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Case Studies in Applied Behavior Analysis: Brain Breaks for Elementary Students and Using the Prevent-Teach-Reinforce (PTR) Model to Increase On-Task Behavior in a Classroom Setting

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Case Studies in Applied Behavior Analysis: Brain Breaks for Elementary Students and Using the
Prevent-Teach-Reinforce (PTR) Model to Increase On-Task Behavior in a Classroom Setting

by

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A thesis submitted in partial fulfillment
of the requirements for the degree of
Master of Science in Applied Behavior Analysis
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ABSTRACT

Disruptive behavior in the classroom can harmfully impact students learning and hinder academic growth (Austin & Agar, 2005; Hartman & Gresham, 2016). The term disruptive behavior encompasses many different behaviors, but when used in the classroom it focuses on off-task behavior, noncompliance, talking out in class, aggression, leaving designated areas, and stereotyping (Celebreti et al., 1997; Folino et al., 2014 & Kern et al., 1982). Both antecedent and consequence-based interventions have been conducted in school settings in attempts to decrease disruptive behaviors and increase appropriate on-task academic behavior. Physical activity and antecedent manipulations have demonstrated empirical evidence that both interventions are successful in creating positive behavior change. The purpose of this study was to evaluate the effects of the Brain Breaks® program in relation to on-task classroom behavior. A reversal design was implemented with one elementary school student. Results indicated a substantial increase in on-task behavior upon implementation of the Brain Breaks® videos for this participant.

Case Study 2: Off-task behavior in the classroom can significantly impact students' academic development. Implementation of behavioral strategies can help diminish these negative effects. One standardized model which has been effectively used to decrease challenging behavior and utilizes a collaborative, team-based approach to create function-based interventions is the Prevent-Teach-Reinforce (PTR) model. The purpose of this study was to evaluate the effects of the PTR model on one elementary student's classroom behavior. An AB research design was

utilized due to recruitment related issues with the COVID-19 pandemic. The results demonstrate that implementation of the PTR model assisted in decreasing off-task behavior and increasing on-task behavior for one elementary school student.

CHAPTER ONE:

INTRODUCTION

Disruptive behavior in the classroom can harmfully impact students learning (Austin & Agar, 2005; Hartman & Gresham, 2016) and decrease on-task performance including engagement in classroom activities (Kern et al., 1982; Leflot et al., 2010 & Powers et al., 1992). The term disruptive behavior, when used broadly encompasses many different behaviors such as aggression, stealing, property destruction and running away from home (McCart & Sheidow, 2016). More specifically, disruptive behavior can take many different forms in the classroom such as off-task behavior, noncompliance, talking out in class, aggression, leaving designated areas, and stereotypy (Celebreti et al., 1997; Folino et al., 2014 & Kern et al., 1982). These disruptive behaviors may yield short term consequences such as decreased academic engagement and lower grades as well as long-term impacts such as worse performance on standardized tests and adverse social effects (Hartman & Gresham, 2016). Powers and colleagues (1992) demonstrated the importance on-task behavior can have on attending to, engaging with, and appropriately manipulating materials. Therefore, reducing disruptive behavior and consequently, increasing on-task behavior in the classroom is critical to students' education, growth, and development.

Research has shown increased amounts of physical activity can aid in minimizing these negative consequences in a variety of areas. Increased amounts of physical activity have been effective in increasing focus, attention, and cognition. Increased levels of exercise can help decrease off-task and problem behavior (Cannella-Malone, Tullis & Kazee, 2011; Carlson et al.,

2015) increase on-task behavior (Bartholomew et al., 2018; Grieco, Jowers & Bartholomew, 2009; Grieco, Jowers, Errisuriz, & Bartholomew, 2016; Mahar et al., 2006; Szabo-Reed et al., 2017) and improve academic achievement (Donnelly et al., 2016; Rasberry et al., 2011; Reilly et al., 2012; Schmidt et al., 2016; Watson et al., 2017).

Physical activity was defined by Caspersen and colleagues as “any bodily movement produced by skeletal muscles that results in energy expenditure” (Caspersen et al., 1985, p.126). Research has demonstrated physical activity to be effective in reducing maladaptive behavior in a multitude of populations including individuals with developmental disabilities (DD) (Bachman & Sluyter, 1988), individuals with Autism Spectrum Disorder (ASD) (Celebreti et al., 1997; Kern, Koegel, & Dunlap, 1984; Neely et al., 2015), and neurotypical children (Bass, 1985). Furthermore, physical activity has resulted in reductions in off-task behavior (Watson et al., 2017), impulsiveness (Bass, 1985), and stereotypy (Neely et al., 2015; Powers et al., 1992). Additionally, behaviors that have been shown to increase from the implementation of physical activity are engagement in school-related tasks (Kern et al., 1982), on-task behavior (Powers et al., 1992), and social skills (Folino et al., 2014).

Physical activity can be used as an antecedent intervention to prevent or decrease the likelihood of problem behaviors (Kern & Clemens, 2007; Lang et al., 2010; Rosenthal-Malek & Mitchell, 1997; Skinner et al., 2002; Wood et al., 2008). Celebreti and colleagues (1997) evaluated antecedent walking and jogging effects on self-stimulatory behavior of a 5-year-old boy with autism. During the jogging condition, the participant engaged in 6 min of moderate, continuous jogging followed by a brief 3 min cool down period before re-entering the classroom. Decreases in self-stimulatory and out-of-seat behavior during the jogging condition were found. This has significant implications with regards to academic performance. Academic activities

