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Evaluation of the Class Pass Intervention: An Application to Improve Classroom Behavior in Children With Disabilities

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Abstract

The Class Pass Intervention (CPI) is designed to be implemented within School-Wide Positive Behavioral Interventions and Supports (SWPBIS) to decrease disruptive behavior and teach replacement behavior for students needing Tier 2 intervention. The CPI has two components: (a) providing negative reinforcement for requesting a break by using a class pass, and (b) providing positive reinforcement for continued engagement in activities without breaks by exchanging unused passes. The purpose of the present study was to extend the literature on the CPI by further evaluating the impact of the first component of the CPI on mild to moderate disruptive behavior, hypothesized to be maintained by social negative reinforcement, and academic engagement of three elementary school students with disabilities. A multiple baseline across participants design was used to demonstrate the impact of the CPI on student behavior during a problematic academic time period. The results indicated that the use of CPI was functionally related to a decrease in disruptive behavior and increase in academic engagement for all participating students whose problem behavior was hypothesized to be maintained by social reinforcement. Results were maintained for one participant while fading the magnitude of the intervention. Students and teachers rated CPI as effective and acceptable.

Keywords

challenging behavior, classroom intervention, positive behavior support

A multi-tiered system of supports, specifically School-Wide Positive Behavioral Interventions and Supports (SWPBIS), addresses the need for proactive strategies. SWPBIS is an educational framework that employs evidence-based practices to decrease problem behavior and increase appropriate behavior within three tiers of support, with each tier differing in the amount of support and individualization provided (Horner et al., 2009; Lewis & Sugai, 1999). Problem behavior in classrooms may be prevented with universal interventions (Tier 1). If problem behavior arises and persists, students may need supplementary (Tier 2) support or even tailored (Tier 3) support (Sugai, Sprague, Horner, & Walker, 2000).

Tier 2 supports within SWPBIS are provided to students who require more focused assessment and intervention strategies than Tier 1 alone offers. This secondary level of support is designed for quick behavioral changes with minimal cost (March & Horner, 2002; Sugai & Horner, 2002). Continuous availability, minimal teacher and staff response effort, and ongoing data collection used to make data-based decisions are important components of Tier 2 interventions (Lee, Sugai, & Horner, 1999). Thus, Tier 2 interventions that provide teachers with effective intervention strategies, require minimal teacher time and school resources, and can be implemented with fidelity by teachers would greatly benefit teachers and students (Maggin, Zurheide, Pickett, & Baillie, 2015). The evidence base of Tier 2 behavior interventions in the school setting, such as the Good Behavior Game and Check/In-Check/Out, is growing (Embry, 2002; Kleinman & Saigh, 2011). Multiple studies have shown positive outcomes of potential Tier 2 interventions (e.g., Campbell & Anderson, 2008; Fairbanks, Sugai, Guardino, & Lathrop, 2007). However, meeting student needs with limited resources is challenging (Maggin et al., 2015).

One Tier 2 intervention that is used within SWPBIS and requires minimal teacher response effort and school resources and has recently been tested in the school setting is the Class Pass Intervention (CPI; Cook et al., 2014). The

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CPI is similar to the Bedtime Pass Program (BPP; Friman et al., 1999) designed to decrease bedtime concerns in typically developing children. Prior to bedtime, the child is provided with a predetermined number of passes to use when wanting to leave the bedroom and gain access to a competing reinforcer such as attention from his or her parents or items. The use of a pass serves as an appropriate way for the child to access reinforcement in the form of escape from the bedroom. Once the passes are used, the child may no longer leave the room, serving as an extinction procedure. If the child does not use all of the passes, he or she may exchange them for a preferred item or activity, thus encouraging the child to remain in his or her bedroom. Friman et al. (1999) demonstrated positive effects of the BPP, leading to the development of the CPI to be used in the classroom.

