THE EFFECTS OF A SELF-MONITORING PACKAGE

USING A TACTILE CUING DEVICE ON

STUDENT ON-TASK BEHAVIOR IN SPECIAL EDUCATION AND GENERAL

EDUCATION SETTINGS

by

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ABSTRACT

The Effects of a Self-Monitoring Package, using a on

Student On-task Behavior in Special Education and General Education and Special Settings

by

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Research has shown that self-monitoring can be effective in different settings and with a

range of students as well as problem behaviors. However, teachers who use self-monitoring

techniques have difficulties in using an effective cueing system as well as generalizing the newly

acquired skill into the general education classroom. This study extends the literature by utilizing a

tactile cueing device to increase the percentage of intervals of on-task behavior as well as

increasing the intervals of on-task behavior in an inclusive general education classroom setting.

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Introduction

Self management is the personal application of behavior change tactics to produce a desired change in behavior (Cooper, Heron, & Heward, 2007). The goal of self management is for people or students to control or manage their own behavior (Rhode, Jenson, & Reavis 1992). One self management procedure is self-monitoring. Self-monitoring is a procedure where a person observes their behavior and records the occurrence or nonoccurrence of a target behavior (Cooper et al., 2007).

Many studies have been conducted on the effects of self-monitoring with a variety of students across a variety of settings (Amato-Zech, Hoff, & Doepke, 2006 Cooper et al., 2007, Dunlap, Dunlap, Koegel, & Koegel 1991). For example Crum, (2004) conducted a study with an eight year old boy with a behavioral disorder. The goal of this study was to increase the participant's on-task behavior. The male student, James, exhibited low rates of on-task behavior in his general education class. During baseline an independent observer collected data on the target behavior. The data sessions lasted for fifteen minutes and a ten second interval system was used. The baseline data showed that James was only on-task for 17.3% of the intervals. Once the intervention began, James was instructed to collect data on his own on-task behavior. He was given a recording form, instructed on how to use it, and expected behaviors. James was instructed to mark a + if he was working and a 0 if he was off-task or not working. Throughout the class period, the classroom teacher reminded James to record his behavior. At the end of the sessions, James was praised for meeting his goal as well as ten minutes of free time. Free time included: listening to music or a story using headphones, playing with a puzzle, coloring or drawing. A new contingency on the intervals needed for staying on-task was given for earning free time at the beginning of each week. Near the end of the study James was able to get his data sheet, start self-

monitoring, and calculate the on-task intervals without being prompted by the teacher. James' on-task behavior increased to 66.4% of the intervals. The results of this study showed that self-monitoring can increase on-task behavior.

Agran, Sinclair, Alper, Cavin, Wehmeyer, and Hughes (2005) showed a positive outcome when a self-monitoring strategy was used with six middle school students with moderate to severe disabilities. The students monitored their own ability to follow directions. Students affirmed they heard the direction, verbally restated the direction, performed the direction and then self-monitored the behaviors performed. The students would mark a plus each time they completed a step in the task analysis (affirmation of direction, restate directions, performed direction) or a minus if they did not complete the task. After training, the students started the self-monitoring strategy in multiple general education classrooms (Art, Social Studies, Instructional Technology and Family and Consumer Science). The behaviors that were being monitored were generalized and maintained. In general, self monitoring may be easily implemented into the classroom, takes little time to teach to students, and is a manageable intervention for the teacher (Smith, Nelson, & Young, 1988). Self-monitoring strategies also shift the responsibility from teachers to students who then are given the opportunity to regulate their own learning instead of relying on others (Agran et al., 2005, Hughes, Copeland, Agran, Wehmeyer, Rodi, & Presley 2002).

Self monitoring systems in classrooms are generally obtrusive. A beep tape or the classroom teacher serves as the cue to record. This process interrupts the lesson and can distract the students. A system is needed to cue students to self-monitor but needs to be done in a way that is personal, especially in general education classrooms. In these classrooms, it may be particularly embarrassing and quite disruptive to use a self-monitoring cueing system that informs peers that a student is using a self management program. One silent, non-obtrusive device that may be used to

help students cue when to self–monitor is a Motiv-Aider. The Motiv-Aider is worn on students' belts or kept in their pocket and vibrates on a predetermined schedule to cue individual students to record their behavior.

Utilizing a personal cueing device to self-monitor is practical and may extend the application of self monitoring strategies to new settings with a broad range of students. The purpose of this experiment is to examine the effects of self-monitoring utilizing a tactile cueing device on a student's on-task behavior in the special education and general education class. The following research questions will be addressed:

1. To what extent does a self monitoring program that utilizes a tactile cueing device increase the percentage of intervals of on-task behavior with students with learning disabilities in a special education resource math classroom?

2. Given an increased percentage of on-task behavior in the special education class as a function of the self-monitoring program to what extent does the percentage of intervals of on-task behavior increase in an inclusive general education science class with students with learning disabilities?

Literature Review

Self-monitoring is a procedure where a person observes their behavior and records the occurrence or nonoccurrence of a target behavior, (Cooper et al., 2007). When used as an intervention strategy, self-monitoring is often paired with self-evaluation and reinforcement for meeting either self or teacher selected goals (Rhode, Jenson, & Reavis 1992, Peterson, Cooper et al., 2007, Peterson, Young, Salzberg, & Hill, 2006). Students record the occurrence of desirable behaviors, evaluate whether they have met predetermined goals, and give themselves an identified reinforcer if they meet predetermined goals (references). In this review studies that utilized self monitoring with students with disabilities will be analyzed.