requiring prolonged attention may yield better results when conducted directly after physical activity. Furthermore, Kern and colleagues (1982) demonstrated the importance of on-task behavior with regards to academic performance. They showed an inverse relationship between stereotypic behaviors and academic performance when pre-activity jogging was implemented. In addition, Powers and colleagues (1992) also evaluated antecedent exercise and self-stimulatory and on-task behavior. An 8-year-old individual with developmental disabilities engaged in roller skating for 10 min before a structured play session. An ABAB reversal design was utilized and indicated a decrease in self-stimulatory behavior and an increase in on-task behavior (attending to, engaging with, and appropriately manipulating the materials) when antecedent exercise was implemented. Similarly, Cannella-Malone and colleagues (2011) showed a variety of antecedent physical activities throughout the school day decreased challenging behavior in the classroom. Additionally, a meta-analysis by Watson in 2017 suggested different learning environments, such as classroom-based physical activity, improved on-task behavior, reduced off-task behavior and ultimately, increased academic performance. Multiple studies support this claim that classroom-based physical activity leads to higher levels of on-task behavior when compared to sedentary seated lessons (Grieco et al., 2009; Mahar et al., 2006). According to Swanton (2007), multiple studies have shown physical activity has a “positive influence on memory, concentration, and classroom behavior.” It has also been demonstrated that exercise before the start of class is helpful in increasing on-task behavior and academic engagement (Neely et al., 2015; Powers et al., 1992) and decreasing challenging behaviors such as maladaptive behaviors and stereotypy (Lang et al., 2010; Lee et al., 2018).

Technology has been useful in the classroom to assist in increasing on-task behavior (Arbeau, 2016; Dele-Ajayi et al., 2019; Risher, 2019). There are several online programs that

have been developed to support teachers to incorporate physical activity as a means for improving in class behavior including one specific program called Brain Breaks®. Brain Breaks® is an interactive online program designed for teachers to support “Whole School, Whole Community, Whole Child and United Nation’s Sustainable Development Goals” (The Foundation for Global Community Health, 2020). The program’s homepage claims to inspire children to create a better world for themselves and others through short 3 to 5 min videos and games. Flexibility (e.g., implemented before, during and/or after school) exists surrounding the presentation of the brief videos striving to improve on-task behavior, self-esteem and other behaviors. The videos typically include a model demonstrating the movements along with verbal instructions on how to follow along. Perera (2015) indicated Brain Breaks® are widely accepted by teachers and that teachers reported increased student concentration after implementation. The literature also demonstrates Brain Breaks® can be effective in increasing self-efficacy (Glapa et al., 2018; Popeska et al., 2018), academic performance (Glapa et al., 2018) and concentration (Perera et al., 2015). Glapa and Popeska utilized self-report surveys, the Attitudes Toward Physical Activity Scale (APAS), and reported increases in participants self-efficacy with learning after using the video exercises with 326 students ages 9-11 years old. The students were divided into one of two groups. The experimental groups engaged in physical activity with Brain Breaks® videos two times per day for three to five minutes over the course of four months. The control group did not use the videos. The authors found an increase in self-efficacy on learning with video exercises in the experimental group compared to the control group. Additionally, Popeska and colleagues (2018) conducted a group design which included 283 participants in the 3rd to 5th grade over the course of three months. They also utilized the APAS and found increased self-efficacy (physical activity confidence) in the experimental group.

While these findings are encouraging, no known studies have reported direct observation measures of academic performance and engagement with the use of Brain Breaks®. While self-report measures used in previous research are encouraging, they may not correlate with actual student behavior in the classroom. Therefore, the purpose of this study was to evaluate the effectiveness of Brain Breaks® on academic engagement in the classroom by collecting direct observation measures during classroom activities.

Case Study 2: Problem behaviors exhibited by students in the classroom have been reported to be the utmost concern with regards to hindering educational growth (Dunlap et al., 2010). When students engage in high levels of off-task behavior, they may fall behind academically as well as impede the learning of their peers. One approach to combat these behavioral concerns is to support teachers and students from a collaborative team-based lens (Dunlap et al., 2010). Individualized behavior support can be provided to teachers and students in the form of a functional behavior assessment (FBA) and behavior intervention plan (BIP). An FBA is utilized to identify factors and events that frequently come before and after the behavior of concern (Sugai et al., 1999). This helps identify why the behavior is occurring and aids in the formation of function-based interventions. Function-based behavioral interventions intend to decrease problem behaviors while increasing functionally equivalent alternative behaviors (Sugai et al., 1999).

BIP's completed with a team-driven approach that include input from school-based personnel (teachers) and behavioral experts (behavior analysts or school psychologists) in the planning process tend to have the highest technical adequacy and contextual fit (Benazzi et al., 2006). Contextual fit refers to the feasibility of the plan and the extent the plan aligns with the

teacher, school administrator and student values (Albin et al., 1996). Ensuring contextual fit may result in high levels of implementation and improved student progress. (Benazzi et al., 2006).

One uniform intervention model that utilizes a manualized approach to facilitate a collaborative process to create function-based intervention plans is called Prevent-Teach-Reinforce (PTR) (Dunlap et al., 2010). In an attempt to maintain consistency and alleviate some of the stress of implementation, the PTR process has standardized the steps of intervention (Dunlap et al., 2010). Though the process is standardized, the model includes a menu of interventions to enable individualization for each case contingent upon the team members preferences, student behavioral goals, and function of target behaviors (Dunlap et al., 2010).

As previously mentioned, the PTR model utilizes a collaborative approach between behavior professionals and school personnel. A facilitator (or coach), who is familiar with and experienced on behavioral theory and application of function-based interventions, works alongside school personnel such as teachers, parents or administrators to find the function of problem behavior and make a BIP that maintains high technical adequacy and contextual fit and (Dunlap et al., 2010). The PTR process has been employed in multiple studies to demonstrate successes in academic engagement and social skills improvements as well as reducing problem behavior with preschool, elementary and middle school students (Iovannone et al., 2009; Dunlap et al., 2018). Recent studies have replicated these early randomized controlled studies to demonstrate similar effects with single case design studies. Sullivan and colleagues (2020) exhibited improvements in reducing problem behaviors and improving replacement behaviors with high school students with emotional and/or behaviors disorders (EBD) following the use of the PTR model in self-contained EDB classrooms. Similarly, Barnes and colleagues (2020) extended the PTR literature to further show effects in reducing problem behaviors and increasing

replacement behaviors in general education, elementary classroom settings with students with behavioral challenges. This case study further supports the PTR literature by demonstrating the effects of decreasing problem behavior and increasing replacement behaviors in a general education classroom with one typically developing student.