There are two components in the CPI. The first component involves giving class passes to students who exhibit disruptive behavior to avoid or escape a difficult or nonpreferred academic task, teaching the students how to appropriately request a break by using a class pass, and providing negative reinforcement by honoring the request. Thus, providing the negative reinforcement consequences contingent on requesting a break by using the passes is considered the first component of the CPI (Collins et al., 2016; Cook et al., 2014). The second component involves allowing students to exchange the passes, when they choose to hold on to the passes while engaging in academic tasks, for a highly desired activity, item, or special privilege, which can help increase time spent engaging in academic tasks. Thus, the second component of CPI is providing positive reinforcement consequences contingent on continued engagement in activities without breaks by exchanging unused passes.

The presentation of the physical class pass could serve as a visual to signal to students that a break is available and prompt students to use the functionally equivalent replacement behavior of requesting a break instead of engaging in disruptive behavior to avoid a task (Conroy, Asmus, Sellers, & Ladwig, 2005; Haley, Heick, & Luiselli, 2010; O'Connor, Prieto, Hoffmann, DeQuinzio, & Taylor, 2011). Students who use the class pass are provided with the choice of when to take a break, which may be more effective than prescheduling breaks. Presenting this choice serves as an antecedent manipulation that may decrease disruptive behavior (Cook et al., 2014). Choice can also serve as an abolishing operation for problem behavior (Carlson, Luiselli, Slyman, & Markowski, 2008) because making a choice provides access to reinforcement that might be obtained when engaging in problem behavior.

The CPI has been evaluated in elementary school (Andreu & Blair, 2017) and high school settings with students without disabilities (Collins et al., 2016; Cook et al., 2014) as a Tier 2 intervention. In all three studies, academic engagement increased, and disruptive behavior decreased once the CPI intervention was introduced. The CPI was effectively faded, and results were maintained. Teachers and students deemed the intervention to be acceptable, indicating that this intervention may be socially valid in complex school environments. Collins et al. (2016) suggested that it might be beneficial to consider individual differences in academic skills as individuals with lower academic skills may need a supplementary intervention to address the difficulty of tasks from which escape is highly reinforcing. Although the CPI was originally designed for addressing escape-motivated disruptive behavior, Cook et al. (2014) and Collins et al. (2016) suggested that the CPI could address multiple functions of disruptive behavior, making it an option for a larger target population. The CPI can address multiple functions by providing negative reinforcement in the form of escape from a task or positive reinforcement if the break includes access to (a) a tangible or activity, (b) attention, or (c) sensory stimulation. However, it is not clear whether using the first component only, without the second component of providing additional positive reinforcement for saving passes, will attain desirable outcomes for student behavior. Although the CPI can be used with students who are not responding to universal supports, and may have the potential to be effective in addressing multiple functions, providing a single reinforcer or isolating contingency components may prevent the potential problem of implementing a complex and labor-intensive intervention, as suggested by Fisher, Greer, Romani, Zangrillo, and Owen (2016). Examining single components of a multi-component treatment may be advantageous as it can allow for greater internal validity and easier implementation while obtaining similar results (Foster & Mash, 1999).

In addition, it is not clear whether the CPI is effective with various student populations. As discussed above, the CPI has mainly been evaluated with students without disabilities. Evaluating the impact of the CPI on mild and moderate disruptive behavior of students with disabilities would provide valuable information on the feasibility of using the CPI as a Tier 2 intervention for students with disabilities who need additional behavior support. Therefore, the current study aimed to evaluate the impact of the CPI on disruptive behavior and academic engagement of students with disabilities who were not responding to universal class-wide interventions. Specifically, the study examined the extent to which the use of the CPI without the positive reinforcement component would impact targeted behaviors.

