The Impact of the Combined Use of Video Modeling, Immediate Feedback, and Audio-Visual Reminders on the Behaviors of Students with Autism Spectrum Disorder Within An Inclusive Classroom Setting

Kia R. Felder Williams

EDRS 823: Advanced Research Methods in Single Subject/Case Design

George Mason University

December 2022

Final Papers

Excellent work, Kia! In just one short semester, you managed to learn about a new research method, design a robust study, implement it, and analyze the data. That is truly impressive. I love the level of detail that you've provided. Your Introduction and Lit. Review sections offer a solid justification for your study. Nice job with single-subject research questions. The Method is full of excellent detailed descriptions (love how well you described your participants and setting; great description of the IV with all its components; excellent operational definitions of target behaviors; great job with IOA, procedural reliability, and social validity). Great Results and Discussions section. Your results show great change in the behavior. I absolutely love and appreciate your Reflection!

Here are just a few comments for your future work: (1) the graph shows the strong evidence of the functional relation (rather than high level of effectiveness:) - you need to be careful with those grand conclusions in a single-subject study; (2) remember that for each individual participant you should first report components of the visual analysis within a phase and only then change across phases; (3) check out some APA components (e.g., reporting descriptive statistics in-text).

P. S. There are still some comments in the paper from previous feedback. It would be better to remove those for the final clean submission:)

P. P. S. Any chance we could receive an IRB approval retrospectively? This would be an awesome presentation and possibly a publication:)

Abstract

The Caught Being Good Game (CBGG) is an adapted classroom management intervention. In the CBGG, students work as teams to earn points for engaging in appropriate behavior during classroom activities. This single subject/case design study examines the impact of a combination of animated video modeling, immediate feedback and audio-visual reminders on off-task and on-task behaviors of students with a primary disability of Autism Spectrum Disorder (ASD). Utilizing Class Dojo videos and a guided personal reflection as the intervention, students have the ability to view an exemplar model of appropriate moods and attitudes, behavior, decision making, and perseverance. During baseline, students were observed in the general education math class and on and off-task behaviors were tallied in 30 min sessions across 5 days. As the intervention/treatment was introduced, students experience an animated video model with immediate feedback and visual reminders, and an audiovisual point system. The intervention study was implemented with 4 students with ASD in a public elementary school, within a 5th grade inclusive general education math class. Using multiple baselines, and ABAB phases, the participants were exposed to the intervention videos and then their behavior was monitored using a gamified behavior chart (Class Dojo). The four participants were awarded points during whole group instruction for engaging in behaviors in line with classroom expectations; and experienced a deduction of points for off-task behaviors. On-task behavior gains were observed across all participants. Implications of these findings, including recommendations for future iterations of the CBGG and uses for visual reminders and immediate feedback are discussed.

Keywords: *on-task behavior, off-task behavior, video modeling, audio-visual reminders, immediate feedback, Autism, self-management*

The Impact of Video Modeling, Immediate Feedback, and Audio-Visual Reminders on the Behaviors of Students with Autism Spectrum Disorder Within An Inclusive Classroom Setting

Educators report that responding to disruptive student behavior is among the most challenging task of classroom management (Westling, 2010). Intervention strategies for younger students who engage in disruptive behaviors are a need that continues to escalate. Teachers require strategies, techniques, and interventions to implement in their classroom to reduce unwanted behaviors, and increase preferred behaviors (Tanol et al, 2010). Students require visual, tangible incentives to encourage preferred behaviors in 'real time' (Qiao et al, 2022). One tool that may be used to promote preferred behaviors, that combines evidence-based practices of immediate feedback and visual reminders, is the Class Dojo class management system. This management system is a gamified version of a cross between the Caught Being Good Game (CBGG) and traditional behavior charts. This system has built in videos on moods and attitudes, respect, empathy, good choices, and other social emotional/behavioral (SE/B) domains that are used to model what acceptable behavior looks like, and possible and preferred responses to difficult situations.

Literature Review

The CBGG has been successful in rewarding preferred behaviors and reducing non-preferred behaviors in the classroom (Bowman-Perrott et al., 2016). Successful implementation has been effective in kindergarten (Donaldson et al., 2015; Tanol et al, 2010), where the foundation of expected social and emotional behaviors are built, and other studies in elementary classroom environments (Wahl et al., 2016), and adolescent students (Mitchell et al., 2015) have been successful.

Behaviorism

B.F. Skinner (1987) hypothesized that student behavior can be understood through the motivations, reinforcers, and punishments imposed upon students by teachers. Student motivation can be manipulated by teachers using systems of reinforcements and punishments to increase student engagement and learning. Educators often apply Skinner's theory in an extrinsic reward system in which teachers essentially bribe students to exhibit preferred behaviors in return for a handful of skittles or gummy bears. Researchers have conducted many studies on the relationship between external rewards and intrinsic motivation. A recent study showed that, compared with delayed rewards, rewards delivered immediately after the experiment enhanced the participants' intrinsic motivation (Liu et al, 2022). Researcher further defended the use of an external reward system as an effective classroom management strategy. Affirming Skinner's theory, these perspectives posit that rewards may be used to strengthen student persistence and gradually demand more from students over time.

Other researchers have warned that a behaviorist reward system may have detrimental effects. Theories include students becoming demotivated by external rewards because they focus on short-term performance goals, fail to make long-term learning goals, and lose their intrinsic motivation to learn (Mader, 2009). Kohn, 1993, when writing about the problem with gold starts, further states that students lose their sense of self-determination and interest in learning and the topic when regulated by a system of rewards. Freiberg and Lamb (2009) argued that a behaviorist approach has failed to facilitate student self-direction and self-discipline and a behavior change with permanence.

Immediate Feedback/Self-Regulation

Early evaluations of the CBGG yielded positive results on student self-regulation. One of the seminal studies on the efficacy of the CBGG was done by Robertshaw and Hiebert (1973). This study demonstrated the efficacy of the CBGG in a first-grade classroom, awarding teams points in the form of tokens for good behavior. Behavior improvements were noted in the extremely disruptive behavior and activity completion for one student and subsequently the behavior of the whole class increased. In other early research, implementation of the CBGG led to decreases in disruptive behavior in a fourth-grade class (Flower, 2014) and an increase in appropriate social behavior in three PE classes (Patrick et al., 1998). This study also included a component where teams could also lose points for atypical behavior.

Early research in the 1980s, 1990s, and early 2000s was limited; however in recent times the CBGG and modified CBGG have successfully been used to target a variety of behaviors: the reduction of rule violations (Tanol et al., 2010), increase of on-task behavior (Pennington & McComas, 2017), and the combined decrease in disruptive behavior.

Classroom Management

Inclusive classes using technology in its implementation has been researched (Lynne et al., 2017) with students with emotional and behavioral disorders (EBD) (Groves & Austin, 2017, Lynne et al., 2017). Seventy teachers (38 special education and 32 general education teachers) completed a questionnaire using Likert-type scales to describe several traits and conditions about themselves and students with challenging behavior. Results indicated that most teachers did not use many effective strategies or receive sufficient support, and viewed challenging behavior as having an adverse effect on them and their students. Still most believed most challenging behavior was learned and could be improved. Although they felt they had learned about how to deal with “most” challenging behavior through experience, most did not perceive their

professional preparation to be adequate. Regression analysis demonstrated that in-service and preservice preparation were predictive of confidence and the number of strategies used for addressing challenging behavior.

Notably, the researchers had the teacher record points discretely throughout the class and announce them to students at the end when the game was finished. Despite promising results, neither intervention was withdrawn with a return to baseline phase, limiting the conclusions that can be drawn.

Technology and Gamification

Educational researchers stress the importance, relevance, and pervasiveness of technology in the lives of current students. With recent international pandemics, schools have been forced to implement technology to engage and educate students. Gamification is typically implemented digitally. However, digital gamification is not always possible because of limited resources and logistical problems. It is thus necessary to explore low-threshold gamification methods that can be easily adopted in classrooms. One such method is non-digital gamification using physical game design elements. Currently, the literature provides a limited understanding of the design and effects of non-digital gamification (Qiao et al, 2022).

Purpose and Research Questions

Children with ASD may pose particular challenges to general education teachers not well versed in social emotional/behavioral strategies. Children with Autism have difficulty with social interactions, particularly in understanding the nuances of social behavior (Robertson et al, 2003). Displays of atypical behaviors may interfere with positive relationships. Tools to assist children with self-managing behavior are critical, and the catalyst of this study. The research questions that guided the intervention study were: (1) Is there a functional relation between a combination

of animated video modeling, immediate feedback, and visual reminders on increased on-task behaviors for four students with ASD? and (2) Is there a functional relation between a combination of animated video modeling, immediate feedback, and visual reminders on decreased off-task behaviors for four students with ASD?

Method

The current study was conducted inside an inclusive 5th grade general education classroom, at an urban public elementary school, in the 3rd large public school district on the east coast. The classroom consisted of 24 students of which 4 of those students were participants in the study. Before the study began, written consent was obtained from parents to collect data on whether animated video modeling, visual reminders, and immediate feedback impacted their students off-task and on-task behavior in the general education classroom (push-in services). Participants were fifth-grade students (n=4), ranging in ages from 9-11. Parents did not give consent for video recording and increased attention was given to interobserver agreement and fidelity, discussed in the *Methods* section.

Participants

The four participants receive core instruction in Science, Health, and Social Studies in a self-contained classroom and push into core content general education classes in Reading, Math and specials, including Spanish, Art, Music, Physical Education, lunch, and recess. The inclusion criteria (see Table 1) delineated each participant as a student with disabilities, coded with Autism Spectrum Disorder (ASD), has and IEP that includes SE/B goals, has a Behavioral Intervention Plan (BIP), and service hours in an inclusive general education environment. Students excluded from this study were students whose primary disability was not ASD, students who did not have behaviors that required a BIP, or social emotional deficits that required SE/B goals and students

whose behaviors did not meet the standard of the eleven operationalized definitions included under off-task behaviors.

