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## **Motivated to Pay Attention! Increasing On-Task Behavior with a Tactile, Self-Monitoring Prompt**

### *Abstract*

*The following study investigated the effects of a tactile, self-monitoring prompt to increase the on-task behavior of a second grade student with ADHD. The participant, Monty, was taught to self-monitor and record his on-task behavior using a device called the MotivAider. A partial interval recording system was used to identify the amount of Monty's off-task behaviors, as well as the amount of time spent academically engaged, or time on task. An A-B case study design was used to evaluate the effects of the MotivAider. Results of this investigation indicated that Monty's on-task behavior increased from baseline mean of 39% of observed intervals in the special education setting to 85%, and 27% to 90% in general education.*

Students with Attention Deficit Hyperactivity Disorder (ADHD) often exhibit a variety of behaviors that are characterized by inattention, hyperactivity, and impulsivity which occur across home, school, work and many other social settings (Silver, 1995). According to Faraone and Beiderman (2005), ADHD affects some 10% of children and adolescents. The disorder of ADHD "is thought to be representative of an extreme on a population continuum of variability with a strong genetic influence" (Smalley, 2008, p. 75). Teachers of students with ADHD often struggle with the behaviors exhibited by children with the disorder. A prevalent behavioral characteristic of ADHD that affects classroom performance is the lack of student mindfulness, or attention to tasks.

Self-monitoring helps students to increase the management of skills that are critical to achieving academic successes, such as attention to task. The results of numerous research studies (e.g., Hughes & Boyle, 1992; O'Reilly, et al., 2002) indicate that the self-management procedure of self-monitoring of attention is effective in increasing time on task for students with ADHD. Self-management of one's behavior is defined as "the personal application of behavior change tactics that produces a desired change in behavior" (Cooper, Heron, & Heward, 2007, p. 578). In a single-subject research design study of students with ADHD, Harris et al. (2005) reported that on task behavior and spelling performance was positively affected under the self-monitoring of attention, with significant improvements in all 4 participants. According to Ganz and Sigafoos (2005), self-monitoring is a relatively rewarding and easy strategy for both teachers and students to implement.

A unique study by Amato-Zech, Hoff, and Doepke (2006) investigated the effects of self-monitoring in the form a tactile prompt. A multiple baseline design across

academic areas was used to isolate the effects of an electronic device called the MotivAider, to examine its effect as a tactile, self-monitoring prompt in order to increase the on-task behaviors of 3 elementary age students with varying disabilities. Students in this study were taught to self-monitor their attention by using the MotivAider. Results indicated that all participants in this study increased their on-task behavior from a mean of 55% to a mean of 90% during observed intervals. Flaute, Peterson, Norman, Riffle and Eakins (2005) noted that the MotivAider could be used with a wide range of target behaviors that include reducing nail biting to decreasing aggressive behaviors.

The purpose of this study was to investigate the use of a MotivAider as a tactile, self-monitoring cue to increase the on-task behaviors of Monty, a second grade student with ADHD. Observations and a partial interval recording system were used to identify the amount of Monty's off-task behaviors, as well as the amount of time spent engaged in academic work, or time on task. A self-monitoring intervention package using a tactile prompt (the MotivAider) and positive reinforcement was implemented to increase time spent on academic tasks in both the regular education and general education classroom. An A-B case study design was implemented in two academic settings to evaluate the effects of the self-monitoring intervention.

## **Method**

### **Participant and Setting**

Monty was a 7-year old Caucasian male diagnosed with ADHD in the second grade. Monty received 60 min of language instruction weekly in the resource room, 300 min daily of reading and math services, and 225 min of written expression, provided in the resource and general education classroom. Monty was referred for possible participation in this current study by his teacher for excessive levels of off-task behavior (i.e., rocking and fidgeting in his seat, staring at the window, talking to peers) that often lead to incomplete, inaccurate work or disruptive behavior (i.e., talking back to the teacher, blurting out irrelevant phrases, or arguing with adults). According to Monty's Individualized Education Plan (IEP), his current skill level was below average of his same age peers in the academic areas of reading, writing, and math.