Method

Participants and Setting

This study was conducted in three classrooms serving students with disabilities, Grades K through 5, at two public elementary schools in a suburban area of a city in Florida. School personnel were familiar with SWPBIS and were

implementing Tier 1 supports. Three students and their corresponding three teachers were recruited to participate in this study. Selection criteria indicated that student participants should (a) receive special education services with a diagnosed disability or developmental delay, (b) engage daily in disruptive behavior during at least 20% of an instructional period, (c) be between the ages of 5 and 12, and (d) have not been adequately progressing with typical Tier 1 or class-wide supports. Students were excluded if they (a) were determined by the school district to have low cognitive functioning levels (i.e., an IQ score of 70 or below during evaluation for eligibility), (b) were frequently absent, (c) exhibited severe challenging behavior that may be harmful to themselves or others (i.e., self-injury and physical aggression), or (d) had previously participated in a similar intervention.

A functional behavior assessment (FBA) was conducted to confirm the students' eligibility. The teachers completed the Functional Assessment Checklist for Teachers and Staff (FACTS; March et al., 2000) with potential student participants to identify antecedents, consequences, problematic academic activities associated with high levels of disruptive behavior, and hypothesized functions. The first author directly observed students using the Functional Assessment Observation Form (FAOF; O'Neill et al., 1997) to corroborate FBA information obtained from the FACTS and to confirm the hypothesized function of their disruptive behavior. The FAOF is designed to observe the individual over multiple days to identify the antecedents, consequences, and perceived functions of target problem behavior. For each student, two 20- to 40-min observations were conducted during problematic instructional time periods using the FAOF.

Students. Three students in three classrooms participated in the study. The students were all Caucasian boys between the ages of 8 and 10 years old. English was their primary language. Stevie was 10 years old receiving special education services with a diagnosis of a speech-language delay. He was served in an inclusive fifth-grade classroom with 21 students, 10 of whom were receiving special education services. He received additional support from an Exceptional Student Education (ESE) specialist in the form of small-group instruction during most academic periods. According to his teacher, Stevie was on track to pass the fifth-grade level for all subjects, based on the state's basic education standards. Following the FBA, Stevie's disruptive behavior was hypothesized to be maintained by escape. The FBA results indicated that his problem behavior mostly occurred when academic demands (e.g., independent reading or guided notes) were given and resulted in removal or delay of the demands. Previous interventions included redirection, seat change, reprimands, and loss of privileges.

Kirk was 8 years old in the third grade. He was diagnosed with autism spectrum disorder (ASD) and language impairment. He was dually served in a third- through fifth-grade self-contained pod designed for students with ASD. His classroom was comprised of 14 students and was staffed with a teacher and one instructional aide. Kirk was on grade level for reading during the study. Following a FBA, Kirk's disruptive behavior was primarily hypothesized to be maintained by escape. The FBA results indicated that his problem behavior mostly occurred when academic demands (e.g., math worksheet with multiple problems or correcting fluency assignments) were given and resulted in a modification or delay of the demands. Problem behavior was also likely when teacher attention (e.g., assistance was provided to others) was on other students and resulted in gaining attention (e.g., redirection to task or reassurance that he could do it). Kirk's behavior was greatly affected by a lack of sleep, a prevalent motivating operation identified via teacher report. This motivating operation was not observed in baseline, but was observed in the intervention phase, leading to some variability in the data. Previous interventions included using first/then statements (providing reinforcement contingent on meeting a set expectation), pre-scheduled "brain breaks" that included educational games on an iPad or manipulative activities before entering into the academic period, and providing one-on-one assistance.

Peter was 9 years old in the fourth grade. He was diagnosed with ASD and attention deficit hyperactivity disorder. He was placed in the same third- through fifth-grade self-contained pod as Kirk; however, Peter was served in a different classroom as the classes rotated for each subject. Peter scored "average" on the Kaufman Test of Educational Achievement, Third Edition (KTEA-3; Kaufman & Kaufman, 2014) in the domains of reading, math, and writing. Following a FBA, Peter's disruptive behavior was hypothesized to be maintained by escape. The observations conducted during problematic academic time periods indicated that an academic demand (e.g., written responding to a prompt) was consistently related to occurrences of his problem behavior and typically resulted in removal or delay of the task. Previous interventions included discussions of expected behavior, change of seating arrangement, prompting back to task, and activity change (e.g., instead of working on worksheet, helping a friend who was behind).