During the study, the behaviors of four participants were monitored. Data was collected during their first period Math class over a 30-minute period, during whole group and independent work sessions. The participants of this study, Antoine, Bradley, Chadwick, and Denim, are four Black/African American, male, 5th graders with a primary disability of ASD, and an Individualized Education Program (IEP) addressing social emotional/behavioral (SE/B) and academic deficits (see Table 2). All participants have a BIP to assist the adults who interact with them in recognizing triggers, strategies, and replacement behaviors in order to mitigate crises.

Antoine is a 5th grade, 11-year-old African American male student with ASD. He also has comorbidities of ADHD and an Anxiety disorder. He is a student with an IEP with reading comprehension, math calculation and SE/B goals in the area of self-management. Antoine has a BIP for aggressive behaviors that include kicking, biting, throwing shoes and other objects, and attacks on teachers and peers. He has been previously retained during the 2021-22 school year, and this is his second year in 5th grade. He is intrinsically motivated to learn new material; however, Antoine displays off-task behavior 50% of the time when the work is challenging and he is not able to cope with the rigor or the expectations of others.

Bradley is a 5th grade, 10-year-old African American male student with ASD. Bradley has an IEP that contains phonics, phonemic awareness, reading fluency, math problem solving, and SE/B goals addressing self-management. He has a BIP for non-aggressive behaviors including using inappropriate language and elopement. Bradley has strong math calculation skills but struggles with math problem solving due to language and comprehension deficits. He

struggles with staying on-task and disrupting others in an attempt to avoid attending to his own work.

Chadwick is a 5th grade, 9-year-old South African male student with ASD. He is an international student experiencing United States schooling for this first time. He has been in the U.S. for two years and in the public school system for one year. He has an IEP with a reading comprehension, writing fundamentals, and SE/B goals for self-regulation. He also has receives related services in the area of Occupational Therapy consult services and Adaptive Physical Education. Chadwick was born prematurely and continues to be small for his age.

Denim is a 5th grade, 10-year-old African American male student with ASD and ADHD. He has an IEP with a reading comprehension, math problem solving, writing fundamentals, speech expressive and receptive language goals, and a BIP for non-aggressive behaviors including talking back to teachers and other adults and elopement. Denim elopes as an escape from challenging work and social situations and finds comfort in the bean bag lounge in the special education chairperson's office.

Setting

This study took place in a public elementary school, with a population of 404 students in grades K3-5, and 73 teachers and staff. The demographic composition of the school is 87% Black/African American, 7% Hispanic, 3% White, 1% American Indian, 1% Asian
1% Two or more races. 92% of the population receives Free and Reduced Meal Subsidy (FARMS), 91% ride the school bus, 6% are walkers, and 3% are car riders. The school has an Autism Program, where 150+ students with ASD access the general education curriculum in inclusive and self-contained classroom environments.

Data collection for observation took place in a 5th grade general education classroom, and treatment took place in the special education chairperson's office. The general education teacher, Ms. D., is a veteran, National Board Certified Teacher with over 20 years of teaching experience. A master teacher, Ms. D. delivered the Math content instruction during this study. The school is divided by wings, and grade levels are aligned with the wings. Wing D is the home of three 5th grade general education classes, one 5th grade Autism self-contained classroom (see Figure 1), one 4th grade self-contained classroom, two World Language classrooms, a sensory room, crisis room, and the special education chairperson's office.

The push-in general education classroom has a total of 24 students who sit at desks arranged in clusters of four and six (see Figure 1). A kidney shaped table is on the right side of the room and is utilized for small group (Tier 2) classroom-based interventions, and independent work as required. At the front of the classroom, spanning the length of the wall, is a 12-foot white board, and 6-foot Smart Board. Instruction, instructional videos, Class Dojo, and announcements are projected on the smart board for the duration of each class. Along the walls are colorful anchor charts that remind the students of classroom norms, expectations and a visual schedule that guides their daily activity. In the right corner of the room are computers and a cool down area for behavior management. In the age of COVID-19, RSV, and the flu, along the floor are brightly colored tiles and stickers that signify to the students where to stand to maintain social distancing, in an effort to keep students healthy.

With a district wide bus driver shortage, there is an occasional late bus that impacts the start and flow of morning procedures. The school day begins at 7:45 AM, and data collection took place in the first period of the day after the students had breakfast. Breakfast is from 7:45-8:00 AM and first period promptly begins at 8:05, after morning announcements. The

participants of this study were brought to the inclusive classroom setting from their self-contained classroom at 8:00 AM by their paraprofessional support, Mrs. A. The paraprofessional remained in the general education classroom with the students for the entire Math block, and was not absent for the duration of this study.

Independent Variable

The intervention (see Table 2) consists of animated video models of preferred behaviors in the classroom setting that directly assist the participants with their SE/B goal. "Mojo", the main character in these videos, models positive and negative responses and consequences, and leads the participants through a culminating journaling activity. The videos range in length from 3:50 – 7:00 minutes and the journaling/reflection activity is intended to be completed in 15 minutes. The video modeling and reflection intervention used in this research study were videos in the *Moods and Attitudes*, *Big Challenges* and *Perseverance* collections. During treatment, participants completed one to two videos and a journaling activity per session.

Class Dojo

The use of technology to aid with classroom management has been gaining popularity. Class Dojo is a free online education tool launched in 2011. The app keeps track of points earned and lost against certain pre-programmed criteria and provides immediate feedback via animations and audio alert in order to improve student behavior. The platform comes pre-programmed with certain criteria like: on-task, hard work, off-task, and users can customize the app with their own target behaviors. Students may be rostered individually or as a group and the visual may be projected on an interactive whiteboard, screen, or wall for all students to see the distribution of points. Keeping track of behaviors using Class Dojo has been reported to lend

itself to more data points being taken and progress monitored than those tracked using paper and pencil (Krach et al, 2017).

Video Modeling

Research on variations of video-based intervention suggest that they can be effective for teaching individuals with disabilities a range of socially significant behaviors. Among the relevant studies and reviews, particular emphasis has been given to applications of these procedures for participants diagnosed with autism (Rayner er al., 2009). The term 'video-based intervention' is a broad term inclusive of procedures that involve presenting video footage as the independent variable for intervention. Thus, VBI conceptually includes approaches described as video modeling, video prompting, video self-modeling, computer-based video instruction and video priming (Rayner et al., 2009).

In video modeling (VM), a child watches a video of a target behavior prior to having an opportunity to engage in that behavior. Growing literature supports the use of video modeling across populations, skills, and settings (Buggey & Ogle, 2012; Mason et al., 2013; Mason et al., 2012). In VM, participants cognitively internalize and later reproduce the observed behaviors (Mason et al., 2012). The integration of technological modalities into instruction provide a precise and accurate exemplar of the skills being taught (Mason et al., 2012). The benefit of VM is that the presentation of the model is uniform across trials and can be repeated and replicated within and across participants. The video modeling that was utilized in this intervention is further outlined in Table 3, Figure 3.

Audio-Visual Reminders

Chiarelli et al. (2015) found that Class Dojo was positively correlated with the conduct of first grade students. The teacher in the study found that she had to redirect the students less when

using Class Dojo then when she was not using it. By year end, student moral had increased. The video and audio aspects of the program provide extrinsic motivation to students. In this study, Class Dojo helped the first-grade students to be more aware of their behavioral choices. This occurred when they received a "buzz," which allowed them to recognize their disruptive behavior and redirect their behavior to more positive actions (Chiarelli et al., 2015). In contrast, students felt good about themselves if they got a "ding" for good behavior and maintained it, thus building, and reinforcing positive behavior. Accordingly, students were enabled to redirect their actions to be successful and reduce interruptions while working in teacher-directed guided reading lessons (Chiarelli et al., 2015). The audio-visual reminders that were utilized in this intervention were for both on-task and off-task behaviors, a pleasant ding that was accompanied by a +1 inside a green circle, or a quick buzz signifying off-task behavior that was accompanied by a – in a red circle. (see Figure 4).

Immediate Feedback

According to theoretical models of self-regulated learning, immediate feedback about progress on a task can promote the development of self-regulated learning skills. Self-regulated learning is defined as “learning that results from students' self-generated thoughts and behaviors that are systematically oriented toward the attainment of their learning goals” (Muis et al., 2015). As Muis (2015) noted, self-regulated learners are more metacognitively aware, more motivated, and generally perform better than less self-regulated learners. Research has shown that students who are better at regulating their learning have higher levels of self-efficacy, experience greater interest in a task, and attain higher levels of achievement. Immediate feedback serves as a key source of information regarding how well one is performing a task. In particular, immediate feedback provides information concerning goal and learning progress, which sustains motivation

and boosts self-efficacy. Furthermore, as previous research has shown, immediate feedback can have positive benefits on cognitive performance, which translates into higher levels of achievement. The immediate feedback that was utilized in this study can be seen in Figure 5. Words that describe the on-task or off-task behavior accompany the corresponding points and sounds alerting the participants of their preferred or non-preferred behavior.

Materials

Participants in this study utilized a Chromebook personal computer and Class Dojo during periods of observation. Antoine, Bradley, Chadwick, and Denim utilized district issued Chromebooks to participate in whole group instruction and small group or individual assignments within the inclusion classroom. The computer was connected to the district WIFI, which enabled participants to access each program that was used during whole group instruction including Nearpod, Pear Deck, YouTube, Quizizz, and Kahoot!, as well as the Google Suite that enabled the participants to create Google Docs, slides, and utilize accessibility features including text to speech, and online dictionaries, as needed. Students were also able to access ClassDojo on their Chromebooks to visually see their accumulation of points during periods of observation. Although the real-time data was projected on the Smart Board, during times of observation, students could also access the platform on their personal devices.

Baseline Materials

During baseline sessions, the Class Dojo interactive point system was used to note whether behaviors were on-task or off-task and points were awarded to participants. Points were deducted for off-task behaviors. Whether on-task or off-task, each behavior within those categories received a value of +1 or -1 point. In baseline, the Class Dojo images were not projected on the smart board and the sound was turned off so students did not receive immediate

feedback or audio-visual reminders for appropriate or non-preferred behaviors. On the final day of baseline data collection, the data was reviewed for stability. Stability was reached by day 5 for all participants.

