

The Effects of a Daily Behavior Report Card Intervention: Inclusion of a Peer Mediator
Component

by

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DEDICATION

I dedicate this manuscript to my parents, Nina and Chuck, and my sister, Rebecca. Thank you for all your love and for always standing by my side.

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ABSTRACT

Research shows that children with disabilities are more likely engage in problem behaviors and have behavioral, social, and academic deficits in a school classroom than those children without disabilities (e.g., Owens et al., 2012; Pierce, Reid, & Epstein, 2004). Daily Behavior Report Cards (DBRCs) have been found to improve disruptive behaviors, such as task refusal or calling out in class, of children with attention-deficit/hyperactivity disorder, intellectual and developmental disorders and typically developing students; however, research evaluating the efficacy of DBRCs with students with emotional and behavioral disorders (EBD) is lacking. Studies also indicate that DBRCs can be effectively implemented by teachers (e.g., Taylor & Hill, 2017) and that peers can implement a variety of interventions with fidelity (e.g., Check in check out [CICO]; Collins, Gresham, & Dart, 2016). Thus, the purpose of this study was to assess the effects of DBRC, implemented by peers, on the behaviors of students at risk for EBD and whether peers can implement the intervention procedures with high integrity. The study used a non-concurrent multiple baseline design across three participants. In this study peer mediated DBRC led to a decrease in disruptive behavior and an increase in appropriate behavior for all three target students who were at risk for EBD. The peer mediators also implemented the DBRC procedures with high integrity.

INTRODUCTION

Disruptive behaviors are common in elementary school classrooms. In fact, about 10% of elementary school children engage in disruptive behaviors (Owens et al., 2012) including but not limited to hyperactivity, inattentiveness, task refusal, and aggression. Also, it is estimated that 3% to 6% of elementary aged children are classified as EBD (Riden, Taylor, Scheeler, & McNaughton, 2017). Moreover, children with EBD tend to have more academic deficits and learning difficulties than peers without a disability (Pierce et al., 2004). Elementary school students with EBD have been found to perform up to two grade levels below their peers, with this discrepancy increasing with age (Ryan, Reid, & Epstein, 2004). Additionally, poor performance in school is correlated with high dropout rates (Pierce et al., 2004). Due to the implications of disruptive behaviors presented by students in schools, it is crucial that these students are provided with the support needed to be successful in academic settings.

School Wide Positive Behavior Interventions and Supports (SWPBIS) aim to address challenging classroom behaviors by improving students' emotional, academic, and social outcomes through evidence-based interventions (OSEP Technical Assistance Center, 2017). Overall, students from schools that implement SWPBIS have higher on-task and lower disruptive behavior in comparison to students enrolled in schools that do not utilize SWPBIS (Benner, Nelson, Sanders, & Ralston, 2012). School Wide Positive Behavior Interventions and Supports offers a three-tiered model approach to school-wide challenges: Tier 1, Tier 2, and Tier 3 (OSEP Technical Assistance Center, 2017).

In the first level of the PBIS framework, the interventions are implemented across the entire student population, focus on prevention of problem behavior, and are designed to teach all children appropriate behavior (Anderson & Borgmeier, 2010). Common Tier 1 support strategies include teaching school-wide expectations and rules and the implementation of school-wide token economy (Steed & Durand, 2013). These interventions, however, may not be effective for all students. In these cases, Tier 2 supports are added. These strategies focus on the reduction in frequency and intensity of problem behavior through antecedent and consequential manipulation strategies (Anderson & Borgmeier, 2010). Tier 2 interventions are simple and involve small group or individualized intervention strategies such as check in check out (CICO) and the class pass (OSEP Technical Assistance Center, 2017). Finally, for students who are not responsive to Tier 1 and Tier 2 procedures, individualized function-based behavioral interventions are prescribed as part of Tier 3 level of support. Examples of Tier 3 interventions include the Prevent-Teach-Reinforce (PTR) Model, or functional communication training (FCT) (OSEP Technical Assistance Center, 2017).

Given that more students require Tier 2 supports in comparison to Tier 3 (OSEP Technical Assistance Center, 2017), research should focus on developing and improving the effectiveness of Tier 2 strategies. CICO, as mentioned, is a secondary support intervention. It consists of a check-in meeting between student and mentor to discuss target behaviors and goals of the day, feedback in the form of a Daily Behavior Report Card (DBRC), a check-out meeting between student and mentor at end of the day to review the behavioral performance, and an at-home performance review by the child's parent (Collins et al., 2016). Studies have demonstrated that CICO is effective in reducing behavioral problems and improving academic skills of typically development elementary school children and children with various disabilities (i.e.,

EBD, IDD; Collins et al., 2016; Melius, Swoszowski, & Siders, 2015; Smith, Evans-McCleon, Urbanski, & Justice, 2015; respectively).

One major component of CICO is the DBRC, a rating-scale and point-based feedback form that reflects the student's performance based on the specific target behaviors (Chafouleas, Riley-Tillman, & Christ, 2007; Taylor & Hill, 2017). Although CICO uses DBRC as a measuring system, DBRCs can be implemented as an intervention tool to increase appropriate classroom behavior and can be used in a variety of ways. Common characteristics of DBRCs include: (a) identification of and operationally defined target behavior(s), (b) daily rating of target behavior(s) occurrence, and (c) sharing daily reports across individuals (e.g., parents, teachers, students) (Riden et al., 2017). The mentor or implementer, typically a teacher, of the DBRC establishes a point goal with the student and allows the student to choose a reward to receive once that goal is achieved within the pre-determined time period (e.g. 30 min, a class period, day, week) (Riley-Tillman, Chafouleas, & Briesch, 2007). The DBRC is reviewed by both parties at these pre-determined times and performance feedback, reinforcement if the goal criterion is met, is provided to the student (Taylor & Hill, 2017).

DBRCs have been found to increase a variety of appropriate responses (e.g., task initiation; Jurbergs, Palcic, & Kelley, 2010) and decrease many topographies of disruptive behaviors such as off-task behavior, aggression, and talking out in class (Fabiano et al., 2010; Riden et al., 2017; Vannest, Davis, Davis, Mason, & Burke, 2010). For instance, one of the first studies to evaluate DBRCs, Dougherty and Dougherty (1977), investigated the effects of DBRCs on homework completion and talking during instruction without permission (labeled "talk out" by the authors). In this study, DBRC led to a decrease in the mean percentage of incomplete homework and in student talk outs. One way that DBRC can reduce problem behavior is by

teaching and improving social skills, on-task behavior, and academic skills (Williams, Noell, Jones, & Gansle, 2012). In a study completed by Collins et al. (2016), for example, the participant's DBRC targeted social skills. More specifically, behaviors targeted for increase included joining group discussions, interacting appropriately with peers, asking for help when needed, and initiating conversations. In this study, DBRC led to an increase in all appropriate target responses and a reduction in disruptive behaviors. Furthermore, studies have shown that DBRC is effective in increasing on-task behavior such as completing assigned academic work during class periods (e.g., Jurbergs et al., 2010). Combined, these studies demonstrate the flexibility of using a DBRC for a variety of target behaviors suggesting that they may also be effective for a variety of populations.

In regard to the generality of DBRC treatments effects across population, studies have shown that DBRCs have been effective in reducing challenging behaviors and improving academic and social skills of students with intellectual and developmental disorders (IDD; Taylor & Hill, 2017), and attention-deficit/hyperactivity disorder (ADHD; Riden et al., 2017), as well as typically developing children with problem behaviors (LeBel, Chafouleas, Britner, & Simonsen, 2013). For instance, LeBel et al. (2013) investigated the use of a DBRC to decrease disruptive behavior in four 4-year old typically developing preschool students. The researchers used the DBRC to score the students' target behavior across each activity period and scores were delivered at the end of each period. In this study DBRC led to an immediate decrease in problem behavior upon intervention. Similar results were found by Dougherty and Dougherty (1977), identifying a decrease in problem behavior in fifteen 8 to 11-year-old students in a general education classroom. Moreover, in a literature review of 11 studies, Riden et al. (2017) discussed the use of DBRC with elementary aged children with disabilities such as, ADHD, specific

learning disabilities, speech and language disabilities, or other health impairments. The researchers' investigation suggested that although there was variability in effect size of the data across the 11 studies, the DBRC implementation showed an overall improvement on the academic and social behaviors of students with disabilities in classroom settings. Moreover, Taylor and Hill (2017) examined the effectiveness of DBRCs for four 6 and 7-year-old students with IDD in extended school year settings. In this study DBRC was used in a similar manner as LeBel et al. (2013). The results yielded that each participant demonstrated an increase in appropriate classroom behaviors. Students with ADHD have also been a target population with DBRCs, and findings show that the intervention yields improved attentiveness for students (Jurbergs et al., 2010).

Although the previously reviewed research suggests that DBRCs are effective in decreasing various topographies of problem behavior and increasing many types of appropriate behavior across students with and without disabilities, DBRCs are usually implemented by the classroom teachers (e.g., Jurbergs et al., 2010; Murray, Rabiner, Schulte, & Newitt, 2008; Pierce, et al., 2004) and with various levels of treatment integrity. For instance, studies assessing treatment integrity of teacher implemented DBRC have found that, after receiving training, at least some of the teachers performed at least 80% (Murray et al., 2008) or 97% (Jurbergs et al., 2010) of all steps correctly. However, it should be noted that in the study completed by Murray and colleagues (2008), six of the 15 teachers did not adhere to all steps of the DBRC; however, several strategies were put in place to enhance teacher adherence. One of the issues with teacher implemented DBRCs though, is that teachers have a lot of responsibilities and therefore limited time to spend on individualized interventions such as DBRCs. This limited time and large work load may lead to future stress or burnout (Grayson & Alvarez, 2008). Thus, it is important to

consider alternative mediators (i.e., peers) and assess whether they can implement the procedures with high integrity.