Literature Search

For the present study, a literature search was completed through ERIC, Google Scholar and Ebsco Host databases. The following terms were used to find articles: self-monitoring, self-recording, on-task, cueing system, and Motiv-Aider. Eleven self-monitoring studies were reviewed and five were rejected. The six studies that were reviewed were chosen due to demographics of participants (middle or high school students, learning or emotional disabilities). Also, the type of the self-monitoring intervention was another criterion for chosen studies. Many of the studies reviewed included a teacher matching component which is similar to the current study. Below is a summary of the demographics of the studies reviewed, an analysis of the various self-monitoring systems used in the studies and a summary of study outcomes.

Study Demographics

Participants in the studies included students with learning disabilities and/or behavioral disorders, students with severe disabilities, and students without a disability in regular education. The ages of the participants in the studies reviewed varied from elementary students, middle schools students to high school students. In the various studies, the range of target behaviors to decrease included: talk-outs, off task behavior, and inappropriate behaviors. Conversely the range of behaviors that were increased included: on-task behavior, attending during class, and following directions.

Self-Monitoring

Broden, Hall, & Mitts, (1971) conducted an early study on the effects of self-monitoring in the classroom. Two students participated in the research. Liza, an eighth grade girl wanted to increase attending to a history class, and Stu, an eighth grade boy was referred to the counselor by his math teacher for help to decrease talk-outs.

During the intervention Liza was given a recording sheet by the counselor and gave her instructions on how to mark the sheet. In the first phase, the counselor instructed Liza to self recorded when she thought about it during her history class. In the second phase Liza self recorded when she was studying and when she was not studying. Also, the history teacher was instructed to attend to Liza whenever he could and to give her praise. An independent observer collected data on Liza's attending during history class at least once per phase using a ten second interval recording system. During baseline, Liza was only attending for about 30% of the observed intervals. During self-recording and self-recording plus praise her attending increased to 80% and 88% of the recording intervals.

The second participant, Stu, was given a data sheet, at the beginning of each math class and told to make a tally mark every time he talked out without permission. An independent observer collected data on Stu's talk outs during class. During baseline Stu was talking out without permission an average of 1.1 times per minute during the first half of class and 1.6 times per minute for the second half of class. During the self recording intervention the talk out rate decreased to an average of 0.3 times per minute.

The results for both participants indicated that self-recording procedures alone can modify students' behavior. For both students self-recording was linked to an undesirable event. For Stu, the cue to record was a talk out. If Liza recorded when she was not studying the recording cue was linked to a negative event (not studying and talk outs) and resulted in decreases in negative target behavior, but it is not clear if it also resulted in increases in positive behaviors.

Self-Monitoring with teacher matching

While the studies above showed that students who monitor their own behavior can result in decreases in negative behaviors, it is not always clear that students record their behavior reliably. Peterson et al., (2006) addressed this issue by adding a student to teacher matching procedure to a self monitoring intervention. The study involved five middle school (seventh and eighth grade) students who were in a regular education setting. These students were pulled out of class for one period per day and taught social and self-management skills. The teachers and students focused on six behaviors to monitor. The behaviors were on and off task, following instructions, accepting no for an answer, accepting teacher feedback and appropriately getting teacher attention. The students were taught how to monitor their behavior. The teachers scored

the students on their behavior during class and the students scored themselves as well. Both the students and teachers used a four point rating scale, H (honor), S (satisfactory), N (needs improvement) and U (unsatisfactory).

If the student's scores closely correlated with the teachers, the students were awarded a specific number of points: 18 for an H, 16 for an S, 2 for an N, and 1 for a U. If they matched exactly, bonus points were given. If the scores were not within the targeted range, then no points were given to the student. At the end of the week the students could redeem their points for rewards such as: edibles, computer time, game time, and tangible objects.

Once the predetermined criterion was met, the students used this strategy in a general education classroom. After the students met the criterion in the first general education class, they used the strategy in another general education class. Student's behavior improved more when the students compared their scores to the general education teachers than when they simply monitored their behavior without a teacher check.

There were, however, limitations to this study. First, students were held to different expectations in each classroom. Each of the teachers rated the students differently, and was not trained with a uniform system. Second, time prohibited extending this study into more general education classrooms to further replicate the results. One final limitation is that there was no cueing system to signal the students to self-record. The students recorded only once, at the end of each period. Self-recording only once might increase unreliable recording due to the amount of time between the behavior and self-recording. More frequent opportunities are likely to increase recording reliability. In addition, the more often they are reminded about appropriate behaviors, the more likely they may be to engage in targeted replacement behaviors. Thus, it may be easier to develop new repertoires when students self-record more frequently.

In a similar study, Smith, Young, Nelson, and West, (1992) taught students to self-monitor and then students matched their recorded data to teacher recorded data. This study involved eight high school male students with special education services. The goal of the study was to increase academic performance and increase on-task behavior in both the general education and special education classroom settings.