Treatment Materials

The materials that were used during the intervention sessions were Class Dojo videos and an online reflection journal. The treatment was implemented daily from 7:45-8:05 am daily during the intervention phase (Phase B). After watching the videos, outlined in Table 3, and receiving explicit instruction by their case manager, students were give a reflection prompt to write about in their online reflection journal.

Dependent Variables

Two target behaviors identified as observable dependent variables were on-task behaviors and off-task behaviors (see Table 3). On-task behaviors were operationally defined with 10 observable, and measurable behavior. Off-task behaviors were operationally defined with 12 observable, and measurable behaviors (see Table 4).

Research Design

An individual case is the unit of intervention and unit of data analysis (Kratochwill, 2010). In this research study, the case is a small cluster of 4 participants. Within this design, the case provided its own control for purposes of comparison. The case's series of outcome variables were measured prior to the intervention and compared with measurements taken during the intervention, and after the intervention. The outcome variables were measured repeatedly within and across different conditions or levels of the independent variable. These different conditions were referred to as phases (e.g., Phase A, Phase B, Phase A_1, Phase B_1).

A combined single-subject research design including a multiple baseline and ABA design was used for this intervention study. Experimental control was further demonstrated by the repeated changes in the dependent variable with each successive introduction of the independent variable. As an experimental design, the central goal was to determine whether a causal relation or functional relation exists between the introduction of a researcher-manipulated independent variable or intervention and change in a dependent variable or outcome (O'Donnell, & Kratochwill, 2003). Experimental control involves replication of the intervention in the experiment (Horner, et al, 2005) and this replication is addressed with introduction and withdrawal of the independent variable and a staggered introduction of the independent variable across different points in time (i.e., multiple baseline design).

Data Collection Procedures

Data collection was completed daily. In 3 of the 5 sessions in each Phase, data was also collected by the paraprofessional, Mrs. A., who accompanied the inclusion students to the classroom three days a week. The baseline and treatment procedures are defined below.

Baseline Procedures

During the baseline phase, participants attended the Math push-in inside the general education environment. As the participants entered the class, the other 5th grade general education students were already engaged in the morning Warm-up. Antoine, Bradley, Chadwick and Denim quickly got situated, took out the materials needed to complete their morning work. Each student worked independently during the warmup time. Mrs. A. walked around and observed.

The objective of the warm-up activity is to “wake up” and engage the brain and prepare to attend to instruction. Antoine was consistently irritated after the warm-up because he wanted

to “finish”, which was not necessarily the objective. Chadwick was distracted by the large number of students in the room and the yellow walls. Despite repeating and clarifying directions as necessary for Antoine, he displayed five instances of off-task behavior during baseline due to feeling rushed and ‘annoyed’ by everyone. The participants participated in whole group and small group activities daily for 5 days. The students were working on word problems involving conversion of fractions to percentages. Behavior data was collected by Mrs. A using a paper pencil tracker and by the researcher, utilizing the customized Class Dojo classroom seen in Appendix B, Figure A1.

Baseline data (Phase A) was collected to record all participant behavior inside the general education classroom from 8:05-8:35 AM, during the whole group portion of the math block from October 3-7, 2022. Class Dojo was used by the researcher without projection and without sound, as not to alert the participants when positive or negative activity was recorded. Further, a paper/pencil tracker of off and on-task behavior was completed by the paraprofessional, Mrs. A. The paraprofessional recorded on-task and off-task behaviors of the four participants and Inter Observer Agreement was initiated. Baseline data was recorded again (Phase A_1) following the first Treatment phase (Phase B).

Treatment Procedures

This research study meets criteria of single-case designs (Kratochwill et al, 2010) to include (a) the ability for the researcher to control or manipulate the independent variable, (b) has an acceptable number of data points with a minimum of 5 points in baseline and treatment, (c) the dependent variable was repeatedly cross checked by the paraprofessional and general education teacher across baseline and treatment sessions, and finally (d) there were at least three opportunities to demonstrate the same effect at three different times.This re

During the treatment phase, participants engaged in watching a social emotional/behavioral video (see Table 3), received direct instruction on the video, and completed an online video reflection. Each treatment session was held immediately prior to the Math block. The treatment was held from 7:45-8:05 AM and the portion of the Math block that was observed was 8:05-8:35 AM.

During the Treatment phase (Phase B), held each morning prior to the Math block, participants walked approximately 30 yards from their self-contained classroom to the researchers office. They carried with them all the materials needed for Math class to include pencils, erasers, calculator, workbook, and Chromebook. The session began with reviewing our plans that were listed on a visual schedule on the white board. After the review and quick bathroom break, students watched SE/B videos, received direct SE/B instruction to review and reteach portions of the video, and completed an online reflection journal from 7:45 – 8:05 am. Antoine received the treatment immediately following baseline on October 10; Bradley, October 12, Chadwick October 17, and Demin October 19. During treatment, students' behaviors were observed again in the math block, 8:05-8:35 each morning for five days. This was repeated again following the second withdrawal in Phase B_1.

Maintenance/Generalization Procedures

A maintenance phase was not formally completed. While sufficient time existed, a change in the participant's daily schedule to include three rounds of district RELA, Math, and Science testing interrupted the schedule.

Interobserver Agreement

Observations were carried out by the researcher and one trained paraprofessional. Training took place on the Sunday, October 2, 2022. During training, the paraprofessional, Mrs. A., was provided with an outline for intervention implementation which described both behavior domains. The researcher explained (1) the operationalized definitions of behaviors that fell under on-task and off-task conditions. Data was collected on the presence of 10 on-task behaviors and 12 off-task behaviors. A full list of behaviors, operational definition, examples and non-examples may be found in Table 3.

An aggressive timeline did not afford time for in-class practice, so together the researcher and paraprofessional viewed classroom management videos on YouTube, and utilizing the definitions and checklist (see Appendix A), coded the behaviors independently and compared results until we reached at least 90% agreement.

IOA data were collected during 60% or three of the five sessions in each phase. This is in concert with the What Works Clearinghouse (WWC) Standards recommendations for collection of IOA during single-case research designs (Kratochwill et al., 2010; WWC, 2017). IOA was calculated using interval-by-interval agreement and dividing the number of agreements by the total number of agreements plus disagreements and multiplying by 100 to obtain a percentage. Mean IOA was 95% for on-task (range = 90%–100%) and 90.05% for off-task (range = 80.1%–100%). Mean IOA all outcome variables was greater than 90%, which is above the threshold in the WWC Standards. IOA never fell below 80%.

Procedural Reliability

The checklist used for observation was both a paper pencil tracking sheet (Appendix A) and the digital tracker, Class Dojo (Appendix B). The paraprofessional, Mrs. A., completed a two-sided data sheet, where one side was on-task and the other side was off-task, and the

researcher complete the digital tracker. Three times weekly across all phases, tallies were compared for on-task and off-task behavior across participants.

Treatment fidelity

The researcher and paraprofessional completed a paper and digital checklist for each session. In addition, the self-contained classroom teacher, not affiliated with the study, observed 20% of intervention sessions through the duration of the intervention and used the same on-task and off-task checklist. All three checklists for these sessions were evaluated comparing the total on-task and off-task tallies for each participant scored between the three observers. If there was perfect agreement, there was no further discussion. When varying tallies, greater than one point difference, we discussed the difference and came to agreement. IOA between the researcher and special education self-contained teacher was 100% for Antoine, Bradley, Chadwick, and Denim. IOA between the researcher and paraprofessional was 100% for Antoine and Bradley and 99% for Chadwick and 98% for Denim. Team IOA was 99.6%.

Procedural fidelity

The researcher completed a four-item procedural integrity checklist (Appendix C) across all treatment phases. The paraprofessional observed 60% of all treatment sessions to determine if procedures were followed with fidelity. Across all participants, procedures were followed with 100% fidelity.

Social Validity

Participants were given a private and anonymous Likert-type scale survey at the end of the study and submitted the survey via a Google Form. The survey consisted of 13 questions. The participants selected responses on a five-point satisfaction scale from 1 (*not at all helpful*) to 5 (*extremely helpful*). The questions/statements (see Table 4) were asked and the results are

reported in Table 5. The participants scores ranged from 53-65 and collectively gave the Class Dojo intervention, the presence of visual modeling, audio-visual reminders, and immediate feedback, an extremely high level of acceptability and satisfaction.

Teacher rating

The paraprofessional and general education classroom teacher were given the Intervention Rating Profile (Wilt & Martens, 1982). This private and anonymous survey consisted of 20 items rated on a six-point scale. The Likert-type rating scale ranged from 1 (*strongly disagree*) to 6 (*strongly agree*). Total scores are obtained by summing all items with higher summed scores indicating greater levels of acceptability. A total score of 70 would represent a moderate level of acceptability. The teacher scale yielded total scores of 115 and 120. Collectively, the teachers rated the intervention with an extremely high level of acceptability. They believed the intervention was extremely helpful, felt it was adequate to address the behavior in their classroom, and could be implemented with classes of more than 30 students.

The paraprofessional and classroom teacher were asked to fill out one questionnaire on the intervention and then denote whether the video modeling, immediate feedback or visual reminders were the defining feature that influenced behavior. There was also a section on the questionnaire for written feedback. The paraprofessional and general education classroom teacher scored the intervention favorably on the IRP ($M = 117.5$). She slightly agreed, agreed, or strongly agreed with all statements except for if the intervention could be implemented for classes greater than 30 students.

Student rating

Four participants completed the five-point survey following the final day of data collection. Responses to each item are outlined in Table 5. The mean score across the

respondents was 4.69 (range = 4-5). In general, participants felt that being able to see and hear their points helped them to increase their on-task behaviors (*M*=5.0) and decrease their off-task behaviors (*M*=5.0), experienced a hard time when they did not complete the video and reflection before inclusion classes (*M*=5.0), and felt that seeing and hearing alerts for on-task and off-task helped other students in the class behave (*M*=4). Four students provided additional written feedback. Two of these students indicated that they thought that the ding and buzz would "get on their nerves" but they like it and it made them feel proud or 'embarrassed a little'.