Other interventions such as prompting procedures (Arceneaux & Murdock, 1997), CICO (Collins et al., 2016), pivotal response training (PRT; Harper, Symon, & Frea, 2007), or modeling (Charlop, Schreibman, & Tryon, 1983) have been modified to use peers as mediators. Studies evaluating peer mediators have found the interventions to be effective in addressing a variety of responses including improving social interactions and on-task behavior, and reducing disruptive behavior (Dart, Collins, Klingbeil, & McKinley, 2014). For instance, Arceneaux and Murdock (1997) investigated the effects of a peer prompting procedure to reduce vocal stereotypy made by another student with developmental disabilities in a general 8th-grade classroom. The results indicate that the stereotypy consistently decelerated throughout the intervention. Moreover, Collins et al. (2016) examined peer-led CICO to improve social skills of four typically developing elementary school students identified as socially neglected. In this study peers implemented CICO led to an increase in social skills of three out of four participants. The results indicated that the participants received higher DBRC ratings and their social skills improved. Additionally, peers have conducted PRT. Harper et al. (2007) utilized peer-mediated PRT to improve social interactions such as exchange of taking turns and gaining attention for two autistic children and found that both participants' social interactions during recess increased significantly and levels maintained during generalization probes. Finally, peer modeling was used to teach receptive labeling to four children with autism (Charlop et al., 1983). In addition, research has shown that peers can implement interventions with high integrity (i.e., 100% in Arceneaux & Murdock, 1997; Charlop et al., 1983; & Collins et al., 2016; an average of at least 80% in Harper et al., 2007).

Combined, the current research on DBRC and interventions with peer mediators, suggests that one way to increase the feasibility of implementing DBRC is by using peer mediators. In addition, results of previous research have shown that DBRCs are effective in decreasing a variety of disruptive behavior and increasing appropriate behavior across various population. However, research assessing the efficacy of DBRCs, implemented by peers, and with students with EBD is lacking. Therefore, the purposes of this study were to assess whether peer-mediated DBRC would result in improvements in disruptive and appropriate replacement behaviors of students with or at risk for EBD and whether peers can implement DBRC with high integrity. This study also followed the procedures from Taylor and Hill (2017).

METHOD

Participants and Setting

This study was completed at a local elementary school in a first, second, and third-grade classrooms that included students who were both typically developing and at risk for classification of EBD. Participants included three target students, three peer mediators, and three teachers. Inclusion criteria for the target student consisted of students a) between the ages of 5 and 14-years old, b) identified by teachers to be at risk for a classification of EBD, and c) who displayed some type of disruptive behavior for at least 30% of observation intervals. For this study, the term EBD was used to encompass individuals who engage in disruptive behaviors that may affect their social skills and academic performance (Kauffman, 1997). Children with other disabilities in addition to their potential EBD classification were also eligible to participate. Moreover, students were not included in this study if disruptive behavior posed a risk to the student, peer mediator, researcher, and others in the environment, and/or the student was currently receiving Tier 3 services. All participants included in this study were provided pseudonyms to protect their identities.

The three target students in this study were Robb, Jon, and Ned. Robb was an 8-year-old Caucasian boy in a second-grade classroom, he was identified by his teacher as at risk for EBD due to his frequent disruptive behaviors in the classroom which included being off task and talking out loud to the teacher and other students without permission. Jon was a 6-year-old African American boy in a first-grade classroom, who was also identified as at risk for EBD by his teacher due to his frequent engagement in task avoidance and inappropriate verbalizations

towards the teacher. Similarly identified as at risk for EBD for his frequent off task behavior was Ned, a 9-year-old Caucasian boy in a third-grade classroom.

In addition, three students were selected to serve as the peer mediators. The inclusion criteria for peer mediators included students who a) were between the ages of 5 and 14 years, b) were typically developing, c) engaged in minimal to no disruptive behavior, d) had regular attendance, e) had good social and communication skills, f) had no negative or significant relationship with the target student, and g) attended the same class as the target student. The three peer mediators were Arya, Jaime, and Catelyn. Arya was an 8-year-old African American girl in a second-grade classroom. She was paired with Robb because teacher report indicated that she had strong communication skills and did not engage in problem behavior. Jaime was a 7-year-old African American girl in a first-grade classroom. She was paired with Jon because according to her teacher she engaged in minimal disruptive behavior and had strong leadership skills. Finally, Catelyn was paired with Ned. She was a 9-year-old Caucasian girl in a third-grade classroom and, per teacher report, she engaged in infrequent disruptive behavior and had strong communication skills.

Finally, teachers who taught in a classroom of students aged 5 to 14-years-old that were either typically developing or at risk for classification of EBD, were eligible to participate in this study. The three teachers participating in this study were Mr. Snow, Mrs. Stark, and Mrs. Lannister. Mr. Snow was a Caucasian male and the third-grade teacher of Arya and Robb. Mrs. Stark was a Caucasian female and the first-grade teacher of Jaime and Jon. Mrs. Lannister was a Caucasian female and a fourth-grade teacher of Catelyn and Ned.

Teachers were recruited through flyers emailed by the primary investigator (PI) to all teachers and the principal of the school. The flyers described the details of the study, proposed

benefits of the study and included the PI's contact information. After recruiting and gathering teacher consent, the PI sent flyers and consent forms to the homes of each student in the identified classrooms to recruit for the target students and peer mediators. Then, based on teacher's suggestion, we selected a target student and peer from the students for whom we received parental consent. Student verbal assent was then obtained from those selected for participation. The first three target students and three peer mediators for whom we received the signed consent/assent forms were enrolled in this study.

To gain information about the topography and severity of each behavior of concern as well as identify times when the target behavior was more likely to occur the PI interviewed the teacher using the teacher version of the Functional Assessment Interview (FAI; O'Neill, Horner, Albin, Storey, & Sprague, 1990; see Appendix B). To determine whether the students met participation criteria and identify potential functions for the target problem behavior the PI conducted direct observations of the target students using the Functional Assessment Observation Form (FAO; O'Neill, Horner, Albin, Sprague, Storey, & Newton, 1997; see Appendix A). During these observations, frequency of disruptive behavior was collected via the FAO, and a 10-s partial interval recording system was used to identify the percentage of intervals with disruptive behavior. Data from these observations were also used to further identify target disruptive and replacement behaviors for each target student. Direct observations for each target student occurred for three observation periods and each observation period lasted the same duration as the class period. Participants whose disruptive behaviors occurred during at least 30% of the intervals, across the three observations, met participation criteria. The first three participants observed met this criterion and thus were selected to continue with the study.

Data Collection and Materials

The materials for data collection included the Countee © phone application for data collection, individualized DBRCs for each target student, reward menus for each target student and peer mediator, a timer for the teachers, pencil or pen, regular classroom furniture (i.e., desks, chairs) and class related materials as needed for the subject during which sessions are being completed, and the target students' and peer mediators' specific reinforcers. Each DBRC included the following components: 1) the selected replacement and disruptive behavior(s) listed and defined for the target student 2) a key of the measure of scale (i.e., points) that can be delivered 3) identification of the predetermined point goal and reinforcer to be delivered 4) list of the selected intervals for points to be delivered within the observation period 5) identification of the total points and final percentage of the points earned 6) one happy and one sad face for the teacher to select and 7) a signature line for the teacher to sign and date. Data were collected during instructional observations that lasted for the duration of the observation period. Both Robb and Ned were observed during their language arts period and the observations lasted for 60 min. Jon was observed during his independent reading period which lasted for 30 min. The specific observation periods were selected because they were the ones identified by the teacher as being associated with most problem behavior for each of the participants. Observations were conducted 3 to 5 times a week depending on the availability of research assistants, schedule of the class of the participating teacher and students, and attendance of the participants.

The PI and trained research assistants (RAs) collected all the data for this study. In addition, teachers recorded data on the target student's responses using the DBRCs (see Appendix C for DBRC copies). The RAs were graduate students who were trained to collect data by the PI through instruction, modeling, rehearsal and corrective feedback. Before RAs began

collect data on their own, they were required to score a mock session and achieve at least 90% agreement with the PI on all the dependent measures.

For each participant the primary dependent variable (DV) was the occurrence of disruptive behavior and appropriate replacement behaviors; the secondary DV was the target student's scores on the DBRCs. For the peer mediator the dependent measure was their procedural integrity scores (see section below). For all three target students, disruptive behavior consisted of task avoidance and the replacement behavior was academic engagement. The three target students all demonstrated similar topographies of task avoidance. This was defined as any instance in which the student did not begin a task within 10 s of receiving instruction from the teacher and/or engaged in any behavior other than completing or interacting with the assigned task or material provided by the teacher. This included talking or getting out of the seat without permission from the teacher, playing with items not related to the current activity, looking away from the assigned task for at least 10 s, and putting his or her head on the desk for at least 5 s. Academic engagement was defined as the emission of behavior appropriate to the ongoing class activity and/or compliance with the instruction provided by the teacher. This included looking at the teacher when he or she was speaking, interacting with the assigned task, and/or appropriately gaining attention from the teacher by hand raising. The PI and RAs collected data on the occurrence and non-occurrence of the disruptive and replacement behavior of each target student using 10-s partial interval recording (see Appendix D) throughout all phases. A '+' was recorded if the target behavior occurs at any point during the interval. A '-' was recorded if the target behavior does not occur during the interval. The data was reported as percentage of intervals with each target behavior (disruptive; appropriate) by calculating the total number of intervals

that the target behavior occurred, divided by the total number of intervals, and then multiplying by 100.