CHAPTER 2:

METHOD

Participants and Setting

This study included one student who was 8 years old. The participant was in a general education 2nd grade classroom at a public Elementary school in Southern Florida. Inclusion criteria for the student included willingness to participate in physical activity based on verbal report, displaying disruptive behavior during at least 30% of academic instruction, and exhibiting no medical conditions preventing participation in physical activities. Exclusion criteria preventing students from participating included repeated school absences (one per week for three consecutive weeks), severe self-injurious or aggressive behavior that may put the researcher, participant, or teacher in harm's way and likeliness of problem behavior when required to engage in physical activity. The researcher conducted an interview with the students' teacher to determine if the student was eligible for the study (Appendix A). The questions were pulled from a previous thesis and modified (Mulligan, 2020).

Mackenzie was an African American, 8-year-old female in the 2nd grade. According to her Individualized Education Plan (IEP), she was diagnosed with ADHD, Disruptive Mood Dysregulation Disorder, Autism Spectrum Disorder and Encopresis. Mackenzie was prescribed several medications which included multiple psychotropics. Her IEP indicated that Mackenzie received speech therapy on Fridays for 30 min and occupational therapy on Wednesdays for 30 min. She was nominated by her teacher and the district behavior analyst's report of observing her

calling out, wandering around the room, jumping off tables and chairs, disrupting other children and engaging in off-topic language.

Teacher inclusion criteria included willing to allow 3-5 min of time to implement the Brain Breaks® video prior to the problematic class time. The teacher also was the lead teacher for the student's classroom. One teacher participated in the study. Katie was a white female, who had been teaching for over 10 years and was a former principal. Her classroom contained 18-23 students (depending on absences, quarantined students, and suspensions) and she did not have a teacher aide. The classroom was a general education classroom in which the school's reading coach would provide one-on-one help once per day for 30 min to assist a few students with reading skills.

Recruitment and Consenting

The researcher started the recruitment phase of the study by first obtaining permission from the public school district and the school principal. Next, the researcher disseminated a flyer to school personnel (Appendix B). The flyer had details of the study and researcher contact information for those interested in participating. Once the teacher agreed to participate in the study, a brief meeting was conducted with the teacher to ensure she had an eligible student participant in her class (Appendix A). Written consent was obtained from the teacher and the researcher sent flyers and consent forms home with all students in that classroom. The parents had one week to return the signed written consent forms stating their child was able to participate in physical activities and the study. Only one student returned a signed parental consent form. The researcher then interviewed the teacher to discuss the students' disruptive behaviors (Appendix A). Assent was then gathered from the student. The researcher conducted a 30- min observation in the classroom of the prospective participant to ensure she met inclusion criteria.

The researcher observed the students' engagement in the problem behavior during this time to evaluate the severity of the behavior and observed Mackenzie was off task for the entire observation.

Sessions took place during the most problematic academic time period identified by the teacher, which was independent writing. Therefore, data collection occurred during the school day immediately after lunch during independent writing class. At least one teacher and researcher were present during all observation sessions.

Materials

An Apple smartphone with the Countee© application was used to collect on-task behavior data. Other materials that were used for this study were on-task behavior data sheets and a pen. The implementation of the Brain Breaks® program required internet access, researcher Brain Breaks® account login information, a laptop and a screen to project the video on.

Target Behavior and Data Collection

The dependent variables were on-task and off-task behavior. On-task behavior was defined as the participant engaging in the assigned task from the teacher and was tailored for the student based on teacher expectations. Mackenzie's on-task definition was defined as any instance where the student was writing or sketching on her paper with a pencil or colored pencil, looking at her paper or asking the teacher questions about the writing assignment. If the participant was not engaging in on-task behavior, she was scored as off-task. Mackenzie's off-task behaviors included when Mackenzie was crying while looking away from her work, verbally calling out, leaving her seat without teacher permission, talking to other students, or playing with toys at her desk for more than 5 s.

The researcher used the Countee© application to collect duration data for on-task behavior. Off-task behavior was the inverse of on-task behavior, so it did not need to be recorded separately. The researcher clicked the start key at the onset of the behavior and clicked the stop key at the offset of the on-task behavior. To maintain consistent data collection, there was an allotted 2 s off-task window. This means the student could be off-task for up to 2 s without clicking off the “on-task” key. The percentage of on-task engagement was calculated by adding the total number of seconds on-task, divided by the total seconds in the session and multiplying by 100. Observation periods ranged between 15 and 35 min. The observation period was the duration of the academic writing activity which was scheduled for 35 min but was terminated at different times based on teacher discretion of task completion.

Interobserver Agreement (IOA)

The researcher trained a secondary observer to collect data using behavioral skills training (BST). This method of teaching included instructions, modeling, rehearsal, and feedback. The primary researcher trained the secondary data collector until they obtained at least 90% agreement for the same practice session. The trained second observer collected on-task behavior data for 33% of sessions across both baseline and intervention phases for the participant. The second observer collected data on the target behavior independent of the primary researcher. The two data collectors moved throughout the classroom to maintain visibility of the participant, maintaining 6 feet from her and 2 feet from each other. The percentage of IOA was calculated by the lowest sum of seconds of on-task behavior from one observer divided by the highest sum of seconds from the second observer multiplied by 100. IOA for on-task behavior for Mackenzie during the first baseline phase was 100%, 97% during the first intervention phase, 100% during the second baseline phase and 98% during the second intervention phase.

Treatment Integrity

Treatment integrity (TI) was measured to determine if the intervention was implemented as intended. TI was calculated for 33% of sessions across both baseline and intervention phases by using a checklist (Appendix C) that was completed by the research assistant. A “yes” response was selected to indicate the researcher properly completed the step. A “no” response was indicated if the researcher did not properly complete the step. The treatment integrity score was calculated by dividing the number of “yes” responses by the total number of steps, then multiplying by 100. Implementation fidelity scores were recorded at 100% for the researcher for all phases.