Data Analysis

There was a marked impact of the intervention on frequency and intensity of student behavior. A comparison of baseline behaviors and behaviors present at the conclusion of Phase B_1 were reviewed. The baseline data that was collected the 5 days prior to intervention is used in the calculation of the mean frequency of Behavior prior to treatment (see Table 7).

Visual Analysis

A visual analysis was completed in accordance with Kratochwill et al., (2013). To assess the effects within SCDs, six outcome-measure features were used to examine within-phase and between-phase data patterns: (a) level, (b) trend, (c) variability, (d) immediacy of the effect, (e) overlap, and (f) consistency of data patterns across similar phases. These six features were assessed individually and collectively to determine whether the results from a single case study demonstrated causal relation.

In addition to analyzing the six outcome measures, the researcher also examined data patterns across phases by considering the immediacy of the effect, overlap, and consistency of data in similar phases. Immediacy of the effect refers to the change in level between the last three data points in one phase and the first three data points of the next. The more rapid the effect, the

more convincing the inference that change in the outcome measure was due to manipulation of the independent variable. Delayed effects might actually compromise the internal validity of the study. However, predicted delayed effects or gradual effects of the intervention may be built into the design of the experiment, which in turn would influence decisions about phase length for a particular study. Overlap refers to the proportion of data from one phase that overlaps with data from the previous phase. The smaller the proportion of overlapping data points or the greater the nonoverlap, the more compelling the demonstration of an effect.

Results

Visual Analysis

Results were analyzed primarily through visual analysis to evaluate (a) level, (b) trend, (c) variability, (d) immediacy of the effect, (e) overlap, and (f) consistency of data patterns across similar phases (Horner et al., 2005; Kazdin, 1982). As previously noted, students with ASD display challenges with normative SE/B expectations, and externalizing and internalizing behaviors that are incongruent to age or grade level expectations; therefore, data variability in off and on-task behavior was anticipated. On-task behaviors was also observed and analyzed.

A strong level of evidence standards exist. In baseline a clear problem of high off-task and low on-task behaviors, or the research problem, was evident. A predictable pattern is visible of increasing off-task behaviors and decreasing or stagnant on-task behaviors in baseline and treatment phases. The problem is evident in both baselines and the pattern is predictable in both phases. In each phase of the analysis, a predictable pattern of decreasing off-task and increasing on-task behavior emerged. It is predicted that when a change in the independent variable (videos, discussion, and reflection) is manipulated, off-task behaviors increase almost to pre-treatment

conditions. Based on the demonstrations of this basic effect at different points in time, there is no demonstration of intervention failure.

As can be seen in Figure 1, four out of four participants increased the number of on-task behaviors between 291-540% and decreased the number of off-task behaviors between 380-760%. In addition, all students were able to perform above their baseline throughout both treatment phases when exposed to video modeling, audio-visual reminders, and immediate feedback. For an outcome where increase is desirable, PND is defined as the proportion of observations in the B phase that exceed the highest observation from the A phase.

Figure 1 indicates a high level of effectiveness of the intervention across measures. Across phases baselines were not getting better and treatment levels were maintaining. The low baselines stayed low and treatment data stayed robust and high relative to baselines, resulting in stability. Convincing data and a strong design demonstrated a functional relation between the use of video modeling, audio-visual reminders, and immediate feedback on increased on-task behaviors and decreased off-task behaviors. The behaviors changed as the intervention was introduced in a staggered fashion demonstrating strong evidence of a functional relation. The level, trend and variability of baseline, and immediacy and overlap, level trend, and variability will be reviewed from B_1 and B_2, T_1 and T_2.

Antione. From baseline to treatment phase, Antione made gains on the number of on-task behaviors, increasing from an average of 1 on-task behavior in baseline (Phase A_1) to 4.8 behaviors in Treatment Phase B_1 and 6.4 in Phase B_2. Off-task behaviors saw a similar change decreasing from an average of 11.6 to 4.8 (Phase A_1) and 10.2 to 4 instances in Phase B_2. Across all participants, there are fairly obvious changes in the level and trend of the dependent variable from condition to condition. Furthermore, the latencies of these changes are short; the change

happens immediately. This pattern of results strongly suggests that the treatment was responsible for the changes in the dependent variable.

Bradley. From baseline to treatment phase, Bradley made gains on the number of on-task behaviors, increasing from an average of 1.9 on-task behaviors in baseline (Phase A_1) to 4.2 behaviors in Treatment Phase B_1 and 5.8 in Phase B_2. Off-task behaviors saw a similar change decreasing from an average of 6.4 to 4.6 (Phase A_1) and 2.4 instances in Phase B_2.

Chadwick. From baseline to treatment phase, Chadwick made gains on the number of on-task behaviors, increasing from an average of 2.1 on-task behavior in baseline (Phase A_1) to 4.6 behaviors in Treatment Phase B_1 and 5.04 in Phase B_2. Off-task behaviors saw a similar change, decreasing from an average of 6.7 to 4.4 (Phase A_1) and 2.8 instances in Phase B_2.

Denim. From baseline to treatment phase, Denim made gains on the number of on-task behaviors, increasing from an average of 1.3 on-task behavior in baseline (Phase A_1) to 4.8 behaviors in Treatment Phase B_1 and 6.6 in Phase B_2. Off-task behaviors saw a similar change decreasing from an average of 7 to 4.8 (Phase A_1) and 3.2 instances in Phase B_2.

Off-task behavior

Based on the collected baseline data, a low level of problem behavior would fall between 0-4 instances, moderate level between 5-9, and high level between 10-14. Overall, the participants demonstrated a high level of off-task behavior during both instances of baseline capture. Means further displayed in Table 7.

Variability demonstrates the consistency to which change is taking place. Based on the graph of baseline and intervention data, there was a high degree of control of an intervention

condition and low variability, wherein the data points were clustered within one to two points of each other.

Overall, there is strong functional relation between the independent variable and the participants' off-task behavior. The PND values for all the participants shows that the combination of video modeling, audio visual reminders, and immediate feedback were effective to very effective. For one participant, Denim, there was a a low average PND of 20% on $\mathbf{A_1B_1}$ behaviors of off-task behaviors. After $\mathbf{A_2B_2}$ the average PND was 100% for off-task behaviors. The low PND of 20% would indicate an ineffective intervention; however the PND after B2 indicated not only an average PND of 100%, but a significant immediacy of effect, reduced behaviors with a continuing downward trending line. Carr (2015) noted that an intervention that produces a PND value of 0 – 50% is considered ineffective, 50 – 70% is questionable, 70 – 90% is effective, and above 90% is deemed very effective. The individual and average PND values (see Table 7) for on-task behaviors ranged from 90-100%, an average PND of 97.5%, thus indicating a very effective intervention.

These data show less to no overlap between the baselines and intervention phases. The magnitude of the immediacy of change between the baseline and intervention phases were high. Overall, there was less variability in the datapoints for all participants.

Antoine

The average (level) data points for both the off-task and on-task behavior for Antoine were 100% respectively. The graphs show less variability between the data. The data points showed a flat or stable trend across baseline and treatment phases. The second treatment phase during the off-task sessions depicts a downward trend. Antoine's data shows consistency among similar phases.

There was no overlap across adjacent phases, and the immediacy of change between the baseline and intervention phases are very big.

Bradley

The average (level) data points for both the off-task and on-task behavior for Bradley were 100% respectively. The graphs show less variability between the data. There are stable trends among the datapoints. However, the first treatment phase during the on-task sessions depicted an upward trend. Bradley's data showed consistency among similar phases. There was no overlap across adjacent phases. The magnitude of the immediacy of change between the baseline and intervention phases in both the off-task and on-task behaviors were big. The immediacy of change between the second baseline and treatment phases is even bigger.

Chadwick

The average (level) data points for both the off-task and on-task behavior for Chadwick were 90% respectively. The graphs show less variability between the data. The data points showed a flat or stable trend across board in the on-task behavior but a downward trend for the treatment phases in the off-task behavior. Chadwick's data showed consistency among similar phases. There was one datapoint overlap between the baseline and the first treatment phases on the off-task behavior. It was the first data point or first treatment session, and the overlap may be attributed to the treatment implementation being too early to see an effect. The magnitude of the immediacy of change between the baseline and intervention phases in both the off-task and on-task behaviors were big, but not as large as Antoine's changes.

Denim

The average (level) data points for both the off-task and on-task behavior for Denim were 100% for on-task and 60% for off-task behavior. The graphs show high variability between the

datapoints in each phase. The treatment phases in the off-task graph showed downward trend and the baselines have relatively an upward trend. The first treatment in the on-task behavior shows an upward trend with significant immediacy of effect. The second treatment phase during the off-task sessions depicted a downward trend with significant immediacy of effect, and the second treatment in the on-task behaviors depicted an upward trend and significant immediacy of effect. Denim's data showed consistency among similar phases. There was huge overlap between the first baseline and treatment phases. The magnitude of the immediacy of change between the first baseline and intervention phases in the off-task was less than that of the second baseline and treatment phases.

Discussion

Based on single case evidence standards (Kratochwill, et al., 2010), strong evidence that a functional relation between video modeling, audio-visual reminders, and immediate feedback and a reduction of off-task behaviors and increase in on-task behaviors (with the four students with Autism in this study) exists. Convincing data and a strong design contributed to this causality. The analysis of data indicated an overall increase in the frequency of the identified behaviors. The mean of on-task behaviors increased between 2.91-5.4 across participants. The mean of off-task behaviors decreased between 3.8-7.6 across participants. The immediacy of change was substantial and little to no overlap was present.

Overall, a strong functional relation exists between the independent variable and the participants off-task behavior and on-task behavior. The PND values for all the participants shows that the combination of animated video modeling, audio-visual reminders, and immediate feedback were effective to very effective. The PND values noted that intervention was effective to very effective.

These data show little to no overlap between the baselines and intervention phases. The magnitude of the immediacy of change between the baseline and intervention phases were high. Overall, there was less variability in the data points for all participants. On-task behaviors repeatedly increased across treatment phases and repeatedly decreased across treatment phases.