Moreover, the DBRC point data were recorded by the teachers throughout all phases. The observation periods were divided into 10-min intervals for Robb and Ned and 5-min intervals for Jon. Points were assigned at the end of each intervals based on the occurrence and non-occurrence of the target students' target behaviors. During each interval the target student had a chance to earn a maximum of 2 points: 2 points were delivered if the target student did not engage in any disruptive behaviors and they demonstrated appropriate replacement behavior independently without prompts; 0 points were given if the target student did not engage in the replacement behavior in the presence of disruptive behavior or required prompts to engage in the replacement behavior in the presence of problem behavior. This scoring system is similar to that described by Taylor and Hill (2017); however, the criteria to earn points was based on both the occurrence of the target behavior and absence of the disruptive behavior. These data were reported as percentage of points earned per observation period. This was calculated by adding up the total points earned, dividing that total by the total possible points to be earned, and multiplying by 100. Each target student during this study could earn a maximum of 12 points since each of their observation periods included six intervals and only one disruptive behavior was being measured.

Interobserver Agreement, Procedural Integrity, and Social Validity

Interobserver agreement (IOA) data was collected by trained RAs. To ensure reliability of data collected, the PI and RAs independently, but simultaneously, collected data for approximately 33% of the observation periods across all participants and phases. We then compared the data collected by the PI and RAs on an interval-by-interval basis. IOA scores for

the DBRC ratings and occurrence of disruptive behaviors and replacement behaviors were calculated by totaling the number of intervals with agreement, dividing by the total number of intervals with agreement and disagreement, and multiplying by 100. IOA for Robb was collected for 30% of sessions during baseline and intervention phase. The mean agreement was 94% for baseline and 96%, (range, 93% to 98%) for the intervention phase. For Ned IOA was assessed for 33% of baseline and intervention phase and 50% in the follow up phase. During baseline the mean agreement was 97% (range, 96% to 97%), 98% (range, 97% to 98%) during the intervention, and 99% in follow up. Finally, for Jon IOA was assessed for 33% of the observations completed during the baseline and intervention phase, and 50% during follow up. The mean agreement was 95% (range, 94% to 95%) for baseline, 97% (range, 96% to 97%) for the intervention phase, and 94% during follow up. The researcher also collected IOA for 30% of the observations during baseline and intervention on the number of DBRC points the student earned. Data from the teachers were compared to that of the researcher on an interval-by-interval basis. The mean IOA on Mr. Snow's DBRC scores was 100% during baseline and intervention. For Mrs. Lannister, the mean IOA score was 100% during baseline and follow up and 94% (range, 83-100%) in the intervention phase. Lastly, the mean IOA for Mrs. Stark in the baseline phase was 92% (range, 83-100%), and 100% during intervention and follow up.

Given that the teacher and peers implemented the intervention, procedural integrity was assessed on their correct implementation of the procedures during the baseline sessions, intervention phase, and follow up. This was done by trained RAs using an integrity checklist adapted from Taylor and Hill (2017; see Appendix E) and a checklist for teachers developed by the PI (see Appendix F). Procedural integrity data were collected for 33% across participants and baseline and interventions phases, and for 50% of the follow up observations. The checklists

included a list of all the steps to be performed in implementing the DBRC and each step was scored '+', '-', or not applicable (n/a). A '+' was marked if the item in the checklist was completed as described by the integrity checklist, a '-' was marked if the item in the checklist was not implemented or implemented incorrectly, and 'n/a' was marked if the step was not necessary and therefore its nonoccurrence was appropriate. For each observation period we calculated the number of steps completed correctly. Then we calculated the percentage of steps completed correctly by adding the total number of steps the peer mediator/teacher implemented correctly, dividing that sum of the total number of steps, and then multiplying them by 100. The mean integrity score for the three peer mediators was 100% across all phases. Mrs. Stark implemented the baseline, intervention, and follow up procedures with 100% integrity. Mrs. Lannister implemented the DBRC intervention with a mean of 96% (range, 92% to 100%) of integrity and both baseline and follow up with 100% integrity. Finally, Mr. Snow implemented the DBRC intervention with a mean of 96% (range, 92% to 100%) of integrity and baseline with 100% integrity.

Acceptability of the DBRC procedures was assessed at the end of the study. Measures of social validity were collected from all parties involved in the study: peer mediators, target students, and classroom teachers. To attain social validity from the teachers, the PI met with each of them individually and asked them to complete the Intervention Rating Profile (IRP-15; see Appendix G) adapted from Martens, Witt, Elliott, & Darveaux (1985). This 15-item questionnaire allowed teachers to rate various aspects of DBRC including its acceptability and effectiveness. Each item is scored using a 6-point Likert scale that ranges from strongly disagree (1) to strongly agree (6). To assess each peer mediators' and target students' acceptability of the procedures and whether they found the DBRC to be effective and efficient, they completed a

brief 7-item questionnaire using a 5-point Likert scale ranging from disagree (1) to agree (5) developed by the PI (see Appendix H and I, respectively). The PI met with each student individually, read each question and possible answer to him/her, and then recorded his/her vocal responses on the sheet.

Experimental Design

This study used a non-concurrent multiple baseline across participants design with follow up probes. Each participant began with baseline followed by the introduction of the DBRC in a staggered fashion across target students. During baseline, the PI visually reviewed the level of disruptive and appropriate behaviors to ensure a stable trend is achieved before introducing the intervention. Follow up probes were completed 1 week after the end of the intervention phase for two instructional periods to assess for maintenance of treatment effects.

Procedure

The procedures of this study were based on the study by Taylor and Hill (2017); however, we used a non-concurrent multiple baseline design, peers as mediators, DBRC for only one instructional period, and partial interval recording to collect data on disruptive and replacement behaviors. Prior to the intervention phase, the PI conducted direct observations of each target student using the FAO (see Appendix A) to identify potential target behaviors. The PI also met with each teacher to review and identify these target behavior(s) for each target student. This was completed with the FAI between the PI and teacher (O'Neill, Horner, Albin, Storey, & Sprague, 1990; see Appendix B), which included several questions about the target students' behavior in the classroom. Once the target behaviors were identified, the PI conducted a preference assessment for each target student and DBRC trainings for peer mediators. The study then began with a baseline phase, followed by the DBRC evaluation phase.

Preference assessment. A preference assessment was completed with each target student (see Appendix J; adapted from Worthington & Gargiulo, 2003) to identify preferred items, people, or activities the student can access at the end of the observation period if the student has earned the necessary number of points. The reinforcement survey adapted from the Functional Assessment Interview by Worthington and Gargiulo (2003) was used. It consisted of open-ended questions (i.e., “What do you like to do in your free time during school?”) that were vocally presented to the target student. Once a variety of possible reinforcers were identified for each target student, the PI met with the teacher to determine which items were available and could be delivered as a reinforcer for the target students’ behavior during this study. The PI then developed a list of the available items for each target student and asked the target students to select their most preferred items. Their most preferred items were added to a reward menu (see Appendix K) that stated the item and amount or duration available. All items listed in the reward menu cost the same number of points, thus the target student was able to access one of those items whenever he met the required number of points for the day. Similarly, the same preference assessment and a list of available items to choose from were delivered and completed by the peer mediators to identify preferred items that were provided to the peer at the end of each observation period for their participation with the study.

Peer and teacher training. Behavioral Skills Training (BST; Miltenberger et al., 2004) was used to train the peer mediators and teachers their roles with implementing the DBRC intervention. The training was conducted separately for each peer and teacher during the baseline phase during a time that was convenient for both the peer and teachers. During BST, teachers and peer mediators received instructions on the implementation of DBRC and these instructions consisted of the information on the procedural integrity checklists (see Appendix E and F). In

addition, the PI modeled correct implementation of each step of the procedures, allowed the participant to rehearsal or role play the step, and provided corrective feedback on the teacher and peers' performance. During the training, the teachers and peers had access to the procedural integrity checklist as a reference for correct responding. Training continued until peers and teachers implemented all steps correctly with a confederate across three consecutive mock trials (i.e., RA). Training sessions lasted approximately 15 min per peer and 15 min per teacher.

Baseline. During baseline classroom instruction was carried out as usual and teachers managed the student's disruptive behavior as had done prior to enrolling in this study. All three teachers used verbal prompts to redirect student's disruptive behavior and to encourage students to engage in appropriate behavior. Both Mrs. Stark and Mrs. Lannister also used a behavior clip chart for the entire classroom that had seven behavior levels ranging from "contact home" to "outstanding." They used this behavior clip chart throughout the duration of this study. During the specified instructional period, the teacher also used the DBRC to collect data on the target student's behavior, but these data were not reviewed with the target students. The PI and RAs also used 10-s partial interval recording to collect baseline for disruptive and replacement behaviors. At least three baseline sessions were completed with each participant. All decisions about phase changes were based on levels of disruptive behavior thus baseline data were collected until disruptive behavior was on a stable or increasing trend.

DBRC evaluation. The procedures implemented during this phase were similar to those described by Taylor and Hill (2017), however, peers helped to implement the DBRC and each session consisted of one instructional period. We began by meeting with the classroom teacher(s) to select a criterion for each student to access a reinforcer. That is, the amount of points the student was required to earn to access a reinforcer. This criterion was selected based on baseline

levels of problem behavior and teacher's input. The criterion differed across participants but remained the same throughout the study. Robb's criterion was earning at least 50% (6 points) of the possible points whereas for Ned and Jon the requirement was 67% (8 points) of points. During this meeting, the PI also reviewed with the teacher the DBRC procedures and their expectations. Teachers were instructed to conduct their class as usual but to deliver points using the DBRC and to sign the DBRC at the designated time, as discussed below. The PI then met with the peer mediator and the target student to explain the purpose of using the DBRC, the number of points the target student was required to earn to access a reward, and the available rewards.