The special education teacher taught students about the self-monitoring system, expectations, rating scale for behavior, and examples and non-examples of expected behavior. Students marked their data sheet every 10 minutes according to the rating scale. At the same time the teacher independently rated each student. At the end of the period students earned bonus points for matching the teacher within one point. At the end of each class period, the students totaled their points and exchanged them for backup reinforcers. This phase lasted until the students matched the teacher's rating three times.

The next phase of the intervention involved matching the teacher and setting academic goals in a special education resource room. The number of sessions that the students were required to match the teacher was reduced across time after students met criterion performance. The phases were then repeated in a general education English classroom. The phases were almost identical in the general education classroom, however, peers served as the teacher and they matched behavior rating with the participants.

During baseline in the special education classroom, the students were off-task only about 20% of the session, yet during baseline in the general education classroom (after the first treatment of the intervention) the students were off-task 40% of the sessions. The results show that the students failed to improve their behavior in the general education setting without the self monitoring intervention. One major shortfall of this study is the obtrusiveness of the cue to self-

monitor. The classroom teacher had to stop the lesson every ten minutes, tell the students to

record, and then continue the lesson. The teacher took time out of the lesson and the students

stopped working to record.

Self-Monitoring with a cueing device

Self-monitoring with a teacher matching strategy is an effective intervention to increase

some desired behaviors with students with disabilities (Peterson et al., 2006, Smith et al., 1992).

Yet sometimes the cueing system is distracting to students, interrupts the lesson and could be

aversive to some students (Amato-Zech et al., 2006). Amato-Zech et al., (2006) showed that a

non obtrusive device, a Motiv-Aider (cueing device), may be used to increase on-task behavior

with elementary aged students in a special education classroom (Amato-Zech et al., 2006). A

Motiv-Aider is a small object that vibrates at a predetermined time interval. The Motiv-Aider

provides a tactile reminder for students to record their behavior. Thus, classroom teachers did not

have to verbally remind the students to record their behavior.

During baseline students were on-task a mean of 55% of the observation intervals. When

students used the Motiv-Aider they were on-task a mean of 90% of the intervals (Amato-Zech et

al., 2006). The Motiv-Aider proved to be an effective tool. The students were responsible for

their own intervention and successful in monitoring their behavior.

Even though students demonstrated improved on task behavior, Amato-Zech et al did not

explore whether on task behavior would remain at a high level and examine how this self

monitoring strategy could be utilized in inclusive general education classrooms.

Navarrete, (2006) extended the work of Amato-Zech et al by adding a teacher matching

component to verify the accuracy of student recording. In this study three sixth and seventh

grade students used a Motiv-Aider to self-monitor and self record the percentage of on-task

behavior at one minute intervals in the first academic class. The students and the teacher both

had a Motiv-Aider and synchronized the device to vibrate at the same time. After the data

session, the students compared their data to the teacher's data. If the students' data matched 90%

of the intervals with the teacher, the student could earn a backup reinforcer. Importantly, the

reinforcement was contingent on accurately recording on-task behavior, regardless of the level of

the student's on-task behaviors (Navarrete et al., 2006).

After the first phase of self-monitoring with the Motiv-Aider and matching the teacher,

baseline was taken in a second academic class. In this class, the students continued to

demonstrate low rates of on-task behavior. Students' were once again given the Motiv-Aider and

told to record their on-task behavior at one minute intervals and their data would be compared to

the teachers at the end of the session.

Results indicated high rates of on-task behavior during the self-monitoring phases for all

students. When the intervention was withdrawn, the students' rates of on-task behavior decreased

significantly. While Navarrete demonstrated the utility of the Motiv-Aider device, he did not

demonstrate how the device might be used to produce generalized behavior change to inclusive

general education classrooms and how targeted behaviors might be maintained when the self

recording device is removed.

Self-Monitoring and Generalized Behavior Change

The previous studies all shared one limitation: generalization to the general education

classroom. Rhode et al., (1983) set out to demonstrate that a self-monitoring system can decrease

inappropriate behaviors in the special education classroom and then generalize into the general

education classroom.

Rhode et al., (1983) selected six students with behavior problems. The first phase of the

intervention took place in the special education classroom. Classroom rules were introduced,

discussed and modeled with the students. The students were then asked to rate their behavior and

the teacher also rated the students' behavior. The students received feedback at the end of each

fifteen minute interval. Students received points for their ratings, and bonus points for matching

the teacher within one rating. The points were later exchanged for small toys, candy or snacks.

During the next part of this phase half of the participants were randomly selected to match with

the teacher. Over time the number of students who were randomly selected to match with the

teacher was reduced across time (33 1/3% and 16 2/3%) until the matching procedure was faded

completely, and the students simply rated their behavior and earned the corresponding number of

the points. Every two or three days, however, the teacher randomly conducted surprise teacher

matching checks. Finally, as the matching procedure was faded, the feedback intervals were

lengthened from fifteen minutes to twenty and thirty minute intervals.

During phase two, Rhode et al., tried to achieve generalization and maintenance of the

treatment gains in the general education class. First, the researchers introduced the self-

monitoring system to the general education teacher and explained the rating scale and other

essential program components.   After the students were in the general education classroom, they

self-monitored their behavior and recorded every thirty minutes without matching the teacher.