Practical Implications

The immediate practical implications are that this free platform can provide a no cost, fully customizable platform to manage and encourage on-task behaviors and mitigate off-task behaviors. This platform has embedded evidence-based practices of visual reminders, video modeling and immediate feedback to assist students with self-management of their behaviors, become more active participants in class and make gains on their IEP goals. It also equips general educators with a fun and festive tool that will benefit all students in the classroom.

The students with the most severe behaviors had the strongest immediacy of effect. The implication from this study is that the consistent and intentional use of this platform to mitigate behavior can be helpful to students struggling with self-control. This study demonstrated an effect on accountability and ownership of behavior, that was not the goal, but a subsequent benefit of the intervention for these four young scholars with Autism. Another implication is that this platform can be used at home and parents can become partners with the school in their child's behavior management.

Limitations and Future Research

One limitation is that this study does not allow the identification of which independent variable caused the gains in on-task and decline in off-task behavior. It is unidentifiable if it was the video modeling in treatment or the audio-visual reminders and immediate feedback experienced in the classroom. It is further non-identifiable whether it was positive peer pressure,

or the presence of the researcher in the classroom that caused the flat trend in treatment. There were several other factors that may have contributed to the gains made. Future research could silence the audio-visual sounds and determine if that makes a difference in response in treatment. Further research could utilize the video modeling and not project the Class Dojo and see if that makes a difference in response in treatment.

Reflection

This experience has been beneficial and has crystallized that I desire to use single-subject/single case design methodology for my intervention with a narrative inquiry segment (focus group, critical, or thematic analysis) to capture the qualitative sentiments of parents and participants). This experience has also been beneficial to a PGCPS school that has several students with interfering off-task behaviors that will benefit from this intervention regimen. As a result of sharing this research study with the Principal and parents of Antione, Bradley, Chadwick, and Denim, 34 3rd, 4th, and 5th graders are now participating in this intervention, working on increasing behaviors relevant to social skills and other social emotional/behavioral age and grade level expectancies.

I have experienced the implementation of many reading interventions, but have never been required to capture and analyze data in the way the SSCD requires. The process of SSCD data collection, calculations, visual analysis of level, trend, and immediacy of effect, among others indicators, is appealing to how I personally process information. A framework that allows the participant to be their own control is the method I have been looking for but had not yet been exposed to.

References

Buggey, T., & Ogle, L. (2012). Video self-modeling. *Psychology in the Schools, 49*(1), 52–70. https://doi.org/10.1002/pits.20618.

Bohan, C., Smyth, S., & McDowell, C. (2021). An evaluation of the caught being good game with an adolescent student population. *Journal of Positive Behavior Interventions*, *23*(1), 42-52. https://doi-org.mutex.gmu.edu/10.1177/1098300720928455

Bowman-Perrott, L., Burke, M. D., Zaini, S., Zhang, N., & Vannest, K. (2016). Promoting positive behavior using the Good Behavior Game: A meta-analysis of single-case research. *Journal of Positive Behavior Interventions, 18*(3), 180-190.

Chiarelli, M., Szabo, S. & Williams, S. (2015). Using Class Dojo to help with classroom management during guided reading. *Texas Journal of Literacy Education. 3*, 81-88.

Donaldson, J. M., Wiskow, K. M., & Soto, P. L. (2015). Immediate and distal effects of the good behavior game. *Journal of Applied Behavior Analysis*, *48*(3), 685-689.

Flower A., Mckenna J. W., Bunuan R. L., Muething C. S., Vega R. (2014). Effects of the Good Behavior Game on challenging behaviors in school settings. *Review of Educational Research*, 84(4), 546–571. https://doi-org.mutex.gmu.edu/10.3102/0034654314536781

Fishbein J. E., Wasik B. H. (1981). Effect of the Good Behavior Game on disruptive library behavior. Journal of Applied Behavior Analysis, 14(1), 89–93. https://doi-org.mutex.gmu.edu/10.1901/jaba.1981.14-89

Groves E. A., Austin J. L. (2017). An evaluation of interdependent and independent group contingencies during the Good Behavior Game. *Journal of Applied Behavior Analysis*, 50(3), 552–566. https://doi-org.mutex.gmu.edu/10.1002/jaba.393

Kohn, A. (1993). Punished by rewards: The trouble with gold stars, incentive plans, A's, praise, and other bribes. *New York*.

Ledford, J. R., & Gast, D. L. (Eds.). (2018). *Single case research methodology* (p. 377). New York, NY: Routledge.

Liu, Y., Yang, Y., Bai, X., Chen, Y., & Mo, L. (2022). Do Immediate External Rewards Really Enhance Intrinsic Motivation?. *Frontiers in psychology*, *13*.

Lynne S., Radley K. C., Dart E. H., Tingstrom D. H., Barry C. T., Lum J. D. K. (2017). Use of a technology-enhanced version of the Good Behavior Game in an elementary school setting. *Psychology in the Schools*, 54(9), 1049–1063. https://doi-org.mutex.gmu.edu/10.1002/pits.22043

Mader, C. E. (2009). "I will never teach the old way again": Classroom management and external incentives. *Theory Into Practice*, *48*(2), 147-155.

Mason, R. A., Davis, H. S., Boles, M. B., & Goodwyn, F. (2013). Efficacy of point-of-view video modeling: a meta-analysis. *Remedial and Special Education, 34*, 333–345.

Mason, R. A., Ganz, J. B., Parker, R. I., Bruke, M. D., & Camargo, S. P. (2012). Moderating factors of video-modeling with other as model: a meta-analysis of single-case studies. *Research in Developmental Disabilities, 33*, 1076–1086.

Mitchell R. R., Tingstrom D. H., Dufrene B. A., Ford W. B., Sterling H. E. (2015). The effects of the Good Behavior Game with general-education high school students. *School Psychology Review*, 44(2), 191–207. https://doi-org.mutex.gmu.edu/10.17105/spr-14-0063.1

Pennington B., McComas J. J. (2017). Effects of the Good Behavior Game across classroom contexts. *Journal of Applied Behavior Analysis*, 50(1), 176–180. https://doi-org.mutex.gmu.edu/10.1002/jaba.357

Qiao, S., Yeung, S. S.-S., Zainuddin, Z., Ng, D. T. K., & Chu, S. K. W. (2022). Examining the effects of mixed and non-digital gamification on students' learning performance, cognitive engagement and course satisfaction. *British Journal of Educational Technology*. Advance online publication. https://doi-org/10.1111/bjet.13249

Rayner, C., Denholm, C., & Sigafoos, J. (2009). Video-based intervention for individuals with autism: Key questions that remain unanswered. *Research in Autism Spectrum Disorders*, *3*(2), 291-303.

Robertshaw C. S., Hiebert H. D. (1973). The astronaut game: A group contingency applied to a first grade classroom. *School Applications of Learning Theory*, 6(1), 28–33.

Skinner, B. F. (1989). The origins of cognitive thought. *American psychologist*, *44*(1), 13.

Tanol, G., Johnson, L., McComas, J., & Cote, E. (2010). Responding to rule violations or rule following: A comparison of two versions of the Good Behavior Game with kindergarten students. *Journal of School Psychology*, *48*(5), 337-355. https://doi: 10.1016/j.jsp.2010.06.001.

Tarlow, K.R., & Penland, A. (2016). Percentage of Non-Overlapping data (PND) Calculator. http://www.ktarlow.com/stats/pnd

Wahl E., Hawkins R. O., Haydon T., Marsicano R., Morrison J. Q. (2016). Comparing versions of the Good Behavior Game: Can a positive spin enhance effectiveness? *Behavior Modification*, 40(4), 493–517. https://doi-org.mutex.gmu.edu/10.1177/0145445516644220

What Works Clearinghouse. (2017). *What Works Clearinghouse™ standards handbook* (Version

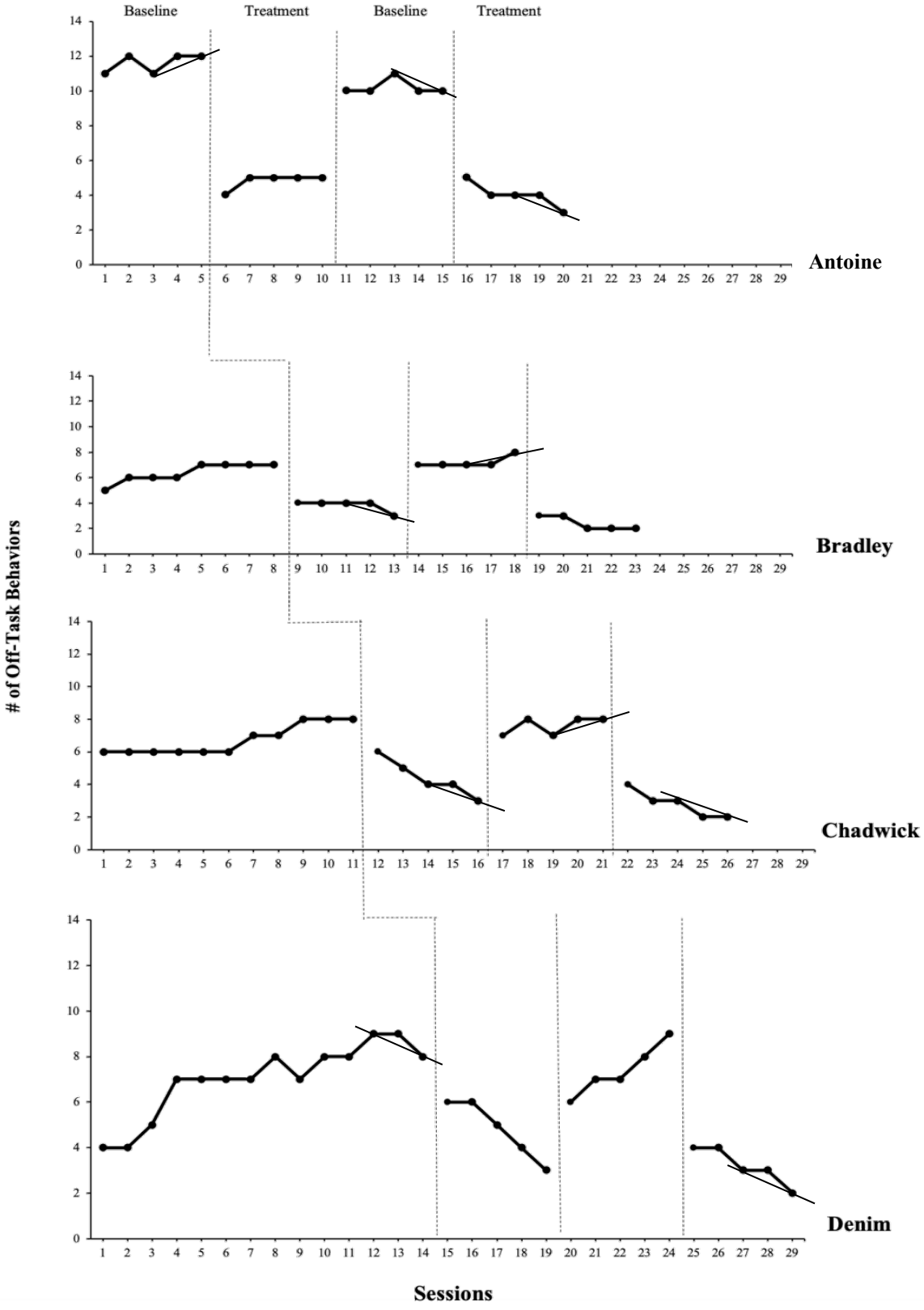
4.0). https://ies.ed.gov/ncee/wwc/Docs/referenceresources/wwc_standards_handbook_v4.pdf