At the beginning of the observation period, the target student's DBRC and reward menu were given to the peer mediator and target student. They briefly met to review the DBRC. The peer mediator reviewed with the target student the criteria to earn points. That is, which behaviors resulted in delivery of points, which behaviors resulted in points being withheld, the number of points the student needed to earn during that class to receive a reinforcer, and available reinforcers for the target student could choose from using the reward menu (see Appendix K, respectively). The peer completed part of the DBRC with the target student (i.e., the target student's name, date, and the determined reinforcer to earn). This initial meeting lasted 1 to 3-minutes. The dyads then returned the DBRC to the teacher and participated in their normal class activities and procedures. During this observation period, the teacher used the DBRC to score the target student's behavior. At the end of each observation interval, the teacher assigned a score to the student (i.e., 2 or 0 points). At the end of the observation period, the teacher calculated the total number and percentage of points earned. This information was written on the DBRC. The teacher also signed, dated, and circled either a happy or sad face on the DBRC. If

the target student did not meet their point criterion, the teacher circled the sad face on the DBRC. If the target student met or exceeded their point criterion, the teacher circled the happy face on the DBRC. The teacher then returned the DBRC to the target student without any verbal feedback or communication. If the target student met criterion for reinforcement, the teacher told the peer mediator to deliver the reinforcer to the student. That is, the peer mediator either physically delivered the desired reinforcer to the target student or verbally informed the student that they could have access to the reinforcer (i.e., “you earned your points, so you can use the computer.”). If the target student did not meet criterion for reinforcement, the student did not earn the reward. The peer mediator attained their selected reinforcer from the PI. After the target student had a chance to review the completed DBRC, the teacher collected the DBRC to make a copy for her record and then gave the completed DBRC to the PI. This phase continued until stable responding or an increasing trend for the replacement behavior and a decreasing trend for the disruptive behavior was demonstrated across five consecutive sessions.

Follow up. To assess for maintenance of treatment effects we conducted two follow up observations with Ned and Jon 1 week after the end of the intervention phase. Follow up observation sessions were not completed with Robb because his teacher assignment changed, and he was placed in another faculty position.

RESULTS

Results of the preference assessment and observations completed using the FOA are depicted in Table 1 and Figure 1, respectively. As shown in Table 1, we identified a variety of preferred items for each target student and peer student. Figure 1 contains the data from the observations and depicts how often disruptive behaviors were preceded and followed by either lack of attention/access to attention or demand presentation/escape during the observations. During these observations Robb, Ned, and Jon engaged in disruptive behavior in 46, 47, and 68 percentage of the intervals, respectively, thus all three met criteria to participate in this study. Robb's disruptive behavior was preceded by lack of attention in 81% and presentation of demands in 19% of the opportunities. In addition, his problem behavior was followed by attention in 100% of the opportunities. These data suggest that his problem behavior was likely maintained by access to attention. Ned's disruptive behavior was preceded by demands in 72%, lack of attention in 28%, and resulted in escape for 62%, and attention for 38% of the opportunities. These data suggest that his disruptive behavior may be multiply maintained by access to attention and escape from demands. Finally, Jon's disruptive behavior was preceded by lack of attention in 90%, presentation of demands in 10%, resulted in access to attention in 78% and escape in 22% of the opportunities; thus, indicating that his disruptive behavior may be maintained by access to attention.

Results of the DBRC evaluation are displayed in Figures 2 and 3. Figure 2 contains data on the occurrence of disruptive and replacement behavior for each of the target students. Figure 3 contains the percentage of DBRC points earned. Across both figures, data are included for

baseline, DBRC evaluation, and follow up phases. During baseline, Robb engaged in disruptive behavior in an average of 49% (range, 42% to 55%) of the intervals and academic engagement occurred in an average of 51% (range, 45% to 58%) of the intervals. In addition, Robb earned less than 20% (range, 4% to 17%) of the points. Once DBRC was introduced, although some variability was observed, disruptive behavior decreased to a mean of 27% (range, 6% to 71%) and academic engagement increased to a mean of 73% (range, 29% to 94%) of the intervals, and Robb met his criteria for reinforcement during the last six sessions.

The middle panel of Figures 2 and 3 show Ned's results. During the baseline phase, Ned engaged in disruptive behavior for an average of 54% (range, 46% to 73%) of intervals and he engaged in the replacement behavior for an average of 46% (range, 27% to 54%) of the intervals. Ned also earned an average of 17% of DBRC points (range, 0% to 50%). Once the DBRC intervention was introduced, despite the little variability in the first few sessions, there was an immediate decrease in disruptive behavior; disruptive behavior decreased to a mean of 13% (range, 1% to 30%) and replacement behavior increased to a mean of 87% (range, 70% to 99%) of the intervals. During the intervention phase Ned also earned an average of 79% of DBRC points (range, 50% to 100%). Finally, similar levels of responding were observed during the follow up sessions with disruptive behavior occurring in an average of 7% (range, 3% to 10%) of intervals and replacement behavior occurring in an average of 94% (range, 90% to 97%) of intervals. Ned also met his point criterion throughout the follow up, earning an average of 92% (range, 83% to 100%).

Jon's results are shown on the bottom panel of Figures 2 and 3. In baseline, Jon engaged in disruptive behavior in an average of 80% (range, 49% to 100%) of intervals, and he engaged in replacement behavior in an average of 20% (range, 0% to 51%) of intervals. He also earned an

average of 21% of DBRC points (range, 0% to 67%). During the intervention phase, disruptive behavior immediately decreased occurring in an average of 13% (range, 2% to 17%) of intervals, and replacement behavior increased to a mean of 87% (range, 83% to 98 Jon met his point criterion throughout the intervention phase. Similar levels of the target responses occurred during the follow up observations with disruptive behavior occurring in an average of 19% (range, 18% to 19%) of intervals and replacement behavior occurring in an average of 82% (range, 81% to 82%) of intervals. During the follow up observations Jon achieved his point criterion, earning an average of 75% (range, 67% to 83%).

The results of the social validity assessments completed by the teachers are shown on Table 2. The teachers completed the IRP questionnaire adapted from Martens et al. (1985). The questionnaire consisted of 15 questions that were answered using a 6-point Likert scale ranging from strongly disagree (1) to strongly agree (6). All three teacher completed the social validity assessment at the end of the study. The mean score for Mr. Snow was 5.1 (range, 3 to 6), 5.7 (range, 5 to 6) for Mrs. Lannister, and 5.8 (range, 5 to 6) for Mrs. Stark. The results from the assessment indicate that the teachers found the DBRC intervention acceptable and effective in a classroom setting. Additionally, the target students also completed a 7-item questionnaire with a 5-point Likert scale ranging from disagree (1) to agree (5). The results are reported on Table 3. The mean social validity score for Robb was 5, 4.5 (range, 4 to 5) for Ned, and 4.8 (range, 4 to 5) for Jon. Overall, the results suggest that all three target students liked the intervention, thought it was helpful and easy, and would like to continue using it. Moreover, all three target students indicated that thee aspect of the intervention they liked the most was earning a reward; Robb also stated that he liked earning points throughout the class period. Similarly, the peer mediators completed a 7-item questionnaire with the same 5-point Likert scale as that in the questionnaire

completed by the target students. The peer mediator social validity scores are shown on Table 4. The mean score for Arya was 5, and 4.8 (range, 4 to 5) for Jaime and Catelyn. The results for all three peer mediators indicate that they liked helping with the intervention, they thought it was easy to use, and they would like to use it again to help other students. Each peer mediator also stated that they enjoyed helping their classmate. Finally, as previous described, the mean procedural integrity score for the three peer mediators was 100% across all phases.

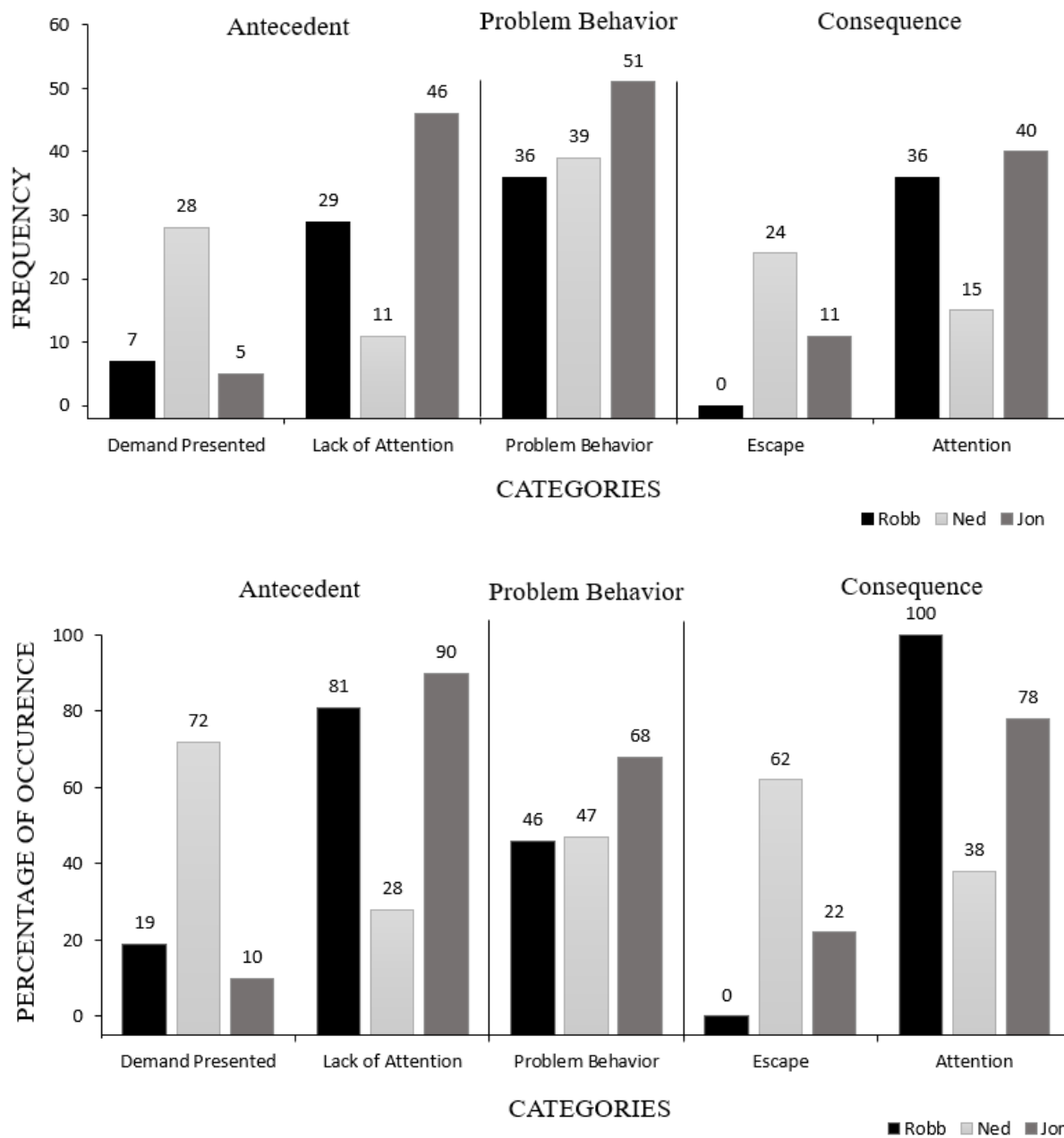


Figure 1. Summary of the data from the observations completed using the FAO for Robb, Ned, and Jon. The top graph includes the frequency of each category whereas the bottom graph represents percentage of occurrence. Both graphs depict problem behavior, its antecedents and consequences.