Experimental Design

An ABAB reversal design was utilized to evaluate the effects of the Brain Breaks® program on student on-task behavior.

Procedure

Baseline

During baseline, no modifications were made to the typical classroom procedures. The participant was observed during the independent writing academic period for duration of the activity which ranged from 15 to 35 min. To attempt to control for consistency and confounding variables, the participant did not engage in physical activity for 30 min before sessions. This was ensured by asking the teacher before the start of the observation if the participant had engaged in any physical activity in the previous 30 min. If the teacher reported that physical activity did occur within the previous 30 min, then data would not have been collected that day, however, this never occurred.

Pre-Class Brain Breaks®

Before the start of the independent writing academic period, the participant and the entire class was invited to engage in 2-4 mins of Brain Breaks® videos. The videos varied only slightly in length, activity, and movement. The videos were chosen by the researcher to ensure the participant was receiving similar amounts of physical activity each session. At the start of class, the researcher presented the Brain Breaks® videos to the entire class and delivered the instruction, “If you want to play, stand up and follow along.” The teacher did not participate in the video activities. The participant could take breaks as often as she needed. Participant engagement in the video was evaluated by recording if the participant attended to the videos and followed along with the instructed movements. If the participant failed to engage for at least 50% of the Brain Breaks® videos, data was not collected during that session. The participant engaged in more than 50% of the videos every session. Immediately after the Brain Breaks® videos were finished, data was collected identical to baseline data collection where the participant was observed for the academic instruction period.

Social Validity

A social validity questionnaire was conducted with the teacher and student at the end of the study. Teacher acceptability, feasibility, and outcome satisfaction of the intervention was assessed using a 5-question, 5-point Likert type scale (Appendix D). A score of 1 corresponded to strongly disagree with the item and a score of 5 corresponded to strongly agree. The statements on the teacher questionnaire included the likability of the intervention, if the teacher would consider continuing to implement the intervention in the future, and the teacher’s attitudes toward student outcomes from the intervention.

Social validity was also conducted with the student by reading the questions to her and recording her answers (Appendix E). Student preference and personal benefit was evaluated through a 3-question 3-point Likert type scale (1 = sad face, 2 = neutral face, 3 = happy face). The statements included the student's likability of the videos, perceptions of behavior change after participating with the videos, and if she would like to continue using the videos after the study was finished.

Case Study 2: Participants and Setting

This study included one male student, Trevon, who was African American and 8 years old. Trevon was in a general education 2nd grade classroom in a public Elementary school in Southern Florida. According to his Individualized Education Plan (IEP), he was receiving services for a Specific Learning Disability exceptionality. Trevon was referred to the district behavior specialist for an observation due to his engagement in non-compliance and off-task behavior in the classroom.

The same teacher from the first case study participated in this study. Katie was a white female, who had been teaching for over 10 years and was a former principal. Her classroom contained 18-23 students (depending on absences, quarantined students, and suspensions) and she did not have a teacher aide. Katie consented to working with the researcher throughout the PTR process. Once teacher consent was obtained, parental consent was sent home with the student. The researcher followed all five steps of the PTR process to collaboratively work with the teacher to help change Trevon's behavior.

Sessions took place during the most problematic academic time period identified by the teacher, which was independent reading. Data collection was arranged to occur during the beginning of the school day during the independent reading block.

Target Behavior and Data Collection

The dependent variables were on-task and off-task behavior. The researcher and the teacher collaborated to choose the target behaviors and create their definitions. On-task behavior was defined as the participant engaging in the assigned task from the teacher and was tailored for the student based on teacher expectations. Trevon's on-task definition was defined as any instance where he was either actively or passively engaged in the assigned task by reading a book silently, talking to the teacher about the assignment, or looking at the work in front of him. Trevon's definition for off-task behavior was individually defined to include any instance in which he was actively off-task such as talking to peers, out of his seat when it was work time, manipulating objects which distracted him from doing a task, turning his supplies into toys, laying/ rolling on the floor or doing a different task than the assigned task.

The researcher requested for Katie to complete the PTR FBA summary form regarding the specific events that surround the behavior. The researcher met with Katie to review the form and create a hypothesis surrounding Trevon's behavior. The researcher and Katie then developed the behavior measurement rating they would use to collect data surrounding Trevon's behavior. The Individualized Behavior Rating Scale Tool (IBRST; Iovannone, 2014) was utilized to measure Trevon's behavior each day. Katie delivered a rating score of one to five for Trevon's on-task and off-task behavior during independent reading each day. On the IBRST, on the off-task scale, a score of 5 corresponded to Trevon being off task for 100% of the academic period, 4 = 75%, 3= 50%, 2= 25% and 1= 0% off task. Similarly, a score of 5 on the on-task rating scale corresponded to 100% on task during independent reading, 4= 75% on task, 3 = 50%, 2= 25% and 1 = 0% on task.

Experimental Design

An AB research design was utilized to evaluate the effects of the PTR process on student on-task and off-task behavior.

Procedure

Baseline

During baseline, no modifications were made to the typical classroom procedures. The researcher informed the teacher to continue with class as she usually would.

PTR Intervention

The researcher met with the teacher and collaboratively formed the BIP. The researcher provided the teacher with a menu of intervention strategies and the teacher selected strategies from each section (Prevent, Teach, and Reinforce) that she felt were most feasible for her in her classroom. The researcher indicated which of her chosen strategies would be most applicable and best match the function of the student's problem behavior to comprise the BIP. The researcher conducted teacher trainings for the implementation of the strategies on the BIP. Teacher trainings utilized BST where instructions, modeling, rehearsal, and feedback occurred until the teacher felt comfortable with each strategy on the plan.