Westling, D. L. (2010). Teachers and challenging behavior: Knowledge, views, and practices. Remedial and Special Education, 31, 48-63. https://doi-org.mutex.gmu.edu/10.1177/074193250832

Witt, J. C., and Martens, B. K. (1983). Assessing the acceptability of behavioral interventions used in classrooms. *Psychology in the Schools, 20*, 510–517.

Figure 1

Multiple Baselines Design On-task and Off-task Behaviors



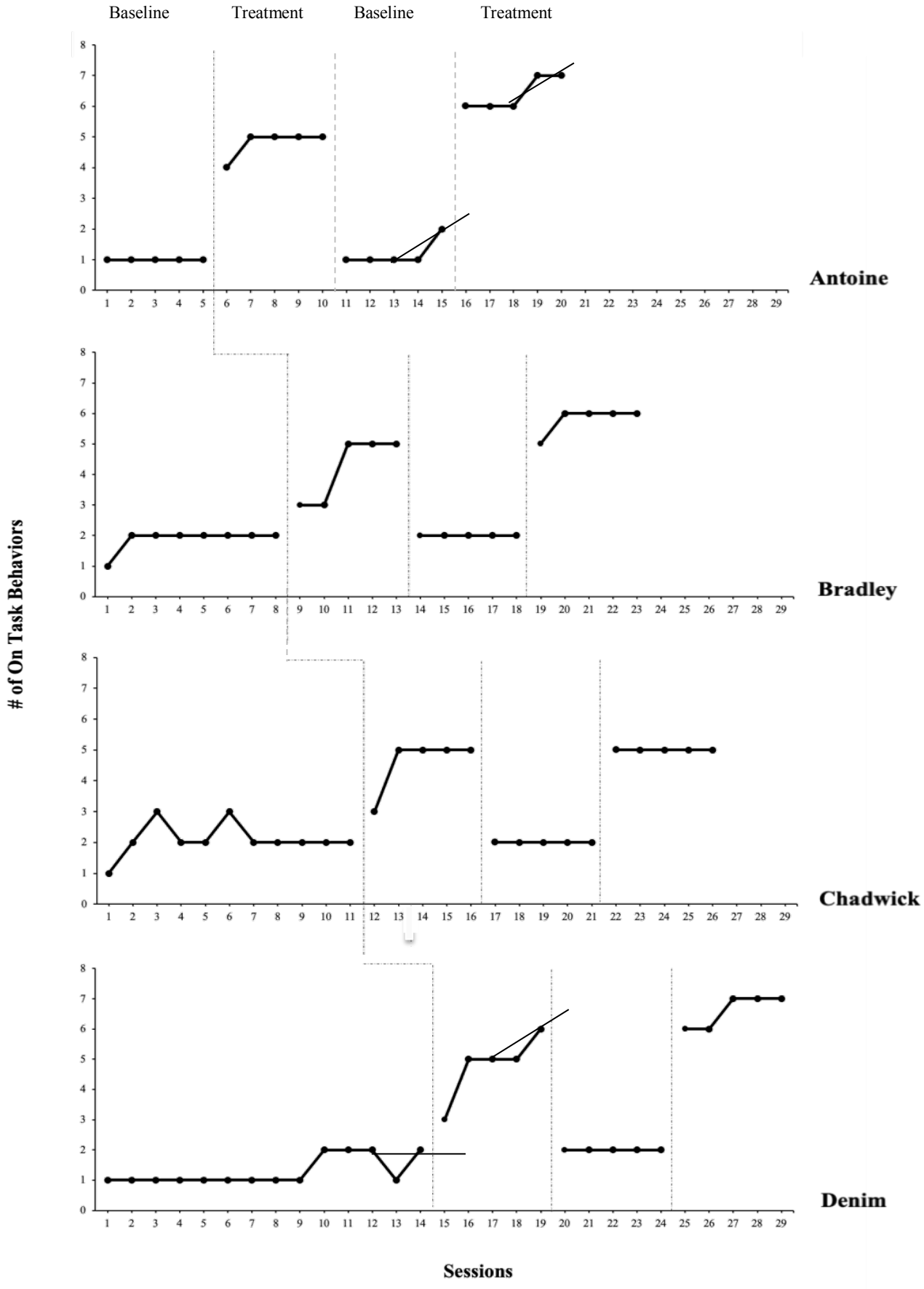

Baseline
Treatment
Baseline
Treatment
Antoine
Bradley
Chadwick
Denim
# of On Task Behaviors
Sessions

Table 1

Inclusion/Exclusion Criteria

Inclusion	Exclusion
Student with Autism Spectrum Disorder	Student with disability other than Autism
Public school	Student without disability
Elementary student	Private school student
Social Emotional/Behavioral goal(s)	Pre-K, secondary, post-secondary student
Academic goal in Reading or Math	Outside of the United States
Students in inclusion classroom environments	
Student of color	
Current, active IEP	
Resides within the United States	

Table 2

Participants

Participants	Gender	Age	Grade	Ethnicity	Disability	IEP Goals	BIP
Antoine	M	10	5	Black	ASD/ ADHD/ AD	R; M; SE/B	Yes
Bradley	M	10	5	Black	Autism	R;M; SE/B	Yes
Chadwick	M	9	5	Black	Autism	M; SE/B	Yes
Denim	M	10	5	Black	Autism	M; SE/B	Yes

Note: ASD= Autism Spectrum Disorder; ADHD= Attention Deficit/Hyperactivity Disorder; AD= Anxiety Disorder

Table 3

The Treatment (Intervention)

Video	Social Emotional/Behavioral Domain
Moods and Attitudes	Mojo is in a bad mood, affecting everyone around him. How can he make sense of his emotions? Is there anything he can do to feel better? This three-episode series highlights moods and how any student can take control of their attitude. • Mojo's in a Mood • A Bad Mood Storm • What Can You Control?
Big Challenges	Mojo's feeling overwhelmed and it's keeping him from having fun with his friends. This series demonstrates how students can take small steps to take on big challenges. • The High Dive • Taking Small Steps • Making a Splash
Perseverance	Class Dojo and Stanford University's PERTS research center created a three-episode video series about perseverance, including a concept called "The Dip". Students are exposed to and learn the power of perseverance and what perseverance looks like in real life.

Table 4

Operationalized Definitions

On-task Behavior	Operational Definition	Example	Non Example
Accountable Talk	Utilizing word stems to demonstrate interest and active engagement in small and whole group instruction.	• I wonder why…. • I have a question about… • I agree or disagree with …… because….. • That reminds me of…… • I would like to add to what …… was saying… because I thought…..	• That's a stupid idea… • Laughing at another student's contribution to class discussion
Attention to Task	The ability to actively process information in the classroom while tuning out other stimuli. Attention to task encompasses working on the assigned task and working to completion.	• Exercise first/then options to give undivided attention to first, Math, then, computer time.	• Sitting at desk quietly not participating; • Putting head down on desk; • working on another class assignment or incomplete homework from the night before
Eye Contact	Eye contact is holding direct gaze for at least five consecutive seconds with the person he/she is communicating with or a speaker in a group setting.	• Affixing gaze on speaker, whether student or teacher, showing interest in what the speaker is sharing.	• Looking outside of the classroom at something happening in the hallway
Persistence	To continue in the assigned task despite difficulty or perceived difficulty.	• Continuing to work on the multiplication problem even though it is hard.	• Doodling on the paper until the time allotted for the task has expired.
Raising Hand	Lifting/Extended your arm to indicate a desire to answer a question or contribute to the group discussion regarding a particular area of content.	• Raising hand to volunteer to complete the morning warm up on the smart board.	• Giving a high five • Extending arms to give a hug • Waving hello