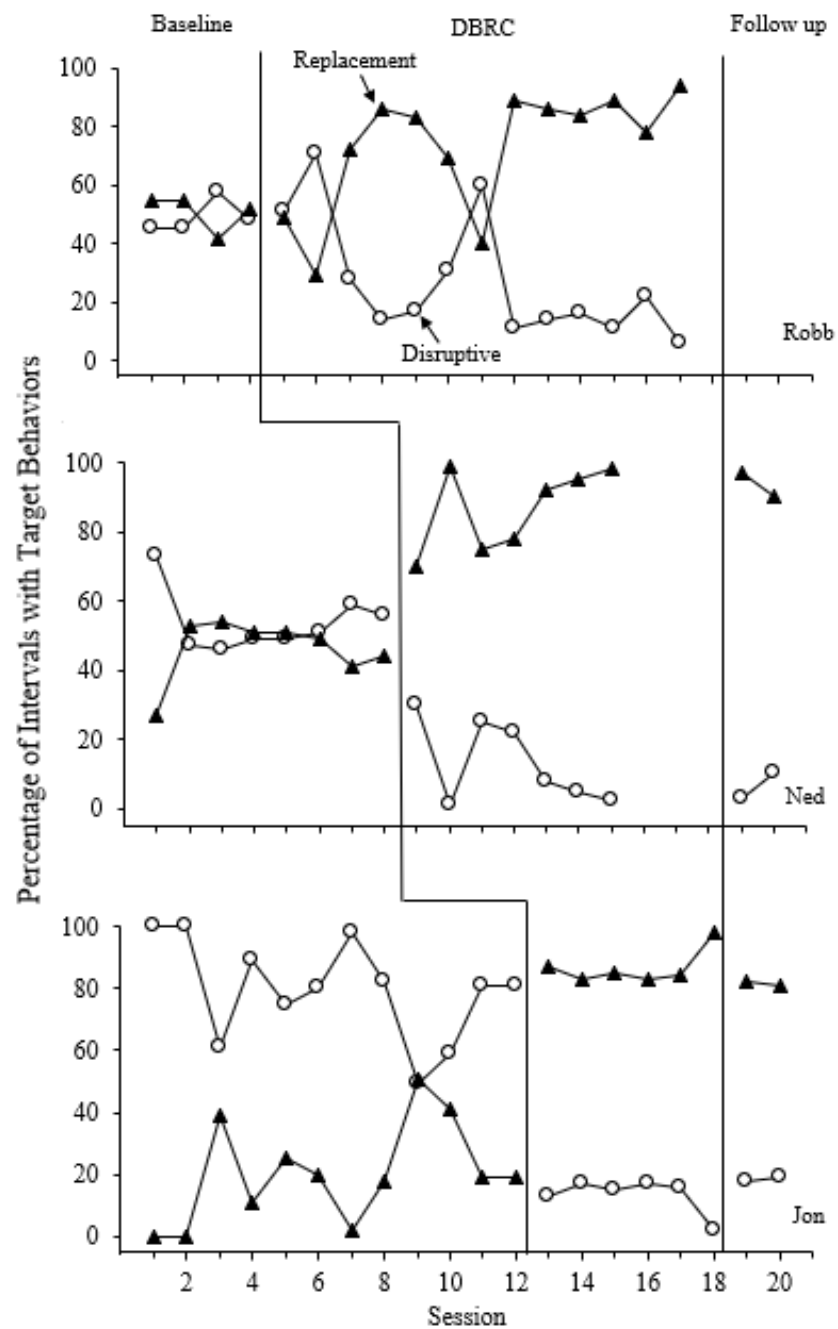


Figure 2. Percentage of intervals with disruptive and replacement behaviors for each participant during baseline, DBRC evaluation, and follow up sessions.

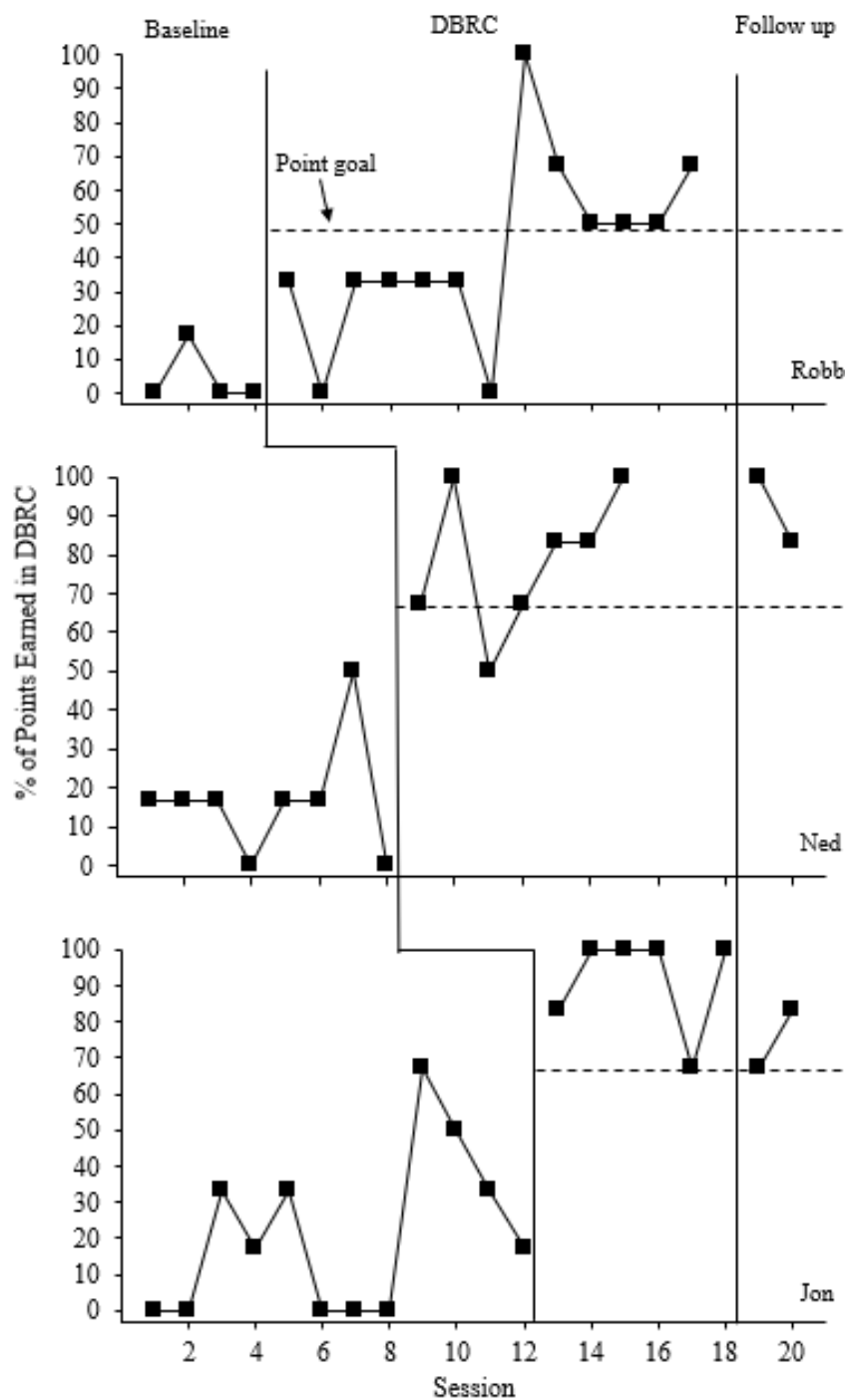


Figure 3. Percentage of points earned by each target student across baseline, DBRC evaluation, and follow up sessions.