During intervention, the procedures written in the BIP were implemented in the classroom. The prevent strategies used were: Provide choices at the beginning of the academic activity, curriculum modifications and adaptations, review expectations and provide non-contingent reinforcement. Specifically, providing choices meant Katie offered Trevon options before the academic task and provided the option he chose. Curriculum modifications and adaptations meant Katie broke down the task into shorter and fewer assignments, comprised his reading plan of books on his level, described the expectations and requirements for each moment

and gradually increased the work contingent upon the absence of problem behavior. Reviewing expectations looked like Katie explaining the instructions individually to Trevon, asking him if he understood the instructions, and reviewing the behavior and academic expectations on his chart. Lastly, increase non-contingent reinforcement meant Katie provided Trevon escape from the task and attention throughout the academic period. The teach strategies used were: Self-monitoring, gaining adult attention appropriately, and functionally equivalent replacement behaviors. Self-Monitoring consisted of Katie reviewing Trevon's daily plan with him, asking him if he had any questions, asking him to repeat the steps, delivering praise to Trevon for repeating the steps, and reviewing his daily sheet to discuss sticker usage. Gaining attention appropriately ensured Katie allowed Trevon time to practice the skill. Katie did not call on Trevon when he shouted out but instead called on him when he raised his hand quietly and delivered behavior specific praise. Functionally equivalent replacement behaviors meant Katie taught Trevon to ask for a work check of his daily reading plan. The reinforce strategies used were: Self-Monitoring, asking for attention appropriately, and discontinue reinforcement for problem behavior. Reinforcement for self-monitoring was demonstrated by Katie providing verbal specific praise and choice of access to reinforcers to Trevon for quietly completing his plan. Katie allowed Trevon 10 min with the chosen reinforcer immediately upon him completing his daily plan. Reinforce asking for attention appropriately was demonstrated by Katie providing praise to Trevon when he quietly raised his hand. In order to discontinue reinforcement of problem behaviors, Katie did not deliver attention or provide escape when Trevon engaged in off-task behavior. Instead, she waited for Trevon to get back on-task by ignoring the behavior and using pivot praise and redirection. Once Trevon got back on task, Katie delivered praise to Trevon.

Treatment Fidelity

The researcher completed the teacher implementation fidelity checklist (Appendix A) to ensure the strategies were being implemented as intended. Each strategy was included on the checklist and corresponded to a yes, no or not applicable rating. The teacher received 28 “yes” responses and one “NA” due to the step not occurring on that day. Therefore, Katie’s implementation fidelity was recorded at 100%.

Social Validity

A social validity questionnaire was implemented with the teacher at the end of the study. The survey evaluated the social acceptance and rating of the PTR process and study as a whole. An adapted version of the *Treatment Acceptability Rating Form Revised* (TARF-R; Reimers et al., 1991) was used. The questionnaire was a 5-point rating scale and consisted of 15 items. The rating form assessed the PTR intervention process and outcomes from the teacher’s perspective. It included how effective she found the interventions to be, how she felt about the time it would take to implement the plan, how willing other staff members would be to implement the plan, and if she felt the plan improved her student’s behavior.

CHAPTER THREE:

RESULTS

Intervention Evaluation

Figure 1 displays Mackenzie's on-task behavior data across baseline and intervention phases. During baseline, Mackenzie engaged in low levels of on-task behavior. Upon implementation of the Brain Breaks® videos in the intervention phases, Mackenzie's on-task behavior immediately increased and remained stable with little variability. Experimental control was demonstrated when Mackenzie's on-task behavior level dropped during the reversal back to baseline then immediately increased during the second intervention phase again. The implementation of the Brain Breaks® videos resulted in increasing Mackenzie's on-task behavior during the writing academic period. Mackenzie's average on-task behavior across both baseline phases was 9% and increased to 74% across both intervention phases. During the follow-up session, Mackenzie was on task for 71% of the academic activity. The follow-up data indicate the increase in on-task behavior maintained over a one-week period.

Social Validity

Results from the social validity questionnaire showed high feasibility, acceptability and outcome satisfaction of the Brain Breaks® videos (Table 1). Katie gave a 5 rating of strongly agree to every question on the questionnaire. Katie wrote in the comments section, "The videos were excellent for stimulating dopamine in the brain."

Mackenzie gave all three happy faces on her social validity questionnaire to the questions of I liked the Brain Breaks® videos, I could focus better in class after participating in the videos and I want to keep doing the videos (Table 2). When asked what she liked about the videos, she

said “The caterpillar one”. When asked what she liked about the class time after the videos, she said, “I liked the space one.” When asked what she thought the videos were helpful with, she stated, “Nothing.”

Case study 2: Intervention Evaluation

Figure 2 displays Katie’s IBRST scores for Trevon’s on-task and off-task behavior during baseline and intervention. During baseline, Trevon engaged in high levels of off-task behavior and low levels of on-task behavior. Upon implementation of the PTR BIP strategies, Trevon’s behavior switched and his off-task behavior immediately decreased and on-task behavior increased. When the teacher began fading the intervention, Trevon’s behavior remained stable. Upon returning from Christmas break, Trevon’s behavior returned to baseline levels. The researcher and teacher agreed to implement a reinforcement system where contingent upon Trevon completing his independent reading assignment, he could choose from three options of toy bins to play with for 10 min. After implementing the reinforcement system, Trevon’s on-task behavior increased and off-task behavior decreased. The follow up data indicated Trevon’s on-task and off-task behavior improvements maintained over a two-week time period. The implementation of the PTR model showed to be effective at increasing Trevon’s on-task behavior and decreasing his off-task behavior during the independent reading academic period.

Social Validity

Results from the social validity questionnaire indicated high likability, feasibility and acceptability of the PTR process (Table 3). Katie reported to enjoy the PTR process, felt the strategies helped improve Trevon’s behavior, and felt the goal of the intervention fit well with the team’s goals to improve the student’s behavior.