Respectful talk with adults	Using your voice to be respectful and courteous to the adults in your presence.	• Greet teacher upon entry to the classroom.	• Calling the teacher by their first name or not acknowledging the teacher when spoken to.
Small group participation	Participating in the small group and group discussion by speaking, organizing, note-taking for the time allotted.	• Assume a group responsibility (e.g. timekeeper, recorder) and perform the duty for the duration of the time allowed	• Deciding to work independently when the expectation is small group participation.
Task completion	Finishing an assignment to include answering every question or prompt to the best of their ability.	• View the white board upon entry. Read the morning warm-up entrance ticket, complete the warm-up, turn it in the warm-up bin.	• Turning in a blank sheet of paper, empty google form, or no exit ticket upon the conclusion of class.
Teamwork	Participating with a team, fulfilling the assigned team job.	• Display a positive attitude, respect others' opinions, give and receive instructions, and work with peers collaboratively.	• Wanting to be the leader all the time and having a tantrum or outburst when not chosen as the leader.
Whole group participation	Participants will learn together with non-disabled peers; teachers and students will participate in instruction at the same time, in the same space, and with each person focused on the same learning goals.	• Arrive timely, listen, exercise accountable talk, participate by sharing verbally and non-verbally.	• Sitting in your seat, being quiet and not sharing in the conversation, activities.
Off-task Behavior			
Aggression	A verbal or nonverbal threat or comment that indicates any form of physical harm to another person; Physical contact with self, others, and/or property that is potentially harmful in nature. Copying is not allowed.	Hitting, kicking, pushing, pinching, pinching, punching, biting, scratching, pulling hair, head-butting, hitting with an object, throwing an object at someone	Stomping feet, banging hands on desk, sticking tongue out, clenching teeth, glaring
Bad attitude (resulting in non-compliance/defiance)	Failure to respond to an instruction within 15 seconds of the instruction being given	• Saying "no", • arguing with instructions, • looking away/ignoring directions, • continuing with previous activity	• Failure to respond to a • direction due to lack of • understanding, failure to complete request due to skill deficit

Biting	Biting is defined as any occurrence of opening and closing of the jaw with upper and/or lower teeth making contact with any part of a person's body.	• Biting flesh of another person, • biting clothing of another person, • biting self to intentionally injure self	• Kissing; • eating
Elopement	Successful and/or unsuccessful attempts to leave the designated area without adult supervision and/or permission	• Any instance of the participant moving away from an adult more than 5 ft while outside or inside without permission.	• Going across the room to get manipulatives from the shelf during small group or free time
Excessive Talking	Inordinate levels of vocalization within the classroom of an incessant nature, which interferes with the education process by producing extreme turbulence and discord.	• Talking at inopportune times when the expectation is to be quiet; • Ignore finger signals, signs, light signals to be quiet and continue to talk at unpreferred times even when address.	
Inattention/no eye contact/distraction	Difficulty in sustaining attention, listening/following conversations/instructions, and organizing.	• mind wandering-like experiences (e.g. "mind seems elsewhere" or "distractible by unrelated thoughts"), • forgetfulness and hesitation to engage in activities requiring sustained mental effort	• Sleeping • Mindfulness activity where closed eyes are preferred
Kicking	Kicking is defined as any occurrence of making contact with any part of another person's body using a foot from a distance of six inches or more.	• Propelling objects at least one foot from their original location by movement of foot or leg in the direction of another person	• Kickball • Karate instruction • Dancing
Outburst	Verbal comment/statements directed at peers or adults that may be argumentative or hurtful in nature	• Loud vocalizations accompanied with tears when presented with a task demand. • Loud vocalizations not accompanied by tears when told student cannot have the iPad.	• Laughing/giggling. • Crying as a result of hurting himself. • Onset: 30 seconds of occurrence • Offset: 30 seconds of nonoccurrence

Out of Seat Without Permission	Successful and/or unsuccessful attempts to leave designated area during instruction or activity without permission	• refusal to follow directions during transitions from one setting/activity to another and remaining out of seat	• In an emergency, leaving seat and running to the bathroom to avoid getting sick in the classroom.
Screaming/Tantrum	the occurrence of vocalizations at a volume above normal conversational level for any period of time. Tantrum: lasting at least 1 minute that may include the following behaviors: crying, lying on the floor, screaming, etc.	• Crying and flopping in response to a demand to transition • Screaming and throwing materials on the floor when given a task demand.	• Lying on the floor as part of a class activity or calming strategy • Screaming from excitement during a class game of Kahoot! Or Quizizz
Work refusal	Any instance in which a student physically and/or verbally refuses to follow an instruction or complete a task.	• Participant swiping materials off the table when presented with a task to complete. • Participant refusing to complete a transition when directed to (may or may not flop on the floor). • • Participant not moving his body to initiate the task/follow the instruction within 30 seconds of the directive.	• Student engaging in a response that matches the delivered instruction.
Yelling	Any instance in engages ina vocalization louder than is used for communication for longer than 3 seconds during which time he may or may not produce tears.	• Loud vocalizations accompanied with tears when presented with a task demand.	• Laughing/giggling • Yelling as a result of feeling like they were in danger.

Table 5

Participant Survey

Rate each question on a 5-point scale.
5- Extremely (Helpful) 4- Very 3- Neither 2- Somewhat 1- Not at all (Helpful)

1.	The videos helped me manage my off-task behaviors?	*M*=5
2.	The videos helped me increase or maintain my on-task behaviors?	*M*=5
3.	I feel the points that were added and deducted were done fairly.	*M*=5
4.	It was easy to put what I learned in the video into practice during class.	*M*=5
5.	It was hard to maintain on-task behavior when I didn't complete the video and reflection before class.	*M*=5
6.	The Class Dojo point system on the smart board helped me make good decision.	*M*=5
7.	Immediate feedback from the sounds were a helpful reminder to continue or to correct my behavior.	*M*=5
8.	Visual reminders from seeing my points going up made me feel good and continue on-task behaviors.	*M*=5
9.	The increase in on-task behaviors points helped me continue to make good decision.	*M*=5
10.	The increase in off-task behaviors points made me continue to make bad decisions.	*M*=3
11.	The increase in off-task behaviors points made me make aware of my actions and helped me make good decisions.	*M*=4
12.	I think the teacher was more effective when she noted my on-task behavior not just my off-task behavior.	*M*=5
13.	I think because other students in the class could see my points it made them act better too.	*M*=4

Table 6

Intervention Rating Profile (Teacher)

The purpose of this questionnaire is to obtain information that will aid in selection of classroom interventions. These interventions will be used by teachers of children with atypical behavior(s). Please circle the number which best describes your agreement or disagreement with each statement.

	Strongly disagree	**Disagree**	**Slightly disagree**	**Slightly agree**	**Agree**	**Strongly agree**
Teachers are likely to use this intervention because it requires few technical skills	1	2	3	4	5	6
Teachers are likely to use this intervention because it requires little training to implement effectively	1	2	3	4	5	6
Most teachers would find the intervention suitable for the behavior problem described	1	2	3	4	5	6
Most teachers would find this intervention appropriate for behavior problems in addition to the one described	1	2	3	4	5	6
The child's behavior problem is severe enough to warrant use of this intervention	1	2	3	4	5	6
This intervention would be appropriate for use *before* making a referral	1	2	3	4	5	6
This intervention would not be difficult to implement in a classroom with 30 other students	1	2	3	4	5	6
This intervention is practical in the amount of time required for parent contact	1	2	3	4	5	6
This intervention is practical in the amount of time required for contact with school staff	1	2	3	4	5	6

	Strongly disagree	**Disagree**	**Slightly disagree**	**Slightly agree**	**Agree**	**Strongly agree**
This intervention is practical in the amount of time required for record keeping	1	2	3	4	5	6
This intervention is practical in the amount of out-of-school time required for implementation	1	2	3	4	5	6
This intervention would not be disruptive to other students	1	2	3	4	5	6
It would not be difficult to use this intervention and still meet the needs of other students	1	2	3	4	5	6
This intervention should prove effective in changing the child's problem behavior	1	2	3	4	5	6
This would be an acceptable intervention for the child's problem behavior	1	2	3	4	5	6
This intervention would not result in negative side effects for the child	1	2	3	4	5	6
This intervention would not result in risk to the child	1	2	3	4	5	6
This intervention would not be considered a "last resort"	1	2	3	4	5	6
Overall, this intervention would be beneficial for the child	1	2	3	4	5	6
I would be willing to use this intervention in the classroom setting	1	2	3	4	5	6

Source: From Witt, J. C., Martens, B. K. (1983). Assessing the acceptability of behavioral interventions used in classrooms. *Psychology in the Schools, 20*, 510–517.

Table 7

Effect Size of the Intervention on Target Behavior

ON-TASK BEHAVIOR

	A_1B_1		A_2B_2		PND					
	PND	***p***	**PND**	***p***	**Average PND**	**s**	**$\bar{x}$ Behavior Instances at Baselines**	**$\bar{x}$ Behavior Instances at Treatments**	**Change in $\bar{x}$**	**Percentage Change in $\bar{x}$ of Behavior Incidences**
Antoine	100%	0.0025	100%	0.0025	**100%**	1.843	1.0	6.4	+5.4	+540%
Bradley	100%	0.0005	100%	0.0025	**100%**	1.946	1.9	5.8	+3.925	+393%
Chadwick	80%	0.0018	100%	0.0025	**90%**	2.0490	2.1	5.0	+2.91	+291%
Denim	100%	0.0001	100%	0.0025	**100%**	2.278	1.3	6.6	+5.31	+531%
Avg PND	95%		100%		**97.5%**					

OFF-TASK BEHAVIOR

	A_1B_1		A_2B_2		PND					
	PND	***p***	**PND**	***p***	**Avg PND**	**s**	**$\bar{x}$ Behavior Instances at Baselines**	**$\bar{x}$ Behavior Instances at Treatments**	**Change in $\bar{x}$**	**Percentage Change in $\bar{x}$ of Behavior Incidences**
Antoine	100%	0.0025	100%	0.0025	**100%**	3.422	11.6	4.0	-7.6	-760%
Bradley	100%	0.0005	100%	0.0025	**100%**	1.984	6.4	2.4	-4.0	-400%
Chadwick	80%	0.0018	100%	0.0025	**90%**	1.975	6.7	2.8	-3.9	-390%
Denim	20%	0.1706	100%	0.0025	**60%**	2.061	7.0	3.2	-3.8	-380%
Avg PND	75%		100%		**87.5%**					

Note: PND = Percentage of non-overlapping data

Figure 1

General Education Classroom

Figure 1. Photograph of General Education Inclusive 5th Grade Classroom

Figure 2

Class Dojo Class Management System

Figure 2. Screenshot of Class Dojo SS/CD Participants

Figure 3

Video Modeling

Figure 3. Screenshot of Social Emotional/Behavioral Video Modeling Intervention

Figure 4

Audio-Visual Reminders

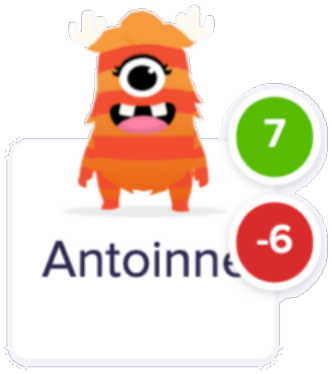


Figure 4. Screenshot of Antoine's points showing on-task (green) and off-task (red) points.