The school was in an urban setting in a large, metropolitan city in central Kentucky, and served approximately 400 students. The special education classroom served students with disabilities ranging from mild to moderately severe. During the time Monty attended his resource class to receive language and reading instruction, the room contained 10 students and 2 teachers with 3 to 4 teaching assistants (the number of assistants varied daily based on need). Monty's regular education classroom consisted of 28 students with one teacher and one teacher's assistant.

### **Materials**

The materials used for measurement of behavior during baseline and intervention included partial interval recording sheets for two observers (set up for 30, 20-sec intervals), a timer, and a pen. In order to implement the intervention, the student was provided a MotivAider set to 3-min intervals, a sheet with reminders of what constitutes

paying attention, a self-monitoring sheet with reward choices, and a writing utensil. A treatment integrity checklist was used to ensure that procedures were carried out completely and with accuracy.

### **Dependent Variable and Measure**

The dependent variable for this study was the amount of time on-task, defined as academic engagement during seatwork and during small and whole group instruction. Examples of on-task behavior for Monty included having his eyes upon the teacher during instruction, reading aloud independently or along with peers during reading instruction, writing on worksheet or open response item when directed to do so, and raising his hand to ask an appropriate question or make a comment related to the academic topic. Monty was considered to be off task if he was rocking in his chair, looking out the window or at peers, talking to peers at an inappropriate time (i.e., during instruction or independent work time), or manipulating non-instructional items/materials at his desk. Disruptive behaviors, which included talking/blurting out irrelevant words or phrases during instruction, arguing with an adult or peer, leaving assigned work area, and/or refusing to do assigned work, were considered off-task behaviors. Baseline and intervention data were recorded for Monty during language arts in both his regular education and special education classroom. Monty received instruction in the second grade, general education classroom from 8:20 to 8:50 each morning. During this time, he was writing to respond to an open response item, completing a spelling worksheet, or following along during a reading activity. From 8:50-9:30, Monty went to the special education resource room where he began with small group reading and language instruction, and then completed independent seatwork relevant to the lesson taught during small group.

Academic engagement, or the amount of time Monty was on task, was measured using a partial interval recording system. On-task behavior was recorded if it occurred anytime within each 20-s interval. Intervals were measured with a timer or MotivAider. Data were collected for two sessions daily, one session in the general and the other in the special education classroom. On a data recording sheet that contained 30 intervals, a “+” was recorded if on-task behavior occurred anytime within each 20-s interval, or a “-” was recorded if on-task behavior did not occur during that 20-s interval. A total of 10 min elapsed from the start of the session to the end. Data collection began after the first 2 to 3 min of the 30-min language arts instruction period for both classrooms. Two trained observers, who maintained a 2-m distance from Monty while observing the behavior, collected the data.

Prior to the intervention, a brief, stimulus preference assessment (Cooper et al., 2007) was conducted to identify highly preferred items or activities for Monty. The assessment began with an interview with his teachers to identify preferred items. Pictures of preferred items were then presented to Monty and he was directed to rank them in order of preference. The top three items were computer time, time with toys, and candy (preferably sour suckers), respectively. Each of the three preferred items was listed in picture and word form at the bottom of Monty’s self-monitoring sheet for choice selection contingent upon meeting on-task criteria on 4 out of 6 sessions.

Interobserver agreement (IOA) was measured by having two data collectors independently record Monty's amount of academic engagement. The second observer, a teacher's assistant, had previous experience in data collection, and was also trained to conduct the measurements for this study prior to the first day of baseline data collection. IOA was assessed for 40% of baseline sessions in both settings. Average IOA for both baseline sessions was 90%, with a range of 81% -99% for on-task behaviors. IOA for the intervention phase was assessed for 30% of the sessions in both settings. Average IOA for the special education classroom and regular education setting was at 89%, and 97%, respectively. The total IOA for the intervention phase was 93%, with a range of 93% to 100% for the special education classroom, and 77% to 100% for the regular education classroom. IOA was calculated by dividing the total number of agreements by the sum of agreements and disagreements, and then multiplying by 100 to get the percentage.