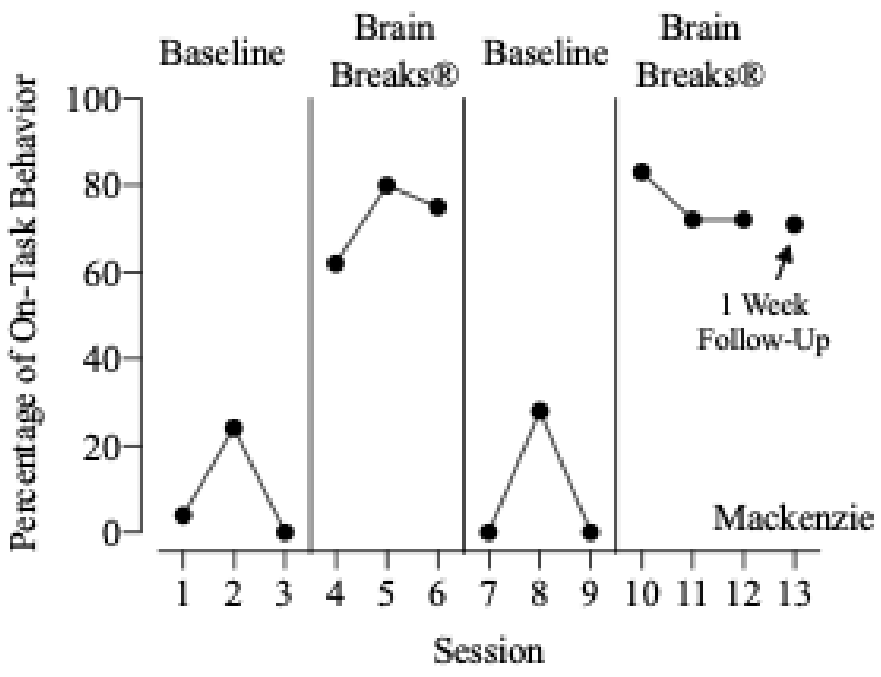


Figure 1. Percentage of on-task behaviors across baseline and Brain Breaks® intervention phases. The one-week follow up probe is represented by the solid triangle.

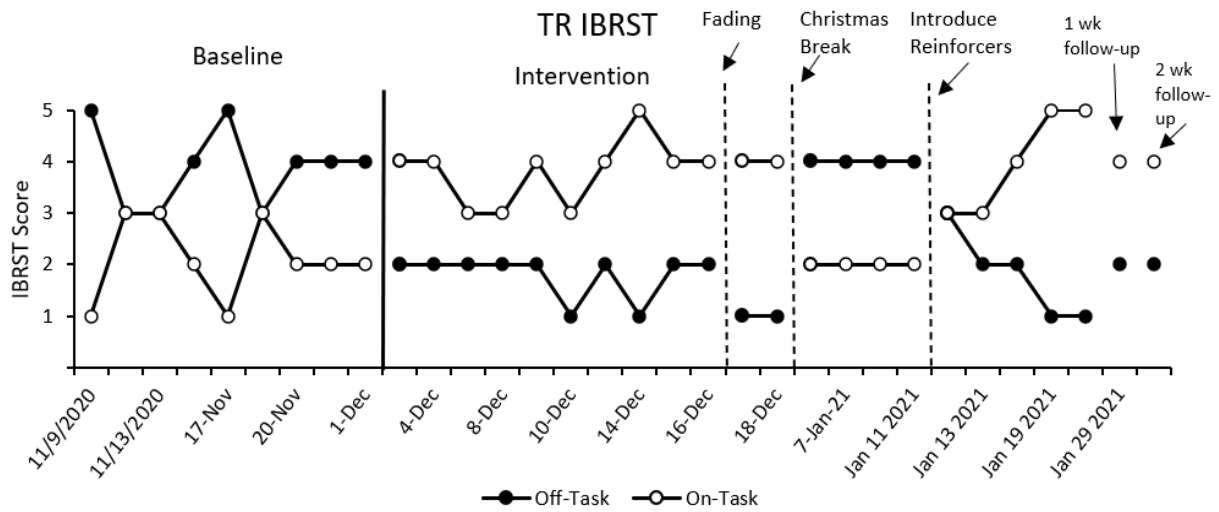


Figure 2. Percentage of on-task and off-task behaviors across baseline and intervention phases. The on-task data are represented by the open circles and the off-task data are represented by the solid circles.

Table 1. Teacher’s Social Validity Rating Results

	Katie
1. Providing the Brain Breaks® video was easy to implement.	5
2. I would implement Brain Breaks® videos in my classroom.	5
3. I would recommend Brain Breaks® to others.	5
4. I saw a positive change in my student’s behavior.	5
5. My student stayed on task more after watching the Brain Breaks® videos.	5
6. Overall, I had a positive experience participating in this study.	5
7. Comments:	“The videos were excellent for stimulating dopamine in the brain.”

Note. 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree.

Table 2. Student’s Social Validity Rating Results

	Mackenzie
1. I liked the Brain Breaks® videos.	3
2. What did you like about the videos?	“The caterpillar one.”
3. I could focus better in class after participating in the videos.	3
4. What did you like about the class time after the videos?	“I liked the space one.”
5. I want to keep doing the videos.	3
6. What did you think the videos are helpful with?	“Nothing”

Note. 1 = sad face, 2 = neutral face, 3 = happy face.

Table 3. Teacher's Social Validity Rating Results

	Katie
1. Given this student's behavior problems, how acceptable do you find the PTR behavior plan?	5 (Very acceptable)
2. How willing are you to carry out this behavior plan?	5 (Very willing)
3. To what extent do you think there might be disadvantages in following this behavior plan?	1 (None) 3 (Neutral)
4. How much time will be needed each day for you to carry out this behavior plan?	4
5. How confident are you that the behavior plan will be effective for this student?	4
6. How likely is this behavior plan to make permanent improvements in this student's behavior?	2
7. How disruptive will it be to carry out this behavior plan?	5 (Like them very much)
8. How much do you like the procedures used in the proposed behavior plan?	3 (Neutral)
9. How willing will other staff members be to help carry out this behavior plan?	1 (No side-effects likely)
10. To what extent are undesirable side-effects likely to result from this behavior plan?	2
11. How much discomfort is this student likely to experience during this behavior plan?	5 (Very willing)
12. How willing would you be to change your routines to carry out this behavior plan?	5 (Very well)
13. How well will carrying out this behavior plan fit into the existing routine?	5 (Very effective)
14. How effective will the intervention be in teaching your student appropriate behavior?	5 (Very much)
15. How well does the goal of the intervention fit with the team's goals to improve the student's behavior?	