Table 1. Preferred Items and Activities for each Target Student and Peer mediator

Participant	Preferred Items/Activities
Robb	Watching Star Wars, spending time with school counselor, hanging out with friends, computer, iPad, chocolate, light savers, Doritos, going to the library, earning teacher praise, coloring, drawing, painting, free time, extra recess, fidget spinners, pencils, pens, crayons, stuffed animals, helping the teacher, listening to music, football, soccer, baseball
Ned	Computer, iPad, playing computer games with friends, fidget spinners, pringles, extra recess time, markers, football, baseball, cell phone, making rubber band bracelets, YouTube
Jon	Recess, spending time with friends, playing “heads up seven up,” getting a good note home, coloring, painting, Legos, puzzles, free time in class, computer, iPad, pens, karate, basketball. Transformers, helping the teacher, working with friends, listening to music, fidget spinners
Arya	Spending time with friends, drawing, coloring, making crafts, candy, going to the library, reading, free time in class, pencils, puzzles, working with friends, books, soccer
Catelyn	Spending time with the teacher, playing games with friends, free time to write or draw, Twix, snickers, almond joys, earning stickers, going to the library, coloring, drawing pictures, play doh, iPad, computer, reading, extra recess time, stuffed animals, pencils, pens, crayons, soccer, fidget spinners, puzzles
Jaime	Spending time with the teacher and friends, studying vocabulary words, time off from reading, skittles, going to the library, earning teacher praise, earning stickers, coloring, drawing, painting, playing with stuffed animals, reading, watching movies, free time in class, extra recess time, iPad, computer, puzzles, listening to music, helping the teacher, working with friends

Table 2. Teacher Social Validity Questionnaire Results

Questions	Mr. Snow	Mrs. Lannister	Mrs. Stark	Mean
1. This was an acceptable intervention for the problem behavior engaged in by the target student in my class:	6	6	6	6
2. Most teachers would find this intervention appropriate for behavior problems in addition to those described:	5	5	5	5
3. This intervention proved effective in changing the overall behavior for the target student in my class:	3	6	6	5
4. I would suggest the use of this intervention to other teachers:	5	6	6	5.7
5. The problem behavior was severe enough to warrant use of this intervention:	6	6	6	6
6. Most teachers would find this intervention suitable for behavior problems in their class:	5	6	5	5.3
7. I would be willing to use this intervention in the classroom setting with other students:	5	6	6	5.7
8. This intervention did not result in negative side effects for children in my class:	5	6	6	5.7
9. This intervention would be appropriate for a variety of children and classrooms:	5	5	6	5.3
10. This intervention is consistent with those that I have used in classroom settings:	6	5	5	5.3
11. This intervention was a fair way to handle problem behavior in my classroom:	5	6	6	5.7
12. This intervention was reasonable for the behavior problems in my classroom	5	5	6	5.3
13. I liked the procedures used in this intervention:	6	6	6	6
14. This intervention was a good way to handle problem behaviors in my classroom:	5	6	6	5.7
15. Overall, this intervention was beneficial for the students in my classroom:	5	6	6	5.7

Table 3. Target Student Social Validity Questionnaire Results

Questions	Robb	Ned	Jon	Mean
I liked using the DBRC:	5	4	5	4.7
It was easy to understand my DBRC:	5	5	5	5
I liked having a peer helping with my DBRC:	5	4	4	4.3
I want to keep using the DBRC with a peer:	5	5	5	5
I think the DBRC was helpful for learning classroom expectations:	5	4	5	4.7
Rating of my experience with the DBRC:	5	5	5	5
What I liked most of the DBRC:	Earning points and a reward	I liked getting my reward	Getting a reward	

Table 4. Peer Mediator Social Validity Questionnaire Results

Questions	Arya	Catelyn	Jaime	Mean
I liked helping my teacher with the DBRC:	5	5	5	5
I thought that my role with the DBRC was easy to use:	5	4	5	4.7
I would like to help with the DBRC with another student:	5	5	5	5
I enjoyed interacting with my assigned classmate:	5	5	4	4.7
I think the DBRC helped my classmate learn the classroom expectations:	5	5	5	5
I liked helping my teacher with the DBRC:	5	5	5	5
What I liked most of helping with the DBRC:	Helping	Helping	Helping another student	

DISCUSSION

This study evaluated the effects of a DBRC intervention with a peer mediator component on disruptive behavior of three elementary-aged children identified as at risk for EBD. DBRC with a peer component was successful in reducing disruptive behavior and increasing academic engagement for all three participants. In addition, treatment effects maintained during the 1-week follow up observations. Furthermore, procedural integrity was 100% for the three peer mediators suggesting that peers can learn to implement the DBRC procedures. Finally, social validity measures from teachers, target students, and peers was high suggesting that all participants found the intervention to be acceptable and helpful.

This study extends the literature on DBRCs in several ways. First, this appears to be the first study to evaluate the effects of DBRCs on disruptive behaviors of students at risk for being classified as EBD. Previous research on the efficacy of DBRCs was completed with typically developing students, and children with IDD or ADHD (LeBel et al., 2013; Riden et al., 2017; Taylor & Hill, 2017). Second, the current study included peers as mediators for the DBRC intervention. Studies have shown that peers have been effective mediators with various interventions, such as prompting procedures (Arceneaux & Murdock, 1997), CICO (Collins et al., 2016), PRT (Harper et al., 2007), and modeling (Charlop et al., 1983). These studies also demonstrated that peers were able to implement the intervention procedures with high integrity. Finally, this study appears to be the first to use BST to train both the peer mediator and the teacher participants on the DBRC implementation procedures, and this training method resulted in high procedural integrity scores for the peer mediator (100%) and for the teachers (on average

above 90%). Previous research has used several other training procedures to teach DBRC implementation, such as reviewing written scripts (Murray, 2008), using self-report checklists to guide the participants (LeBel et al., 2013), and instruction and modeling (Taylor & Hill, 2017). The procedure integrity scores across these studies ranged from 80% and above (Murray, 2008) to 100% (LeBel et al., 2013). Thus, the results of the current study suggest that BST may be more effective training procedure and that peer mediators can learn to assist their teachers with behavioral interventions.

Although the DBRC procedure was effective, the mechanism responsible for its efficacy is unclear. During the intervention target students received reinforcement in the form of points and preferred items. In addition, they received attention from the teacher and peer mediator. Another aspect of the intervention that may have had an impact on the target behavior is the initial contingency reviews. Because this study did not complete a component analysis of the DBRC procedures it is unclear which of these components was responsible for the changes in target behavior. However, based on the information gathered during the social validity assessment, it is likely that access to tangible reinforcers, contingent of appropriate behavior, exerted some control over the target students' behavior because all target students indicated that this was their most preferred part of the intervention.

In addition, consistent with previous research, the DBRC procedure implemented in this study was not a function-based intervention. That is, although potential functions of the disruptive behavior of each target student were identified through the FAO, we did not attempt to provide access to the functional reinforcers contingent on alternative behavior. It is possible that greater reductions in disruptive behavior and increases in academic engagement would have been attained if the DBRC was modified to be a function-based intervention. This possibility should

be explored in future research. However, the efficacy of the DBRC without considering the function of the target students' problem behavior can be helpful for the school setting because they often have limited resources necessary to conduct functional behavior assessments.

Furthermore, results of this study are consistent with findings from previous research (Dougherty & Dougherty, 1977; LeBel et al., 2013; Taylor & Hill, 2017). For instance, Dougherty and Dougherty (1977) evaluated DBRCs in a general education classroom and found that the intervention led to a decrease in disruptive behaviors across all participants. LeBel et al. (2013) combined DBRC with a home communication component and demonstrated a reduction in problem behaviors for preschoolers. Similarly, Taylor and Hill (2017) improved appropriate classroom behaviors and reduced disruptive behaviors in children with IDD using a DBRC intervention. The current study replicates these findings with a novel population and students at risk for EBD. Moreover, the findings are consistent with previous research on the inclusion of peers as effective interventionists. For instance, Collins et al. (2016) conducted three 10-min trainings with each peer interventionist where the researchers provided a checklist with the steps, modeled the steps and practice opportunities. Each peer interventionist maintained 100% treatment integrity for the duration of the study. Harper et al. (2007) conducted seven 20-min training sessions to train PRT for each peer interventionist. The researchers trained the peers by describing each component of PRT, modeled the component, had each peer describe the individual components and then role play each. All six peer mediators achieved an overall average of above 90% integrity.

There are some limitations of the current study that must be considered. First, due to the setting used for this study (i.e., regular classroom in a public school), we were unable to control for all potential confounding variables. For instance, during the treatment phase, Robb's mom

began to give Robb a reward contingent on the number of points he earned at school on his daily classroom point sheet. It is unknown when this his mother introduced this contingency and whether it had any impact on Robb's disruptive and appropriate behavior at school. Future research should extend research on the DBRC intervention by evaluating whether the addition of a parent communication component and home contingencies would make the intervention even more effective. Moreover, we were unable to control for potential reactivity to the presence of the researchers. The students were aware of the researcher(s) in the classroom and of their involvement in the study; thus, reactivity may have influenced the treatment effects found in this study. The intervention was also only in effect when the PI was present in the classroom during one observation period per day. Due to this, it is possible that the intervention itself, the presence of the researcher, or both factors influenced the target student's change in behavior. Mr. Snow, Robb's teacher, for example, reported that Robb's behavior was significantly better during the observation period, when the researcher was present in comparison to times when the intervention/researcher were not there. To reduce reactivity, future research could extend the baseline phase, have the researcher present in class during times when the intervention is not in effect, and/or collect data in a less conspicuous manner.

Furthermore, the DBRC intervention was only implemented during one 30 to 60-min observation period, 2 to 5 times a week. For this study, shorter intervals were selected to ensure that the target students could have more immediate contact with the reinforcer, and to increase the feasibility of intervention implementation for teachers and the peer mediators. In this study, it is unknown if the intervention would yield the same results if the intervention period was extended to the duration of the school day. However, previous research have implemented teacher-mediated DBRC throughout the entire school day and found the procedure to be

effective (e.g., Taylor & Hill, 2017). Future research should attempt to identify optimal initial interval durations for DBRC and ways to systematically increase the interval to the duration of the school day. Future research should also investigate whether treatment effects maintain across the school day when the DBRC intervention is implemented for a brief interval during the day. This may lead to greater feasibility of the intervention.

In summary, this study evaluated whether peer-mediated DBRC could be used to decrease disruptive behavior and increase appropriate behavior in a classroom setting for three students at risk of EBD. Results demonstrated that the intervention was effective and that peers can help to implement the DBRC with high integrity. Thus, the findings indicate that DBRC is an effective, acceptable, and non-resource intensive intervention that can be used in classroom settings.