The teacher was independently recording the students' behavior and would conduct a surprise

check every two or three days. In the final phase of the study the interval time was extended as

well as the amount of time between exchanging points for backup reinforcers. Booster sessions

were given if appropriate classroom behavior was lower than 80% for three days. Teachers

reported that the intervention was easy to use and that they would use the same intervention

system again. The students had sufficient practice monitoring and getting feedback in the

resource room. This might be why generalization in the general education classroom was

successful.

In summary, self-monitoring procedures can modify a variety of student behaviors. An

important key to self-monitoring is an effective cueing system. As shown in Rhode et al., (1983),

the classroom teacher served as the cue for students to record. This interrupted the lesson and

was not a convenient way to remind students to record. Both Navarrete et al., 2006 and Amato-

Zech et al., (2006) used a Motiv-Aider to assist the students in recording behavior in a non-

obtrusive manner. In addition, assuring generalized changes in behavior into regular education

classrooms is an important factor when implementing behavior change (Rhode et al., 1983, Smith

et al., 1988). This study will replicate Navarrete et al.'s study by using a tactile self-monitoring

system (use of Motiv-Aider and a teacher matching strategy) to increase on-task behavior with

students with disabilities. Finally, this study will examine the effects of the self-monitoring

system in the special education classroom and then generalizing the desired behavior into the

general education classroom.

<center>Method</center>

Participants and Settings

Three students will participate in this study. The participants are seventh grade students

and each receives 135 minutes (3 classes of 45 minutes each) of special education services per

day. Table 1 reports test scores which qualifies each student for special education services under

the Individuals with Disabilities Education Act, as well as student's ethnicity. To participate in this study the participants must exhibit low rates of on-task behavior during class time. Sessions will take place in both special education math and regular education science classrooms.

Participants' math grades in the resource classroom range from 70% to 88% and during the last trimester they turned in from 21 to 26 out of 30 assignments. Participants' science grades in the general education class range from54% to 68% and, during the last quarter, they turned in from 30 to 32 out of 44 assignments (see Table 1).

Sessions will occur in a natural classroom setting. In the special education class there will be 5 to 7 other students with disabilities. In the general education science class there will be 27 to 32 other students. The lesson format during math classes includes review questions of previously learned materials, lecture and guided practice, followed by independent work. In the science classroom a similar class structure occurs. The lesson begins with review questions, the teacher presents a lecture and provides guided practice, and the students work independently in small groups or complete lab work. The lesson structure comparison of the two classes is provided in Table 2.

Table 1
Student Demographic

Student Name	Wechsler Individual Achievement Test (WIAT II)	Wechsler Intelligence Scale for Children (WISC IV)	Classification	Ethnicity	Math	Scien
Nick	Word Reading: 83 Reading Comp: 69 Numerical Operations: 63 Math Reasoning: 55 Written Expression: 59	Verbal Comp: 85 Perceptual Reasoning: 88 Working Memory: 77 Processing Speed: 70 Full Scale IQ: 75	Specific learning disability	Caucasian	Current grade: B+ (87%) 22 of 30 assignments turned in (73%)	Current gr (68%) 32 of 44 assignmer turned in
Jackie	Word Reading: 85 Reading Comp: 85 Numerical Operations: 61 Math Reasoning: 70 Written Expression: 68	Verbal Comp: 93 Perceptual Reasoning: 75 Working Memory: 74 Processing Speed: 62 Full Scale IQ: 72	Specific learning disability	Caucasian	Current grade: C- (70%) 21 of 30 assignments turned in (70%)	Current gr (54%) 31 of 44 assignmer turned in
Oscar	Word Reading: 85 Reading Comp: 77 Numerical Operations: 102 Math Reasoning: 73 Written Expression: 86	Full Scale IQ: 79	Multiple disabilities	Tongan	Current grade: B+ (88%) 26 of 30 assignments turned in (87%)	Current gr (68%) 30 of 44 assignmer turned in

Table 2
Lesson Structure

	Review	Lecture/Guided Practice	Independent/Lab work
Math 5 to 7 students	Students solve 3-5 review math problems. Students must write down the solution to the problems that are written on the board.	Students write down procedures for solving math concepts and problems in a math notebook. Teacher gives steps to solve a concept and examples. The students solve 5to 7 problems with the teacher.	Students solve problems their textbook or complete a worksh Most days, students work independently, but some days s may work together.
Science 27 to 32 students	Students respond to 3-5 science questions that are written on the board. They must copy	Teacher presents a lecture. Teacher uses a projection system to show different pictures, graphic organizers, or provide other information to students. Students are	Students answer questions on a worksheet. Types of workshee include: fill in the blank, multi choice, short answer, guided re

	and answer the questions independently.	required to take independent notes, guided notes, fill in the blank or highlight notes. Teacher asks questions for understanding, but does not ask every student	from text, and or defining term students work in small groups. each concept the students also participate in a lab activity. Du activities the students use scier equipment and record their fin Lab work is done in pairs and has an accompanying assignm

Dependent Variable

The dependent variable, on-task behavior, is defined by each activity during class. At all

times students are in their seats during the class period, feet on the floor, and facing forward,

unless directed to do other wise. During the review portion of the lesson students will be marked

on-task if they are writing down and answering the review questions quietly. Once they have

answered the questions, they will sit quietly at their desk until the review time is over. In the

special education math class, students will be asked to volunteer answers to each problem.