Teachers. Three corresponding female teachers participated. They reported to be familiar with implementing behavior management interventions at all tiers (i.e., 1, 2, and 3). Stevie's teacher was 42 years old, had 20 years of teaching experience, and completed multiple related degrees: BA in Elementary Education, MS in Curriculum and Instruction, and MS in Special Education. She was teacher-of-the-year at her school during the study. Kirk's teacher was 41 years old. Years of experience and degree information were not obtained. Peter's teacher was 27 years

old, had 3 years of teaching experience, and completed a BS in Education with certifications in K–6 subject areas, K–12 ESE, and ASD. She also had endorsements in Reading and English as a Second Language.

Measurement

Direct observation of student behavior. The primary dependent variables included disruptive behavior and academic engagement. Disruptive behavior was defined as distracting others or impeding ongoing classroom activities, such as calling out, talking to a peer or getting out of seat without permission, making inappropriate noises, throwing objects, and playing with irrelevant objects (Cook et al., 2014). Spinning spinner fidgets or squeezing stress balls was added to the disruptive behavior definition for Stevie as the teacher did not allow engagement with these items during academic time for all students in the classroom due to disruptions from other students. The following behaviors were excluded from the definition for Kirk and Peter: fidgeting with materials (e.g., tapping pencil) unless heard from 15 ft away and reading materials out loud; standing within 3 ft of desk or sitting on a wiggle chair (Kirk); and sitting on folded legs as long as all legs of the chair are on the floor (Peter). Academic engagement was defined as attending to teacher or academic speaker, reading (scored as eyes on materials), writing, responding to an academic task, completing assignment, following teacher direction, raising hand, or attending to materials for longer than 2 s. This definition was revised from Thorne and Kamps (2008). Direct observational data were collected using a 15-s partial interval recording system. The first author and a research assistant (RA) collected data approximately 2 times per week. The RA (a graduate student in an Applied Behavior Analysis Master's program) received training with videos available publicly on the Internet. The RA scored at least a 90% interobserver agreement (IOA) with the researcher prior to scoring for the study.

Individualized Behavior Rating Scale Tool (IBRST). To supplement direct observational data, teachers developed and used the IBRST (Iovannone, Greenbaum, Wang, Dunlap, & Kincaid, 2014) during the targeted academic time period. The authors sought to investigate whether the IBRST could feasibly be used by teachers to monitor student progress during implementation of the CPI. The IBRST is comprised of a 5-point Likert-type scale. The first author helped teachers individualize the anchors for each participant. Teachers were asked what percentage of time disruptive behavior and academic engagement occurred during a target academic time period on a *very bad day*, a *so-so day*, and a *very good day* to set the anchors. A *very bad day* for Stevie and Kirk was characterized by at least 80% of the session with disruptive behavior and at most 20% of the session with academic engagement. A *very good day* was characterized by at most 35% of the session with disruptive behavior and at least 60% of the session with academic engagement. A *very bad day* for Peter was characterized by at least 60% of the session with disruptive behavior and at most 20% of the session with academic engagement. A *very good day* was characterized by at most 20% of the session with disruptive behavior and at least 60% of the session with academic engagement.