*(Adapted from the TREATMENT ACCEPTABILITY RATING FORM-REVISED; TARF-R; Reimers & Wacker, 1988)

CHAPTER 4

DISCUSSION

This study investigated the implementation of antecedent Brain Breaks® videos to determine the effect on increasing on-task behavior for one student. The researcher planned to implement a reinforcement token system intervention phase if on-task behavior did not significantly increase, but it was not necessary. The results were consistent with the literature in indicating that the teacher preferred using the Brain Breaks® videos and felt her students performed better after participating in them (Glapa et al., 2018; Perera et al., 2015; Popeska et al., 2018). The results furthered the literature by indicating the videos were successful in increasing on-task academic behavior through direct observation measurement. In addition to the videos being effective, the behavior change was immediate and maintained over a 1-week follow up probe.

This study adds to the literature by providing support for the Brain Breaks® videos effectiveness at improving behavior in the classroom. This study indicated the videos were effective, preferred, quick and easy to implement in the classroom. The researcher's treatment integrity scores were consistently 100% throughout the study indicating the ease of implementation. The classroom teacher reached out to the researcher to ask if she could show the videos when the researcher was not present because she felt her children enjoyed them and focused better after participating in the videos. With limited research on the Brain Breaks® videos, this study demonstrated an intervention that could help teachers gain another tool for their classroom behavior management toolbox.

Limitations

Multiple limitations of the study with regards to Mackenzie's on-task behavior come from outside factors that could have possibly had an influence on her behavior. The researcher was informed that Mackenzie's mother and psychiatrist were changing her medications to try new dosages and different types. The researcher was not informed which medications were taken on what days and this may have effected Mackenzie's behavior. Family events occurring in the home may have also played a factor in the participant's behavior in school. Different family members in and out of the home before, during and after the holidays could have impacted the participant's performance. Although the researcher targeted the writing academic period, the assigned writing assignment varied day-to-day. The change in writing activity could have had an impact on Mackenzie's performance due to the rigor of the assignment or materials used and preference for different assignments. The adult to student ratio in the classroom may have impacted Mackenzie's performance as well. Throughout the study, there was a behavior technician assigned to Mackenzie and another student in the classroom who would intermittently conference with her about her behavior. There were also days when the school's reading coach pushed into class and helped Mackenzie with her assigned task. The increase in adult assistance, attention, and prompting of Mackenzie back to the task, may have influenced academic engagement levels. To control for the aforementioned limitations occurring throughout the study, the researcher utilized a reversal design to account for the variances occurring throughout all phases.

Future Direction

Future studies should replicate this study utilizing a multiple baseline across participants research design. The primary researcher intended to evaluate the effects across multiple

participants but was unable to due to COVID-19 restrictions. This would allow the evaluation of the effects of the Brain Breaks® videos on multiple participants across multiple classrooms and conclude if the effects generalize to different students. Conducting a larger scale study with more students would further support the effects of the videos and allow the findings to generalize to a larger population of students.

Another future direction could look at a parametric analysis of the amount of time spent in physical activity and the effects on behavior. For example, evaluating the implementation of one versus three videos and the exact duration each video adds to the total time spent engaging in physical activity. The correlation between time spent engaged in physical activity and the duration of time on-task could yield significant changes in classroom dynamics.

Case study 2: This study demonstrated the implementation of the PTR process to be beneficial at increasing one typically developing Elementary student's on-task behavior and decreasing his off-task behavior. The results lead to clinicians use of the PTR process. The current study further adds to the literature by providing support for the PTR model's effectiveness at improving behavior in the classroom. This study indicated the process was effective, preferred, and easy to implement in the classroom. With limited research on the PTR model, this study demonstrated the process that could help teachers gain another tool for their classroom behavior management toolbox.

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APPENDICIES

Appendix A: Teacher Interview Form

1. In your classroom, are there any students who engage in disruptive or off-task behaviors during academic instruction on a daily basis (disruptive or off-task behaviors may include, but is not limited to, behaviors such as crying, verbally calling out, leaving seat without teacher permission, talking to other students, or playing with toys at desk)?
2. Do the disruptive or off-task behaviors generally require you to stop academic instruction to redirect the behaviors?
3. Do the disruptive or off-task behaviors generally distract other students from academic instruction?
4. In your opinion as an educator, do you feel the student's engagement in disruptive behaviors interferes with his/her academic engagement and academic progress?
5. Are you willing and able to allocate 2-4 min at the beginning of an academic period for potential participants to engage in physical activity prior to academic instruction?
6. Are you comfortable with the primary researcher and research assistants observing potential participants in your classroom during academic instruction?
7. Please review the participant inclusion and exclusion criteria below and select up to 3 students who you believe meet the criteria.

Inclusion criteria:

- a.) Willingness to participate in physical activity based on verbal report
- b.) Displaying disruptive behavior during academic instruction
- c.) Exhibiting no medical conditions preventing participation in physical activities

Exclusion criteria:

- a.) Repeated school absences (one per week for three consecutive weeks),
- b.) Severe self-injurious or aggressive behavior that may put the researcher, participant or teacher in harm's way
- c.) Likelihood of problem behavior when required to engage in physical activity

Student Nomination List

Student 1:

Student 2:

Student 3:

8. Based on the student who returned the signed consent form, please explain all the disruptive behaviors the student typically engages in.