During the lecture and guided practice section of each class, students will be marked on-task if

they are attending to the teacher, quietly. Also, if the teacher requires the student to take some

form of notes, the students will follow these directions. During independent work time, students

will work quietly at their seats on the assigned problems. If they have a question about the task,

they must raise their hand and wait until the teacher attends to them. If there is a lab activity or

small group work, the students will be marked as on-task if they are working on the assigned

task, and working with the assigned group members. On-task also includes writing on

assignments and answering assigned problems during independent seat work or when otherwise

instructed to do so. Student will be marked off-task if they are talking out of turn, playing with

objects, out of seat without permission, touching others, have their head on the desk or looking

around the room.

Response Measurement

A trained observer will use a 10 second momentary time sample to collect data on participants' on-task behavior. If the student is on-task the observer will mark a + on the data sheet and if the student is not on-task a - will be marked on the behavior sheet. In addition, the observer will indicate the current classroom activity; review, lecture and guided practice, independent or lab work. See Appendix A for a sample data collection sheet.

Independent Variable

During the self monitoring intervention students will use a tactile cueing device (a Motiv-Aider) to prompt self-monitoring. Each student will bring their Motiv-Aider to class each day. The Motiv-Aider will be set to one minute intervals. The classroom teacher will sync the participants Motiv-Aider with their own (classroom teacher's) so the intervals are set to go off simultaneously. Once the Motiv-Aider vibrates, each participant will circle a + (on-task) or − (off-task) on their self-monitoring sheet. See Appendix B for student self-monitoring sheet.

Research Design

A withdrawal design will be used to examine the effects of the self-monitoring system in the special education classroom. A multiple baseline design across settings will be used to examine the generalized effects of self monitoring to the general education classroom. The withdrawal design will consist of four conditions implemented sequentially: baseline 1, self-monitoring in the special education classroom, baseline 2, self-monitoring in the special education classroom. Observers will collect baseline data on on-task behavior in the general

education science class throughout each condition. After the second implementation of the self-monitoring system in the special education classroom, self monitoring will be implemented in the general education science classroom. Each condition is described below.

Baseline

Baseline will be collected on each participant's on-task behavior in the special education math classroom and the general education science classroom. The observer will watch students during class time in both settings and record students' on task and off task behavior as well as the change in classroom activities. At least 3 stable data points of low rates on on-task behavior are needed before moving into the second condition (self-monitoring in the special education math class).

Self-Monitoring in the Special Education Classroom

Prior to the first self-monitoring data session the resource teacher will teach the participants what self-monitoring is and how to do it. The teacher will show the participants how to use the Motiv-Aider and let them practice using it. The student will also learn what on-task behaviors look like and provide students with examples and non-examples of on-task behavior. The teacher will then ask the students to demonstrate examples of the target behavior.

The resource teacher will then teach and practice taking self-monitoring data with the students. The students will have a card placed in the top portion of their desk. The card will be sectioned into two columns; one for on-task and the other for off-task. The students will practice and role play marking on or off-task behaviors with the resource teacher and other students.

The teacher will sync the Motiv-Aiders to one-minute intervals. The teacher and student will put the Motiv-Aider in their pocket or other inconspicuous place and begin taking data.

The student and the teacher will each have a recording sheet on which they will record the date, the class period and will have multiple squares to mark behavior at each interval. At each interval both the student and teacher will circle a + if the student was on-task and circle a - if the student was off-task.

At the end of the class the teacher and student will compare their data. Students and the teacher will independently count how many + they recorded and write it on the bottom of their data sheet. During phase 1 of this condition the student and the teacher will match the number of on-task intervals. If the student matches the teacher exactly (same frequency of on-task behavior marks) the student will earn 5 points. If the student matches the teacher within 1 interval, the student will earn 3 points. If they match within 2 intervals the student will earn 1 point. If the student and teacher do not match within 2 or more intervals, the student will earn no points for that class session. At the end of each class the students may choose to spend their points on a backup reinforcer or save their points for a reinforcer which is worth more points. Each participant will have a menu of desirable choices (based on stimulus preference assessment) to spend their earned points on. See Appendix D for a sample reinforcer menu.

Students will receive edible or tangible reinforcers at the end of each class period. If students select computer time, time with teacher, or leave early, they will receive a coupon that they can exchange for the desired reinforcer on another day (See Appendix D for reinforcer coupon).

After two consecutive days in which the participant matches the teacher within one point, the intervention will move into a second phase. During phase 2 the student must match the teacher data and have a high percentage of on-task intervals.

The procedures for this phase are the same as phase 1. In addition to earning points at the end of each class, the student will also earn points for the percentage of intervals marked as on-task. If the percentage of on-task intervals is 77 to 81% on-task the student will earn 1 point. If the percentage of on-task intervals is 82-86% the student will earn 2 points and if the percentage is greater than 86% the student will earn 3 points (these percentages are based on a sample of two students on-task behavior in the math class and the science class).

After each student matches the teacher within one interval and at least 80% marked on-task for two consecutive data points, the second baseline condition will be implemented.

Baseline 2

The same procedures will be implemented as in the first baseline condition. At least three data points of low rates of on-task behavior are needed before moving into the next condition.