Treatment integrity. The research team collected treatment integrity data during 100% of sessions across all intervention phases using a checklist with a task analysis of implementation steps, adapted from the Cook et al. (2014) study. Implementation steps included (a) providing class passes, (b) prompting each student to use a class pass to access a break when either appropriate behavior or precursor behavior is observed, (c) allowing student to go to a predetermined area engaging in the predetermined break activity, (d) ensuring student returns to the academic activity once the predetermined break time elapses, and (e) tallying the number of passes saved up by student at the end of the instructional period. Completing the IBRST following the instructional period was also added as an implementation step to promote the teachers' data-based decision making about the CPI during implementation (e.g., fading of the number of passes, adding in positive reinforcement). Treatment integrity was calculated as a percentage of steps completed correctly. The treatment integrity scores indicated that the intervention was implemented with high levels of integrity (i.e., over 80%) in all observations with an exception of one session (75%) for Stevie's teacher. Treatment integrity averaged 97.9% across teachers.

Social validity. An adapted Intervention Rating Profile (IRP-15; Martens, Witt, Elliot, & Darveaux, 1985) was used after the intervention phase to assess the social validity of the CPI by teachers. Seventeen items were assessed to determine the extent to which teachers found the intervention to be acceptable, effective, and efficient. Fifteen of the items used a 6-point Likert-type scale. Two items were open-ended questions, which asked what the teachers liked and disliked most about using the CPI. Student social validity was assessed using a similar questionnaire with seven items total, four rated on a 5-point scale, two open-ended questions, and a yes-no question. One of the question arranged the rating scores in an opposite order to detect whether the students were simply circling an answer without reading the questions.

IOA. IOA was assessed for an average of 47.9% of all phases for student behaviors, ranging from 14.3% to 80% of sessions across participants and behaviors. To assess IOA, the RA independently and simultaneously collected data on

the target behaviors and treatment integrity. IOA for student target behaviors was calculated by dividing the number of intervals with agreements by the total number of intervals with agreements and disagreements and multiplying by 100%. IOA for treatment integrity was assessed for 55.6% of the intervention sessions and calculated by dividing the number of steps scored with agreements by the total number of steps with agreements and disagreements and multiplying by 100%. IOA for Stevie averaged 97.7% for disruptive behavior and 97.5% for academic engagement and was collected during 44.4% of sessions across all phases. IOA for Kirk averaged 94.4% for disruptive behavior and 97.3% for academic engagement and was collected during 41.7% of sessions across all phases. IOA for Peter averaged 99.2% for disruptive behavior and 99% for academic engagement and was collected during 43.3% of sessions across all phases. IOA ranged from 90% to 100% across participants, behaviors, and phases. Implementation fidelity IOA was 100% across all phases and participants.

Experimental Design and Procedures

Experimental design. A multiple baseline across participants design was utilized to evaluate the outcome produced by the first component of the CPI (allowing escape from a task to neutral break items). Intervention was staggered across participants based on stability of baseline data, introducing intervention first to the participant whose target behavior showed the most stable pattern in baseline. A reversal was embedded into Stevie's evaluation. The number of passes provided to Peter was systematically faded. Decisions for changing phases were based on the stability of disruptive behavior data and teacher treatment integrity. Direct observations lasted on average 18 min, ranging from approximately 10 to 41 min, with the exception of two sessions (one baseline session for Stevie and one intervention session for Kirk) lasting for only 7 min due to the participants unexpectedly being pulled out for testing or other educational services. During Kirk's intervention session lasting 7 min, he used a class pass during the last minute of the observation before being pulled out of class. The average observation duration of 18 min was consistent across both baseline and intervention (18.7 min and 17.2 min, respectively), thus students had approximately the same amount of opportunity to engage in disruptive behavior outside of their class pass break time. Observations were typically conducted during the beginning of the academic time periods. Teachers rated their student's behavior using the IBRST at the end of the direct observation.

Baseline. In the baseline phase, the participating students joined in whole-group lessons, small-group activities, independent tasks, and projects during a targeted academic time period, depending on the scheduled curriculum activities. English Language Arts (ELA) was targeted for Stevie and Peter, and Mathematics was targeted for Kirk, as these were the subjects when the most disruptive behavior occurred. The teachers managed their classrooms as usual using class-wide behavior systems. Existing behavior supports remained in place, including teaching classroom expectations, verbal redirections, visual supports, and environmental arrangements (either used as an antecedent manipulation or consequence). During baseline, tangibles provided as break items were not available. Baseline data were collected approximately 2 days per week for a period of 2 to 3 weeks.