### **Baseline**

During baseline, no changes were made to the student's daily routine, reinforcement schedule, or expectations for classroom performance in either setting. Reinforcement throughout the study remained the token economy system in the special education classroom, and the CHAMPS system in the regular education classroom. Baseline data were collected concurrently for two daily 10-min sessions, one session collected in the general education classroom and the other in the special education classroom. Five days of baseline data were collected for each setting. Data were collected using a 20-s partial interval recording system, with any occurrence of on-task behavior at anytime during each interval recorded. During session three of the baseline phase, Monty's level of on-task behavior increased to 60%. Observers agreed that this might have been due to increased amounts of verbal praise and reprimands of both the classroom teacher and assistant. The teacher's assistant sat next to Monty during this session, unlike previous sessions. In order to correct this error, a brief meeting was conducted with the teacher and teacher's assistant to remind them to keep the student's reinforcement and consequence schedule as normal as possible. Once the issue was corrected, Monty's baseline data resumed to previous levels.

### **Intervention**

The intervention used in this study was self-monitoring, utilizing a tactile prompt (provided by the MotivAider) to increase the level of on-task behavior. The MotivAider, set to 3-min intervals, prompted Monty to record whether or not he was academically engaged or "on-task," during language arts time in both his special and regular education classroom. Prior to the implementation of the intervention in both settings, Monty and his teachers were trained to operate the MotivAider, recognize on-task behaviors, record his behavior in the appropriate column, and Monty was informed he could choose a reward if he was on-task 4 out of 6 sessions. Monty's teachers were instructed on how to fill out the final column on the self-monitoring sheet that indicated their agreement or disagreement with Monty's self-recordings in order to ensure treatment integrity. The checking of the final column was used as a part of treatment integrity as it ensured that the teacher(s) were making sure Monty completed the self-monitoring form, along with

providing him with appropriate feedback on his levels of on-task behavior for that academic period.

The implementation of the intervention began by giving Monty a self-monitoring sheet that contained three columns with six rows. The first and second columns respectively were labeled, “Yes, I was paying attention, or “No, I was not paying attention,” with an icon of a happy face or frown face. The third column was labeled, “My teacher said...,” and was for the teacher to check whether or not she agreed with Monty’s responses. The teachers did not record data on Monty’s on-task behavior, however, the third column ensured that the teacher provided feedback, and that Monty completed the chart. The third column also increased Monty’s responsibility, as he knew that his teacher would be checking to see if he was completing the chart and following the steps. Along with a self-monitoring sheet to record his on-task behavior, Monty was given a sheet describing what constituted on-task behavior for him in each class (e.g., I am looking at the teacher or I am reading along in my book). Once instruction began, Monty was handed the MotivAider set to 3-min intervals, and attached it to his waistband. Every 3 min, the MotivAider would vibrate, prompting Monty to check in the appropriate column documenting whether or not he was paying attention. At the end of each class period, Monty handed the self-monitoring sheet to the teacher, who responded whether or not she agree with Monty’s recordings with a “yes,” or “no” response. When responding with a disagreement, the teacher would reiterate to Monty what he was doing that indicated he was not paying attention, reminding him what he needed to do in order to pay attention, as well as remind him of the goal. The student needed only to get at least 4 out of 6 “yes, I was paying attention,” responses completed on his monitoring form in order to get rewarded. If the teacher disagreed, then the student’s response was not counted towards the total number of “yes” responses. The teacher checked to see if Monty completed the self-monitoring sheet appropriately, and provided feedback at the end of each language arts period. Positive reinforcement was implemented in that computer time, time with toys, or candy (Monty’s Choice) was provided contingent upon meeting the goals for the checklist. Data for the intervention phase were collected using the same, 20-s partial interval recording system that was used during the collection of baseline data. Data for the intervention phase were collected for 10 days.

### **Treatment Integrity**

Two trained observers, the primary investigator and a teacher’s assistant from the resource room, recorded on a checklist the degree to which steps involved with the self-monitoring intervention were completed. Data were recorded on the following five procedures: (1) the teacher responding (agreeing or disagreeing with student) to all items on the third column of the student self-monitoring checklist, (2) the teacher collecting student responses on a daily basis at the end of the language arts period, (3) the teacher providing one of three rewards to student if he was on task for 67% of the intervals on his self-monitoring checklist or redirecting him if he did not meet the goal, (4) the teacher collecting the MotivAider at the end of subject period, and (5) the teacher ensuring that the MotivAider was properly set to 3-min intervals before each session. Treatment integrity for both settings of the study was 100% for all data collections.

