training and support from the teacher to carry out self-monitoring independently while the teacher was in the room.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

5. I received enough training and support from the teacher to carry out self-monitoring independently while the substitute teacher was in the room.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

6. I was comfortable using self-monitoring.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

7. I understand how self-monitoring can help me maintain positive behaviors in the classroom.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

8. During times when the teacher was present, my behavior was better managed when I used self-monitoring.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

9. During times when a substitute was present, my behavior was better managed when I used self-monitoring.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

10. The self-monitoring form was easy to understand and use.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

11. Self-monitoring while completing assignments did not impede my learning or assignment completion.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

12. I would use self-monitoring in the future to manage my behaviors.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

Please list any other comments or concerns:

APPENDIX F

SCRIPT FOR SUBSTITUTE TEACHER

Self-Monitoring Script for Substitute Teacher

Directions: At the beginning of mathematics class, read the following script verbatim and carry out each action as indicated below. Verbal statements that should be made to the student are in italics. Action items to be carried out by you, the substitute teacher, are enclosed in parenthesis.

1. *-Insert student name-, you are going to be following the self-monitoring process that has been trained to you by your teacher. Here is your cueing device and self-monitoring form.*
2. (Provide the student with the MotivAider and sheet titled "Student Self-Monitoring Form.")
3. *Please set the timer on the MotivAider to 2 minutes.*
4. (Allow student to set MotivAider.)
5. *Indicate the start time of the lesson on your sheet; the time right now is –time-.*
6. *Please be sure to record a plus or minus based on your academic engagement at each vibration of the MotivAider. When you are finished with the lesson, please turn it in to me.*
7. (Monitor the student to ensure self-monitoring is being completed.)
    a. If the student is not completing self-monitoring, use the following verbal prompt: *Please self-monitor your behavior at the vibration of the device.*
8. When the student hands in the self-monitoring sheet: *Thank you, the current time is –time-; record it on your sheet.*
9. (File the sheet in the folder provided in the substitute binder.)

APPENDIX G

SOCIAL VALIDITY SURVEY

RESULTS

Social Validity Survey Results

Statement from Survey	John	Eric	Nate	Average
Overall, the self-monitoring process supported me in maintaining my attention to a task/assignment.	4	4	4	4
The self-monitoring process supported me in maintaining my attention to a task/assignment when the teacher was in the room.	4	4	5	4.33
The self-monitoring process supported me in maintaining my attention to a task/assignment when a substitute teacher was in the room.	4	3	4	3.67
I received enough training and support from the teacher to carry out self-monitoring independently while the teacher was in the room.	3	5	4	4
I received enough training and support from the teacher to carry out self-monitoring independently while the substitute teacher was in the room.	3	4	5	4
I was comfortable using self-monitoring.	3	5	5	4.33
I understand how self-monitoring can help me maintain positive behaviors in the classroom.	3	5	4	4
During times when the teacher was present, my behavior was better managed when I used self-monitoring.	3	4	5	4
During times when a substitute was present, my behavior was better managed when I used self-monitoring.	3	4	3	3.33
The self-monitoring form was easy to understand and use.	4	5	5	4.67
Self-monitoring while completing assignments did not impede my learning or assignment completion.	4	5	4	4.33
I would use self-monitoring in the future to manage my behaviors.	1	3	4	2.67