Self-Monitoring in the Special Education Classroom 2

During the first phase of this condition, students will continue to self-monitor in the special education math class. Both the matching and the percent of on-task intervals will be reinforced using the same strategies as in the first self-monitoring condition. After the student matches the teacher within one interval with at least 80% of the intervals marked on-task, the second phase of the condition will be implemented.

The second phase involves a match fading component. The students will be required to match the teacher on a variable schedule which will be faded over time. In order for the students to fade the number of days needed to match the teacher, they must match the teacher within one interval and be at least 80% on-task. The fading schedule during this phase will be to match with the teacher on three days, then two days, and finally one day per week. In addition to matching the teacher, the students will be reinforced for the percentage of on-task intervals they record. After students have demonstrated on task behavior for 80% of the intervals for 2 consecutive days, self monitoring will be implemented in the science classroom. The students will continue to self-monitor in the math class and match with the teacher one random day per week while self-monitoring in science.

Self-Monitoring in the Science Classroom

In this final condition of the study, the students will be required to self-monitor using the same strategies as when in the special education math class. The students will only be required to match with the teacher one randomly selected day per week. The students will earn reinforcers for the percentage of on-task intervals and only on matching days will earn additional reinforcers for matching with the teacher. The points for matching and on-task intervals are the same as described above.

Pre-Baseline Activities

Prior to beginning the study, the student will complete a reinforcer survey. Students will first read through a list of possible reinforcers (See Appendix E for sample reinforcer survey). They will select five reinforcers they like the most. Once the top five choices are selected, the

resource teacher will conduct a stimulus preference assessment (SPA) using the five selected

reinforcers (See appendix D for data sheet). Once the SPA is completed for all students, the

resource teacher will list different reinforcers and attach a numerical value to each reinforcer.

The highest ranking reinforcer will be worth the most points, and the reinforcer that ranked the

lowest will be worth the least amount of points (See chart 1 below for example of SPA rankings).

Students can use the points they earn to purchase specific reinforcers (Appendix F). The more

desirable the reinforcer, the more points it will be worth. Students can choose to purchase a

reinforcer worth fewer points or save up to get a more desired reinforcer. Some reinforcer

possibilities are: computer time, free time, candy, pop, listen to music, write a note, color, and

talk with the teacher.

Chart 1
Sample Stimulus Preference Assessment Ranking

Preference Assessment
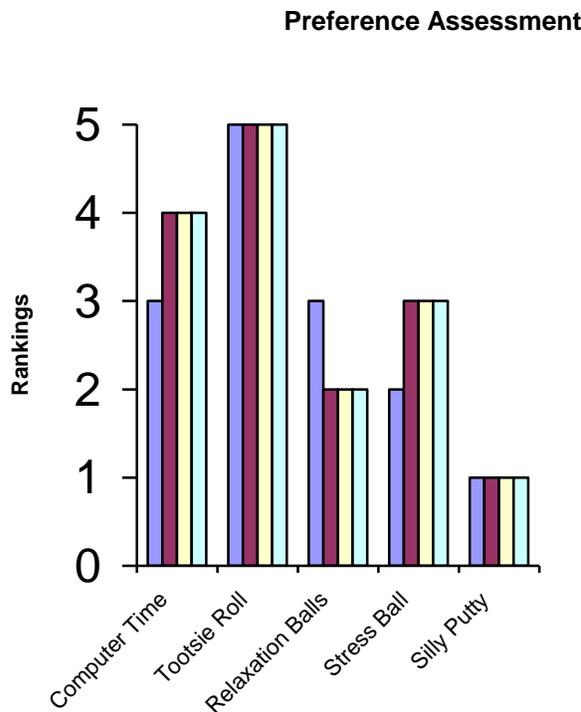
Interobserver Agreement

Interobserver agreement (IOA) will be taken on on-task behavior and the activity identification for at least 30% of the sessions and will be taken across all phases. IOA will be calculated separately for on task and the activity variable using the point by point agreement method, which is found by dividing the total number of agreements by the total number of agreements plus disagreements and then multiplied that number by one hundred to yield a percentage score.

Treatment Integrity

An independent second observer will record data on whether the critical features of the intervention were implemented. These features include: whether the students had their Motiv-Aider at the beginning of the class, if the teacher synced the Motiv-Aider, if the target students self-monitor (mark their self-monitoring sheet), if the target students data sheet included the same number of marks as the teachers' data sheet, if, during the matching condition, the teacher informed the students how closely they matched, and if the reinforcer was delivered if earned. See appendix C for the treatment integrity data sheet.