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APPENDICES

Appendix A: Functional Assessment Observation Form

FUNCTIONAL ASSESSMENT OBSERVATION FORM¹

Name: _____						Starting Date: _____						Ending Date: _____						Perceived Functions												
TIME(S)	Behaviors					Predictors									Get/Obtain				Escape/Avoid					Actual Consequences		COMMENTS: (If nothing happened in period,) Write initials.				
						Demand/Request	Difficult Task	Transitions	Interruption	Alone (no attention)					Attention	Desired Item/Activity	Self-Stimulation		Demand/Request	Activity ()	Person		Other/Don't Know							
Total(s)																														
Event(s)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25					
Date(s)																														

Appendix B: Functional Assessment Interview – Teacher Version

Functional Assessment Interview (FAI) – Teacher Version

Demographics		
Student:	ID#:	Date:
School:	Grade:	DOB:
Exceptionality:	Medical Dx:	Medications:
Teacher:	Case Manager:	Informant:
Team:		

Target Behavior

(Define in specific, observable, measurable terms)

1. Describe the behavior of concern:

2. How often does the behavior occur?

3. How long does the behavior last?

4. How intense is the behavior?

5. What is happening when the behavior occurs?

6. When / where is the behavior most / least likely to occur?

7. With whom is the behavior most / least likely to occur?

Appendix C: Robb's Daily Behavior Report Card (DBRC)

Definition:

Replacement: Academic Engagement: **To earn points you need to...**

Continuously interact with the assigned task or material given by the teacher

Disruptive: Task Avoidance: **You won't earn points if you...**

Do not begin a task and/or you are doing anything other than completing the task given by the teacher, such as talking or getting out of your seat without permission, playing with items, and putting your head on the desk

My goal is _____ points to earn _____

Point scale:

2: student did not engage in any disruptive behaviors and showed replacement behavior independently

1: No disruptive behaviors occurred, nor replacement behavior occurred

0: Disruptive behavior occurred

Student name: _____

Date: _____

	10:30 – 10:40 am	10:40 – 10:50 am	10:50 – 11:00 am	11:00 – 11:10 am	11:10 – 11:20 am	11:20 – 11:30 am	Total:
On Task							

Total Points Earned: _____

Final Percentage: _____



My day was: (circle one):

Teacher Signature: _____ Date: _____

Ned's Daily Behavior Report Card

Definition:

Replacement: Academic Engagement: **To earn points you need to...**

Continuously interact with the assigned task or material given by the teacher

Disruptive: Task Avoidance: **You won't earn points if you...**

Do not begin a task and/or you are doing anything other than completing the task given by the teacher, such as talking or getting out of your seat without permission, playing with items, and putting your head on the desk

My goal is _____ points to earn _____

Point scale:

2: student did not engage in any disruptive behaviors and showed replacement behavior independently

1: No disruptive behaviors occurred, nor replacement behavior occurred

0: Disruptive behavior occurred

Student name: _____

Date: _____

	2:00 – 2:10 pm	2:10 – 2:20 pm	2:20 – 2:30 pm	2:30 – 2:40 pm	2:40 – 2:50 pm	2:50 – 3:00 pm	Total:
On Task							

Total Points Earned: _____

Final Percentage: _____



My day was: (circle one):

Teacher Signature: _____ Date: _____

Jon's Daily Behavior Report Card

Definition:

Replacement: Academic Engagement: **To get points you need to...**

Follow directions and do the task that the teacher asks you to do

Disruptive: Task Avoidance: **You won't get points if you...**

Do not start the task and/or you are doing anything other than doing the task given by the teacher, like talking, playing with items, putting your head on the desk, and looking around the room away from your task for more than 10 seconds.

My goal is _____ points to earn _____

Point scale:

2: student did not engage in any disruptive behaviors and showed replacement behavior independently

1: No disruptive behaviors occurred, nor replacement behavior occurred

0: Disruptive behavior occurred

Student name: _____

Date: _____

	9:50 – 9:55 am	9:55 – 10:00 am	10:00 – 10:05 am	10:05 – 10:10 am	10:10 – 10:15 am	10: 15 – 10:20 am	Total:
On Task							

Total Points Earned: _____

Final Percentage: _____



My day was: (circle one):

Teacher Signature: _____ Date: _____

Appendix D: Interval Recording Sheet

Participant Identifier: _____ Observer: _____ Date: _____

Target Behavior: Replacement: _____ Definition: _____

Disruptive: _____ Definition: _____

Type: 10 s Partial Interval

Interval # (10 s)	RB	DB	Interval # (10 s)	RB	DB	Interval # (10 s)	RB	DB	Interval # (10 s)	RB	DB
1			26			51			76		
2			27			52			77		
3			28			53			78		
4			29			54			79		
5			30			55			80		
6			31			56			81		
7			32			57			82		
8			33			58			83		
9			34			59			84		
10			35			60			85		
11			36			61			86		
12			37			62			87		
13			38			63			88		
14			39			64			89		
15			40			65			90		
16			41			66			91		
17			42			67			92		
18			43			68			93		
19			44			69			94		
20			45			70			95		
21			46			71			96		
22			47			72			97		
23			48			73			98		
24			49			74			99		
25			50			75			100		

Appendix E: Peer Mediator Procedural Integrity Checklist

	Obs 1	Obs 2	Obs 3
Upon class arrival			
1. Meets with target student to review DBRC			
2. Review behavioral expectations to earn points (e.g., target replacement behaviors)			
3. Review behaviors that they will not earn points for (e.g., target disruptive behavior)			
4. Reviews # of points needed to access reinforcer			
5. Review reward menu and allows target student to select a reinforcer for the session			
6. Fills out the DBRC (the target student's name, date, and reinforcer to earn) with target student			
7. Returns the DBRC to the teacher			
End of instructional period			
8. If point goal met: delivers reinforcer			
Subtotal:	/	/	/
Total:		/	
Percentage:			

Appendix F: Teacher Procedural Integrity Checklist

	Obs 1	Obs 2	Obs 3																																				
During baseline																																							
1. Teacher follows usual class routine	<table border="1"><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr></table>													<table border="1"><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr></table>													<table border="1"><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr></table>												
2. Delivers 0 or 2 points to target student during intervals	<table border="1"><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr></table>													<table border="1"><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr></table>													<table border="1"><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr></table>												
During DBRC Evaluation																																							
3. Receives DBRC from dyads																																							
4. Scores either 0 or 2 points at the end of each interval	<table border="1"><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr></table>													<table border="1"><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr></table>													<table border="1"><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr></table>												
End of Instructional Period																																							
5. Calculates the total points earned and final percentage and fills out those sections on the DBRC																																							
6. a) Circles the sad face if target student did not meet point goal OR b) Circles smiley face if target student meets/exceeds point goal																																							
7. Signs and dates the designated area on DBRC																																							
8. Returns DBRC to target student without verbal feedback																																							
9. If applicable, tells peer mediator to deliver reinforcer to target student																																							
Subtotal:	/	/	/																																				
Total:		/																																					
Percentage:																																							

Appendix G: Intervention Rating Profile

Please circle the number that best describes your agreement or disagreement with each statement using the scale below.

1= Strongly Disagree 2= Disagree 3= Slightly Disagree 4= Slightly Agree 5= Agree
6= Strongly Agree

1. This was an acceptable intervention for the problem behavior engaged in by targeted students in my class.
1 2 3 4 5 6
2. Most teachers would find this intervention appropriate for behavior problems in addition to those described
1 2 3 4 5 6
3. This intervention proved effective in changing the overall problem behavior for targeted students in my class.
1 2 3 4 5 6
4. I would suggest the use of this intervention to other teachers.
1 2 3 4 5 6
5. The problem behavior was severe enough to warrant use of this intervention.
1 2 3 4 5 6
6. Most teachers would find this intervention suitable for the behavior problems in their class.
1 2 3 4 5 6
7. I would be willing to use this intervention in the classroom setting with other students.
1 2 3 4 5 6
8. This intervention did *not* result in negative side effects for children in my class.
1 2 3 4 5 6
9. This intervention would be appropriate for a variety of children and classrooms.
1 2 3 4 5 6
10. This intervention was consistent with those I have used in classroom settings.
1 2 3 4 5 6
11. This intervention was a fair way to handle the problem behavior in my classroom.

1 2 3 4 5 6

12. This intervention was reasonable for the behavior problems in my classroom.

1 2 3 4 5 6

13. I liked the procedures used in this intervention.

1 2 3 4 5 6

14. This intervention was a good way to handle the problem behaviors in my classroom.

1 2 3 4 5 6

15. Overall, this intervention was beneficial for the students in my classroom.

1 2 3 4 5 6

Appendix H: Social Validity Questionnaire for Peer Mediators

Please circle the number that best describes your agreement or disagreement with each statement using the scale below.

1. I liked helping my teacher with the report card:

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

2. I thought that my role with the report card was easy to use:

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

3. I would like to help with the report card with another classmate:

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

4. I enjoyed interacting with my assigned classmate:

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

5. I think the daily behavior report card helped my classmate learn the classroom expectations.

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

6. What I liked most of helping with the daily behavior report card:

7. Rating of my experience with the daily behavior report card:

1	2	3	4	5
Disliked it	Slightly disliked it	Neutral	Slightly liked it	Liked it

Appendix I: Social Validity Questionnaire for Target Students

Please circle the number that best describes your agreement or disagreement with each statement using the scale below.

1. I liked using the daily behavior report card:

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

2. It was easy to understand my daily behavior report card:

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

3. I liked having a peer (another student) help me with the daily behavior report card:

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

4. I want to keep using the daily behavior report card with a peer:

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

5. I think the daily behavior report card was helpful for learning classroom expectations:

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

6. What I liked most of the daily behavior report card:

7. Rating of my experience with the daily behavior report card:

1	2	3	4	5
Disliked it	Slightly disliked it	Neutral	Slightly liked it	Liked it

Appendix J: Preference Assessment Questionnaire

Section E – Reinforcement Survey

Directions: To complete this survey, it is recommended that each question be read to the student in an informal manner. While you should guard against pressuring a student to complete each statement, please be sure to follow-up or clarify any vague responses.