Appendix B: Recruitment Flyer



Classroom Physical Activity: Does the Implementation of Brain Breaks® Increase On-Task Classroom Behavior?

PARTICIPANTS NEEDED FOR A RESEARCH STUDY ON CLASSROOM MANAGEMENT!

Purpose:

The purpose of this study is to evaluate the effectiveness of students engaging in physical activity Brain Breaks® videos before a problematic academic period on increasing on-task behaviors in the classroom.

Teacher Eligibility Criteria:

- Willing to give 2-4 min of class time to allow students to engage in physical activity Brain Breaks® videos before an academic activity
- Consent to allow this study to be conducted in your classroom
- Nominate at least 1 student to participate in the study based on inclusion criteria
- Allow researcher and/or research assistant to observe students during academic task

Student Eligibility Criteria:

- Ages 5-10 years old
- Engages in off-task behavior for at least 30% of the time during an academic task
- No health/medical issues that restrict the child's engagement in physical activity
- No problem behavior when asked to engage in physical activity

If you have any questions or are interested in participating and have students that may benefit from this study, please contact:

Peyton Stipes, B.A., BCaBA
Applied Behavior Analysis Master's Student
The University of South Florida
Cell: (813) 597-8641
Email: plstipes@usf.edu

Appendix C: Treatment Integrity Checklist

Baseline Steps	Yes= Completed No= Not Completed
1. Ensure students have not engaged in physical activity within 30 min of observation	
2. Remind teacher to instruct class per usual	
Score	/2 = _____ %

Brain Breaks® Condition Steps	Yes= Completed No = Not Completed
1. Ensure students have not engaged in physical activity within 30 min of observation	
2. Present Brain Breaks video	
3. Verbally state “If you want to play, stand up and follow along”	
4. Allow students to engage in activity	
5. Do not prompt engagement with video	
6. Allows student to take a break from activity if student requests one	
7. Remind teacher to instruct class per usual	
Score	/5 = _____ %

Appendix D: Social Validity Questionnaire (Teacher Version)

For each question, please circle the number that best represents the response that you feel best fits your answer. In addition, please provide any comments or feedback that you would like to share.

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

Providing the Brain Breaks® video was easy to implement.	1	2	3	4	5
I would implement Brain Breaks® videos in my classroom.	1	2	3	4	5
I would recommend Brain Breaks® to others.	1	2	3	4	5
I saw a positive change in my student’s behavior.	1	2	3	4	5
My student’s stayed on task more after watching the Brain Breaks® videos	1	2	3	4	5
Overall, I had a positive experience participating in this study.	1	2	3	4	5
Comments:					

Appendix E: Social Validity Questionnaire (Student Version)

For each statement, please circle the face that best matches what you think.

1. I liked the Brain Breaks® videos.



What did you like about the videos?

2. I could focus better in class after participating in the videos.



What did you like about the class time after the videos?

3. I want to keep doing the videos.



What did you think the videos are helpful with?

Appendix F: Teacher Implementation Fidelity Checklist

Date: 1/29/2021

Teacher: Katie

Participant: T

Observer: PS

Interventions PREVENT	Implemented Correctly?
<p><u>Provide Choices</u></p> <ul style="list-style-type: none"> • Provided Trevon with choices at the beginning of the task • Provided the choice that was made <p><u>Curriculum Modifications and Adaptations</u></p> <ul style="list-style-type: none"> • Broke down task into shorter and fewer assignments • Comprised reading plan of books on Trevon’s level • Described requirements and expectations for each moment • Increased work contingent upon the absence of problem behavior <p><u>Review Expectations</u></p> <ul style="list-style-type: none"> • Explained instructions to Trevon • Asked Trevon if he understood the instructions • Reviewed the behavior and academic expectations on his chart <p><u>Increase Non-Contingent Reinforcement</u></p> <ul style="list-style-type: none"> • Provided escape and attention throughout the academic period 	<p>Y / N / NA Y / N / NA</p> <p>Y / N / NA Y / N / NA Y / N / NA Y / N / NA</p> <p>Y / N / NA Y / N / NA Y / N / NA</p> <p>Y / N / NA</p>
TEACH	
<p><u>Gaining Adult Attention Appropriately</u></p> <ul style="list-style-type: none"> • Allowed time to practice the skill • Did not call on Trevon when he shouted out • Called on Trevon when his hand was raised • Delivered behavior specific praise <p><u>Self-Monitoring</u></p> <ul style="list-style-type: none"> • Reviewed daily plan with Trevon • Asked if Trevon had any questions • Asked Trevon to repeat the steps • Delivered praise to Trevon for stating the steps • Reviewed the sheet daily to discuss sticker usage <p><u>Functionally Equivalent Replacement Behaviors</u></p> <ul style="list-style-type: none"> • Taught Trevon to ask for a work check 	<p>Y / N / NA Y / N / NA Y / N / NA Y / N / NA</p> <p>Y / N / NA Y / N / NA Y / N / NA Y / N / NA</p> <p>Y / N / NA</p>
REINFORCE	
<p><u>Reinforce Self-Monitoring</u></p> <ul style="list-style-type: none"> • Provided verbal specific praise to Trevon for quietly completing his plan • Presented choice of reinforcers to Trevon for completing his plan • Provided 10 min for Trevon to engage in chosen reinforcer <p><u>Reinforce asking for attention appropriately</u></p> <ul style="list-style-type: none"> • Provided praise to Trevon for quietly raising his hand 	<p>Y / N / NA Y / N / NA Y / N / NA</p> <p>Y / N / NA</p>

<u>Discontinue reinforcement of problem behaviors</u> <ul style="list-style-type: none"> • Did not deliver attention or provide escape when Trevon engaged in off-task behavior • Waited for Trevon to get back on-task • Ignored the behavior • Used redirection/ pivot praise • Delivered praise when Trevon got back on-task 	Y / N / NA Y / N / NA Y / N / NA Y / N / NA Y / N / NA
Behavior Plan Assessment Implementation: Total # of Y/Y + N total	