Treatment integrity will be collected for at least 30% of sessions across all intervention conditions. Treatment integrity will be calculated using the point by point agreement method, which is found by dividing the total number of agreements by the total number of agreements plus disagreements and then multiplied that number by one hundred to yield a percentage score.
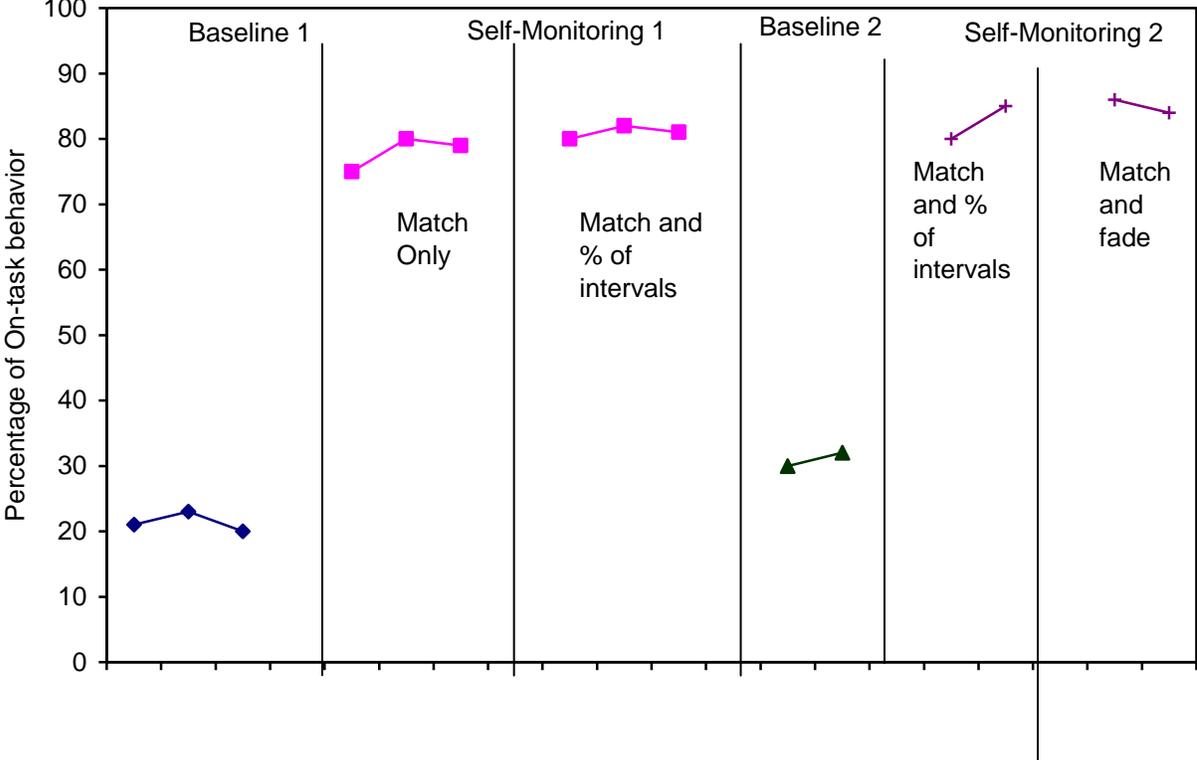
Data Analysis

Data will be analyzed visually for each participant. A sample graph for one student with one a summary of the student's performance is provided below.

Percentage of On-Task Behavior for Nick
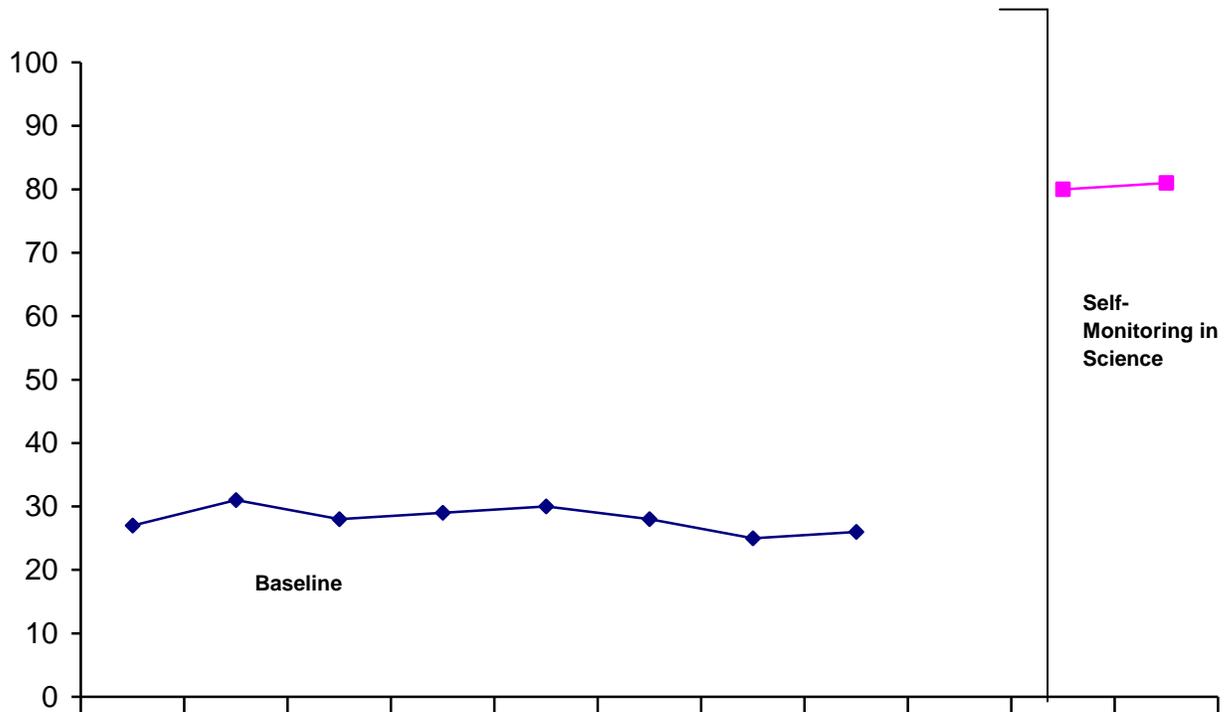
Baseline was collected in the special education math class. Student A exhibited low rates (21% average) of on-task behavior. Once the intervention started, student A's on-task behavior increased to an average of 79.5%. During the second baseline condition student A's on-task behavior decreased to 31%. Finally, during the second self-monitoring phase on-task behavior in student A increase to 84%. Throughout the first four conditions of the study, baseline data was taken in the regular education science class. On average, student A was on-task just 28.8% of the intervals during those class sessions. Once the intervention was applied in the science classroom, on-task behavior increased to 81% off the intervals.