Figure 5

Immediate Feedback

Figure 5. Student was given immediate feedback for an on-task behavior.

Figure 6

Participant Survey

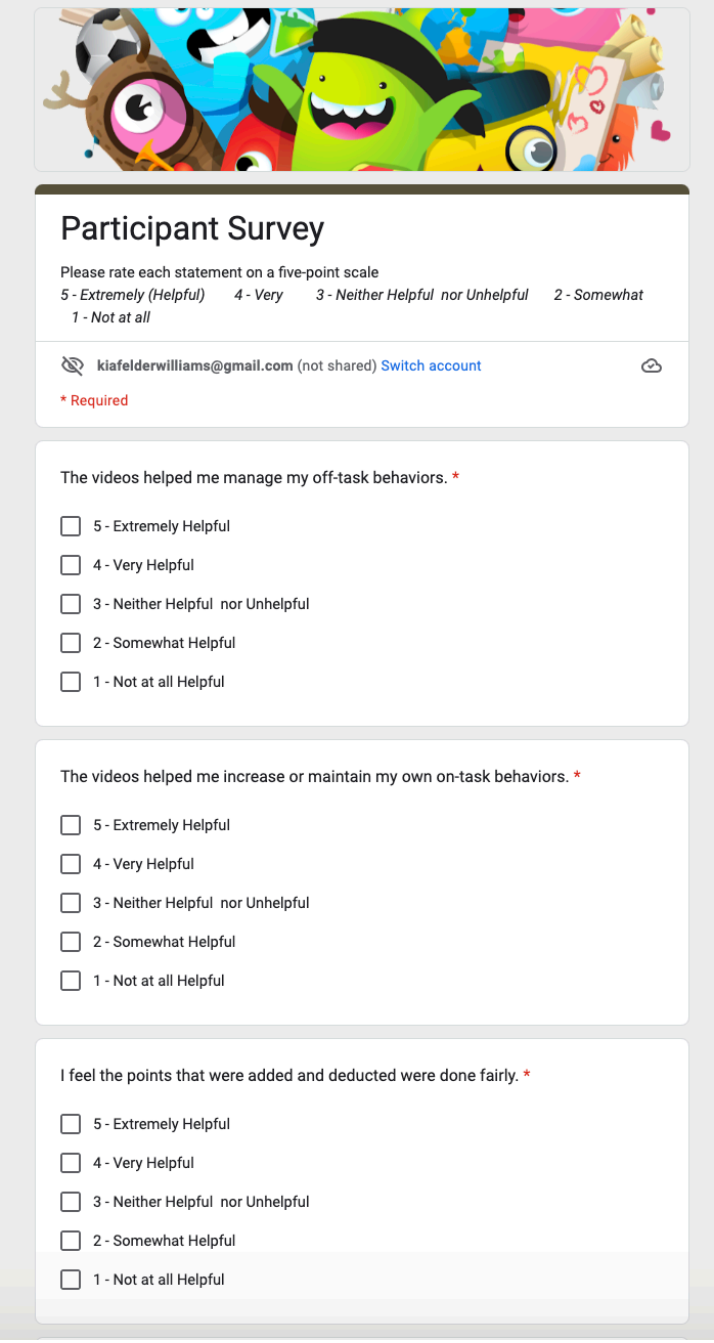


Figure 6. Screenshot of Participant Survey (partial)

Appendix A
Behavior Event Recording Form

Event Recording Form

Directions:

1. Record the time the observation begins.
2. Write a tally mark for each occurrence of the behavior.
3. Record the time the observation ends.
4. Count the number of tally marks (occurrences) for on-task behaviors; record the total number.
5. Count the number of tally marks (occurrences) for off-task behaviors; record the total number.
6. Calculate the length of observation and rate of occurrences. (Rate = number of occurrences during the time period / length of observation.)

Student: _____ Date:_____ Class: _____

Class/Teacher: _____ Observer: _____

Time of day: _____ Length of observation: _____

	ON-TASK Occurrences											
Participant	Accountable talk with peers	Attention to Task	Eye Contact	Persistence	Raise hand	Respectful talk with Adult	Small Group Participation	Whole Group Participation	Task Completion	Teamwork	**Total Tally**	**Rate**
Antoine												
Bradley												
Chadwick												
Denim												

	OFF-TASK Occurrences												
Participant	Aggression toward adults	Aggression to peers	Bad attitude to adults	Bad attitude to peers	Biting	Elopement	Excessive talking	Inattention	Kicking	Screaming/Yell/ Other outburst	Work Refusal	**Total Tally**	**Rate**
Antoine													
Bradley													
Chadwick													
Denim													

Appendix B

Screenshot of a Class Dojo Classroom

www.classdojo.com

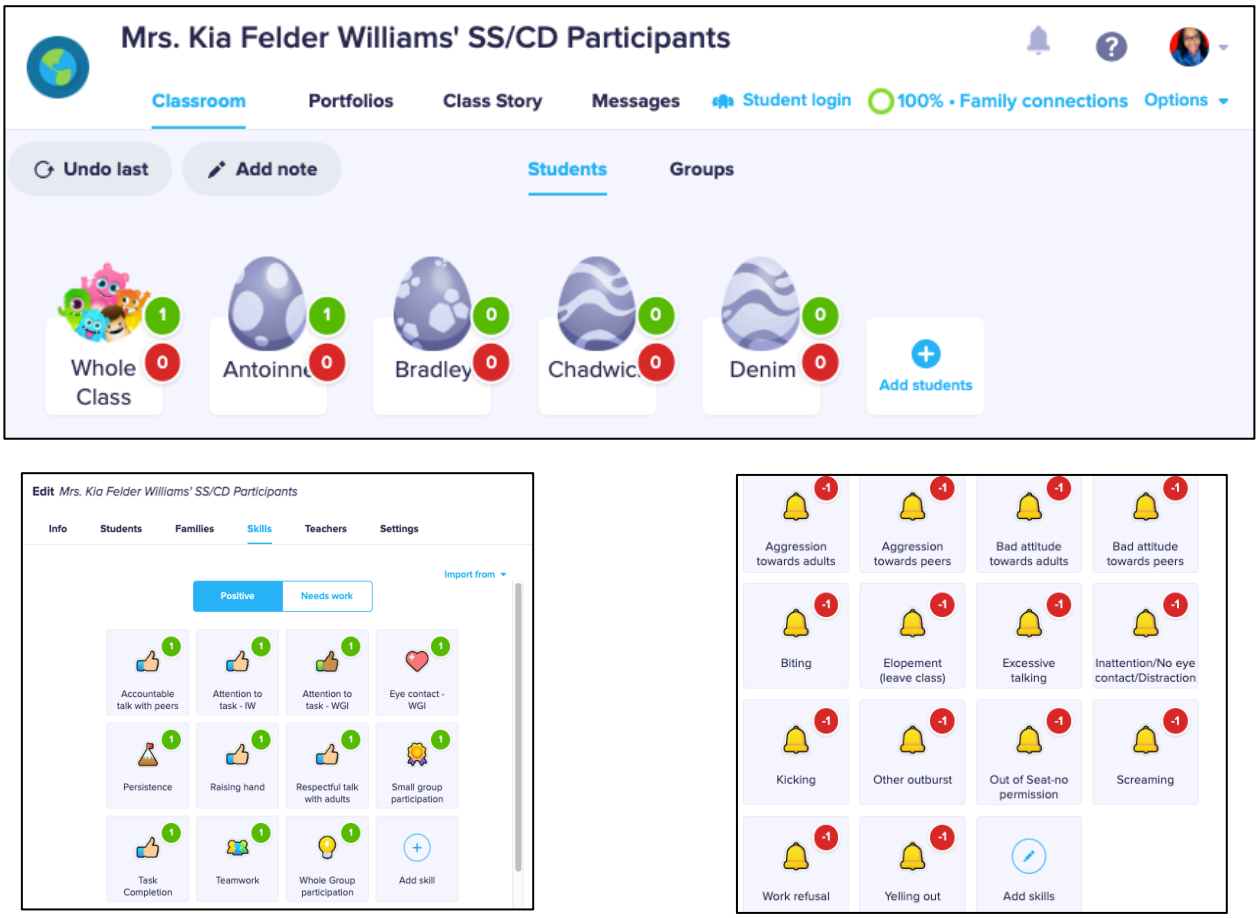


Figure A1. Screenshot of the ClassDojo program, On-task and Off-task behaviors

Appendix C

Treatment Integrity Checklist

Name: _____ Date:_____

Observer: _____

Steps	**Yes**	**No**
Announce the video		
Cue and play video on each Chromebook		
Discuss video		
Answer questions regarding video		
Teacher makes immediate and direct application of video		
Students assigned a corresponding prompt		
Participants given ample time to complete online reflection journal		
Participants submit online reflection		
Participants collect materials to transition to Math class		
Students enter Math class and take out materials needed for class		

Percentage of steps completed: _____

Notes:

Adapted and modified from Ford (2015)

Appendix D

Treatment Integrity Checklist (Maintenance)

Name: _____ Date:_____

Observer: _____

Steps	**Yes**	**No**
Researcher announces the Class Dojo points will not be tracked.		
Researcher reviews behavior expectations		
Researcher does not award points for on-task or off-task behavior		
Paraprofessional does not award points for on-task or off-task behavior		

Percentage of steps completed: N/A

Adapted and modified from Ford (2015)