## **Design**

The design used for this study was an A-B, single-subject case study. The design was implemented beginning with 5 days of recording baseline data in order to measure Monty's levels of on-task behavior in the general and special education classroom settings. The intervention began after collection of baseline data for both settings, and lasted for 10 days. Once a trend was established in the first setting with the implementation of the intervention, it was then implemented in the general education classroom

## **Results**

Monty's observed levels of on task behavior for both the special and general education classroom settings are presented in Figure 1. Self-monitoring using the MotivAider yielded positive effects for increasing the amount of Monty's on-task behavior in both the special and general education classroom settings. Observed levels of Monty's on-task behavior during baseline averaged 39% for a period of five sessions in the general education classroom, and 27% in the general education classroom for five sessions. When the intervention of the MotivAider was implemented on day 6 of the observations, Monty's levels of on task behavior increased to a mean of 85% of intervals in the special education classroom and to 90% of intervals in the general education classroom. In both of the settings, the increase of on-task behavior was gradual, and on the last 2 days of observation, averaged 100%. Monty's level of on-task behavior was lower in the general education classroom, and this may have been attributed to the increased levels of distractions in the room as well as more opportunities to be near peers in small group settings. There were two days during data collection sessions that are worth noting. During baseline, on day 3 in the special education setting, Monty's level of on-task behavior increased to 60%. This could have been due to more teachers' assistants in the room that day, as well as one sitting beside him who was frequently prompting him to "pay attention." On day 12 during intervention phase in the special education classroom, Monty put his head down on the desk, and fell asleep during interval 21 of the 30 observation intervals. The teacher attributed this behavior as Monty often "not getting enough sleep," the night before.

Monty's self-monitoring of his on-task behavior on the recording sheets also yielded positive results. There was only 1 day in the general education classroom, and 1 day in the special education classroom that he did not receive his reward. Monty expressed enthusiasm about using the MotivAider, with comments such as, "I want to use this in every class!" Monty's teachers, both in regular and special education anecdotally not that Monty had improved in reading and other academic tasks.

## **Discussion**

The findings of this investigation indicate that self-monitoring of on-task behaviors through the use of a self-monitoring prompt such as the MotivAider may result in increased levels of academic engagement. Levels of academic engagement for Monty increased in both the special and general education classroom setting. Upon

implementation of the intervention, Monty's on-task behavior increased from baseline mean of 39% of intervals in the special education setting to 85% and 27% of intervals to 90% in the general education setting. These results extend past research on the use of self-monitoring interventions that include tactile prompts in order to improve on-task behavior. The results and implications of using the Motivator were similar to those in the study by Amato-Zech et al. (2006) in that the intervention not only increased on-task behaviors, but also presented several practical applications for use in various classroom settings such as being less time consuming, easy to implement, and fits into most curriculums and activities.

This study produced effective results; however, there are limitations and further implications to be noted. A major limitation to be addressed is that even though observations were made in two settings, the data were only collected during language arts instruction, and therefore it is unknown if the effects generalized into additional settings. Also, this study was also conducted with only one student with ADHD, and could have had different results if conducted with a student(s) with other disabilities. Implications for further research would include the study of the use of the MotivAider in a variety of academic settings, such as mathematics, science and other content areas. There is also a need for replicating this study with more students with a wide range of disabilities who exhibit similar off-task behaviors.

### **Implications for Rural Educators**

There are many positive implications for the use of the MotivAider for teachers in rural areas. Educators in both general and special education settings would be able to easily implement the MotivAider, as it does not require a lot of training time. The MotivAider could be a technique that could save both time, and money, due to the reduced need for costly equipment and training. As teachers in rural areas often have to travel great distances to receive training in various interventions, the use of the MotivAider could be taught via distance learning training, or through literature provided by the website (MotivAider, 2000).

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## Monty's On-Task Behavior with the MotivAider