Appendix A
Observer Data Collection Sheet
(Review, Lecture/Guided Practice, Independent or Lab work)

+ - R LGP I/L	+ - R LGP I/L	+ - R LGP I/L	+ - R LGP I/L	+ - R LGP I/L
+ - R LGP I/L	+ - R LGP I/L	+ - R LGP I/L	+ - R LGP I/L	+ - R LGP I/L
+ - R LGP I/L	+ - R LGP I/L	+ - R LGP I/L	+ - R LGP I/L	+ - R LGP I/L
+ - R LGP I/L	+ - R LGP I/L	+ - R LGP I/L	+ - R LGP I/L	+ - R LGP I/L
+ - R LGP I/L	+ - R LGP I/L	+ - R LGP I/L	+ - R LGP I/L	+ - R LGP I/L
+ - R LGP I/L	+ - R LGP I/L	+ - R LGP I/L	+ - R LGP I/L	+ - R LGP I/L
+ - R LGP I/L	+ - R LGP I/L	+ - R LGP I/L	+ - R LGP I/L	+ - R LGP I/L
+ - R LGP I/L	+ - R LGP I/L	+ - R LGP I/L	+ - R LGP I/L	+ - R LGP I/L
+ - R LGP I/L	+ - R LGP I/L	+ - R LGP I/L	+ - R LGP I/L	+ - R LGP I/L
Date:	Math Science	R Totals:	LGP Totals:	I/L Totals:

Appendix B
Student Self-Monitoring Data Sheet

+	-	+	-	+	-	+	-	+	-
+	-	+	-	+	-	+	-	+	-
+	-	+	-	+	-	+	-	+	-
+	-	+	-	+	-	+	-	+	-
+	-	+	-	+	-	+	-	+	-
+	-	+	-	+	-	+	-	+	-
+	-	+	-	+	-	+	-	+	-
+	-	+	-	+	-	+	-	+	-
+	-	+	-	+	-	+	-	+	-
Date		Math Science		Total + /45		% of on-task			

Appendix C
Treatment Integrity Data Sheet

1. Did the target students have their Motiv-Aider at the beginning of class?	YES NO
2. Did the teacher sync the Motiv-Aider at the beginning of class?	YES NO
3. Did the target students self-monitor (mark their self-monitoring sheet)	YES NO
4. Did the target students mark their self-monitoring sheet the appropriate amount of intervals?	YES NO
5. During the matching condition, did the teacher inform the students how closely they matched?	YES NO
6. If the student earned the reinforcer, was it delivered?	YES NO
Student Name Date	Math Science

Appendix D
Reinforcer Coupon

This coupon can be used for **5 minutes of computer time** in (circle one) Science or Math. You must tell the teacher before class starts that you want to use the coupon.

This coupon can be used to **get out of ½ of the questions on 1 assignment** in (circle one) Science or Math. You must tell the teacher before the assignment is due that you want to use the coupon.

Appendix E
Reinforcer Survey

Please list the items from 1 to 10. 1 being your favorite item and 10 being your least favorite item.	Write your rankings here:
1. 5 minutes of computer time	
2. Leave 1 minute early from class	
3. Small Candy Bar	
4. Time with the teacher	
5. Starburst	
6. Small Tootsie Roll	
7. 5 minutes to read your free reading books	
8. Be excused from 5 problems on assignment	
9. Eraser	
10. Write on the white board	

Stimulus Preference Assessment Data Sheet
Preference Assessment Data Sheet (Carr, Nicolson, & Higbee; 2000)

Student: Nick   Assessed By: Mrs. Teacher

Date:11/1/07   Time 8:01 am

Stimulus Items	Rank by Trial			Sum of 1,2,& 3	Overall Rank (Smallest sum is #1)
	1	2	3		
Tootsie Roll	5	5	5	15	5
Starburst	4	4	4	12	4
Leave 1 min early	1	1	1	3	1
Pen or Pencil	2	3	2	7	2
Mini-candy bar	3	2	3	8	3

Appendix F
Student Reinforcer Menu

Nick

1 point	Small Tootsie Roll
3 points	Starburst
5 points	Mini-candy bar
10 points	Pen or pencil
15 points	Leave 1 minute early for class.

Jackie

1 point	Starburst
3 points	Tootsie Roll
5 points	Pen or pencil
10 points	Teacher time for 2 min
15 points	Leave 1 minute early for class.

Oscar

1 point	Small Tootsie Roll
3 points	Starburst
5 points	Eraser
10 points	Pen or pencil
15 points	Get out of 5 problems on assignment.

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