For younger children, you may want to consider placing each item on cards and use them to play a game (using a generic game board). The items can be made less threatening in a game-like format because you will be completing the statements along with the student.

Your primary goal of this survey is to determine those reinforcers that have the greatest potential for use in a plan for behavior support.

Part I: Sentence Completion

1. My favorite adult at school is:
The things I like to do with this adult are:
2. My best friend at school is:
Some things I like to do with my best friend at school are:
3. Some other friends I have at school are:
Some things I like to do with them are:
4. When I do well in school, a person I'd like to know about it is:
5. When I do well in school, I wish my teacher would:
6. At school, I'd like to spend more time with:
Some things I'd like to do with this person are:
7. One thing I'd really like to do more in school is:
8. When I have free time at school I like to:
9. I feel great in school when:
10. The person who likes me best at school is:
I think this person likes me because:
11. I will do almost anything to keep from:
12. The kind of punishment at school that I hate most is:
13. I sure get mad at school when I can't:
14. The thing that upsets my teacher the most is:
15. The thing that upsets me the most is:

From Worthington & Gargiulo, 1998

16. Some things I like are (check all that apply):

Favorite Edible Reinforcers

- ☐ candy (specify _____)
- ☐ fruit (specify _____)
- ☐ drinks (specify _____)
- ☐ cereal (specify _____)
- ☐ snacks (specify _____)
- ☐ nuts (specify _____)
- ☐ vegetables (specify _____)
- ☐ other (specify _____)

Academic Reinforcers

- ☐ going to library
- ☐ having good work displayed
- ☐ getting good grades
- ☐ having parents praise good school work
- ☐ giving reports
- ☐ making projects
- ☐ completing creative writing projects
- ☐ earning teacher praise
- ☐ helping grade papers
- ☐ getting a good note home
- ☐ earning stickers, points, etc.
- ☐ other (specify _____)

Activity Reinforcers

- ☐ coloring/drawing/painting
- ☐ making things (specify _____)
- ☐ going on field trips
- ☐ taking care of/playing with animals
- ☐ going shopping
- ☐ eating out in a restaurant
- ☐ going to movies
- ☐ spending time alone
- ☐ reading
- ☐ having free time in class
- ☐ having extra gym/recess time
- ☐ working on the computer
- ☐ other (specify _____)

Favorite Tangible Items

- ☐ stuffed animals
- ☐ pencils, pens, crayons
- ☐ paper (specify _____)
- ☐ trucks, tractors
- ☐ sports equipment (specify _____)
- ☐ toys (specify _____)
- ☐ books (specify _____)
- ☐ puzzles

Social Reinforcers

- ☐ teaching things to other people
- ☐ being the teacher's helper
- ☐ spending time with my friends
- ☐ spending time with the teacher
- ☐ spending time with the principal
- ☐ spending time with _____
- ☐ having class parties
- ☐ working with my friends in class
- ☐ being a tutor
- ☐ being a leader in the class
- ☐ other (specify _____)
- ☐ other (specify _____)

Recreation/Leisure Reinforcers

- ☐ listening to music
- ☐ singing
- ☐ playing a musical instrument
- ☐ watching TV
- ☐ cooking
- ☐ building models
- ☐ woodworking/carpentry
- ☐ favorite sports (specify _____)
- ☐ working with crafts
- ☐ other (specify _____)
- ☐ other (specify _____)
- ☐ other (specify _____)
- ☐ other (specify _____)

Appendix K: Reward Menus

Robb's Reward Menu

Reward	# of Points
Computer: 10 min	6
iPad: 10 min	6
Time with friends (playing games)	6
Fidget Spinner: 10 min	6

Ned's Reward Menu

Reward	# of Points
Computer/iPad: 15 min	8
Time with friends: 15 min (playing games)	8
Fidget Spinner: 15 min	8
Pringles: 10 pringles	8

Jon's Reward Menu

Reward	# of Points
Computer/iPad: 10 min	8
Fidget Spinner: 10 min	8
Coloring: 10 min	8

Arya's Reward Menu

Reward
iPad/Computer: 10 min
Reading a book: 10 min
Playing games with friends: 10 min
Candy (chocolate)
Coloring or drawing: 10 min

Catelyn's Reward Menu

Reward
iPad/Computer: 15 min
Time with friends: 15 min (playing games, drawing, etc.)
Fidget Spinner: 15 min
Stickers
Candy (Twix, snickers, almond joys)
Free time by myself (draw, write, read, etc.)

Jaime's Reward Menu

Reward
iPad/Computer: 10 min
Playing with stuffed animal: 10 min
Coloring, drawing: 10 min
Studying words: 10 min

Appendix L: IRB Approval Letters



RESEARCH INTEGRITY AND COMPLIANCE
Institutional Review Boards, FWA No. 00001669
12901 Bruce B. Downs Blvd., MDC035 • Tampa, FL 33612-4799
(813) 974-5638 • FAX (813) 974-7091

October 12, 2018

Deanna Canfield
CFBH-Child and Family Behavioral Health
Tampa, FL 33612

RE: **Expedited Approval for Initial Review**

IRB#: Pro00036393

Title: The effects of a Daily Behavior Report Card Intervention: Inclusion of a Peer-Mediator Component

Study Approval Period: 10/11/2018 to 10/11/2019

Dear Ms. Canfield:

On 10/11/2018, the Institutional Review Board (IRB) reviewed and **APPROVED** the above application and all documents contained within, including those outlined below.

Approved Item(s):

Protocol Document(s):

[Protocol, Version #1, 9/23/18](#)

Consent/Assent Document(s)*:

[Adult Consent teacher, Version #1, 9/23/18.pdf](#)

[Parental Permission peer mediator, Version #1, 9/23/18.pdf](#)

[Parental Permission target student, Version #1, 9/04/18.pdf](#)

[Student Written Assent peer mediator, Version #1, 10/10/18.pdf](#)

[Student Written Assent target student, Version #1, 10/10/18.pdf](#)

Verbal assent_peer mediator, Version #1, 10/11/18

Verbal assent_target student, Version #1, 10/11/18

*Please use only the official IRB stamped informed consent/assent document(s) found under the "Attachments" tab. Please note, these consent/assent documents are valid until the consent document is amended and approved. Verbal Consent forms are not stamped.

It was the determination of the IRB that your study qualified for expedited review which includes activities that (1) present no more than minimal risk to human subjects, and (2) involve only procedures listed in one or more of the categories outlined below. The IRB may review research through the expedited review procedure authorized by 45CFR46.110. The research proposed in this study is categorized under the following expedited review category:

(7) Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

This research involving children as participants was approved under 45 CFR 46.404: Research not involving greater than minimal risk to children is presented.

Requirements for Assent and/or Permission by Parents or Guardians: 45 CFR 46.408 :
Permission of one parent is sufficient.

Assent is required of all children.

As the principal investigator of this study, it is your responsibility to conduct this study in accordance with IRB policies and procedures and as approved by the IRB. Any changes to the approved research must be submitted to the IRB for review and approval via an amendment. Additionally, all unanticipated problems must be reported to the USF IRB within five (5) business days.

We appreciate your dedication to the ethical conduct of human subject research at the University of South Florida and your continued commitment to human research protections. If you have any questions regarding this matter, please call 813-974-5638.

Sincerely,



Kristen Salomon, Ph.D., Chairperson
USF Institutional Review Board

Amendment 1 Approval



RESEARCH INTEGRITY AND COMPLIANCE
Institutional Review Boards, FWA No. 00001669
12901 Bruce B. Downs Blvd., MDC035 • Tampa, FL 33612-4799
(813) 974-5638 • FAX (813) 974-7091

December 18, 2018

Deanna Canfield
CFBH-Child and Family Behavioral Health
Tampa, FL 33612

RE: **Expedited Approval of Amendment**

IRB#: Ame1_Pro00036393

Title: The effects of a Daily Behavior Report Card Intervention: Inclusion of a Peer-Mediator Component

Dear Ms. Canfield:

On 12/18/2018, the Institutional Review Board (IRB) reviewed and **APPROVED** your Amendment. The submitted request and all documents contained within have been approved, including those outlined below, as described by the study team.

I stated in the Adult (teacher) Consent Forms and in section 3.1 of the IRB form, that the intervals that the teachers will be delivering points with the Daily Behavior Report Card would be between 10 to 15 minute long intervals. However, I have a participant whose observation period will only be 30 minutes long, so the teacher and I want to change it so that the intervals for earning points can be 5 minutes long. We believe that this will allow the student to have more opportunities to earn points for his appropriate behavior.

Approved Item(s):

Consent Document(s)*:

[Adult Consent teacher Clean, Version #2, 12/14/18.pdf](#)

*Please use only the official IRB stamped informed consent/assent document(s) found under the "Attachments" tab on the main study's workspace. Please note, these consent/assent document(s) are valid until they are amended and approved.

Re-consent of the one teacher is needed if that teacher has already been consented with Version #1 of the consent form.

As the principal investigator of this study, it is your responsibility to conduct this study in accordance with USF HRPP policies and procedures and as approved by the USF IRB. Any changes to the approved research must be submitted to the IRB for review and approval via an amendment. Additionally, all unanticipated problems must be reported to the USF IRB within five (5) business days.

We appreciate your dedication to the ethical conduct of human subject research at the University of South Florida and your continued commitment to human research protections. If you have any questions regarding this matter, please call 813-974-5638.

Sincerely,

A handwritten signature in black ink, appearing to read 'Kristen Salomon', followed by a horizontal line.

Kristen Salomon, Ph.D., Chairperson
USF Institutional Review Board