Teacher and student training. The first author provided teachers with a 30-min training on the use of CPI prior to implementation. This training occurred using Behavioral Skills Training (Hogan, Knez, & Kahng, 2015) that included a brief overview and instructions, modeling, teacher role-plays, and feedback. To ensure that training was implemented as planned, the author was scored on the fidelity of the training by the RA using a task analysis and scored 100% during all trainings. Teachers were provided with an implementation fidelity checklist that listed each step in the CPI for reference during the intervention phase. This checklist was the same as the integrity checklist used during intervention phases. Teachers were required to demonstrate all steps independently with 100% fidelity during training. Students received 10-min training. The first author and teacher provided instructions on how to use the class pass (e.g., holding the pass in the air) and four situations under which to use the passes (e.g., bored, tired, frustrated, and/or need help). They modeled the expected use of the class passes, and students were provided with an opportunity to role-play and received feedback on their performance.

Intervention. All participating students received the first CPI component following baseline; however, Stevie experienced a reversal and Peter experienced fading of the number of class passes. During the target period, locations where participants could escape when using a pass were set up within the classroom. To prevent them from disrupting classmates, teachers set up a designated area away from the main instruction area. Students only had the opportunity to access designated neutral items or activities during breaks, which were identified through teacher report following a naturalistic free operant preference assessment completed by the teacher. The teachers reported that these neutral items and activities were not used as rewards prior to this study. A timer (via visual timer, iPad, or smartphone) was used to ensure that breaks were brief (5 min or less) and signaled students to return to their academic task. The number of passes provided to students was determined based on the length of the instructional period to ensure that they were not missing a significant amount of instructional time. As the participating school district preferred to minimize

time away from instruction over the average amount of time that elapsed between instances of disruptive behavior, baseline data were used to negotiate with the teachers regarding the magnitude of negative reinforcement provided (e.g., length of break time).

When Stevie used a class pass, he was allowed 2 min in a comfortable chair (i.e., rocker or moon chair) and accessed fidgets and/or a dry erase board with marker. Stevie was provided with two passes during a 30-min ELA period. When Kirk used a class pass, he was allowed 5 min to access dinosaur manipulatives or building blocks at a desk set up at a side wall of the classroom. Kirk was provided with two passes during a 60-min math period. When Peter used a class pass, he was allowed 5 min in a wiggle seat at a desk to free draw with a pencil and blank printer paper. Peter was originally provided with three passes during a 105-min ELA period; however, the number of passes were systematically faded in subsequent phases. To ensure the students would immediately access the break, the materials accessed were controlled. When the timer went off, the student was prompted to forfeit the tangible and reminded that they could use another pass to access it later (if they had another pass).

Each student received a predetermined number of passes prior to the start of the targeted period in addition to any existing interventions used in baseline. Each student raised his pass and was provided with a break from the academic task consequently. If the student was observed engaging in precursor behavior, the teacher prompted the student to use a pass by asking if he would like to use a pass to take a break. Precursor behavior included putting his head on his desk or looking around the room for more than 5 s (Stevie); sighing, putting his head on his desk or arm, or shaking his head (Kirk); or putting his feet on his chair seat, looking around the room for more than 5 s, or tapping his pencil quietly, unable to hear from less than 15 ft away (Peter). Students were not allowed to use their class pass when engaging in disruptive behavior. Teachers reminded students of what to do, using a first-then statement (e.g., "first you have to finish one more problem, then you can use a class pass"). The students gained access to the designated break area for 2 to 5 min, as predetermined. They had to wait at least 5 min before using another pass; however, they did not request to use another pass within this 5-min criterion. Treatment integrity dropped below 80% in one session with Stevie's teacher during intervention, and with the provision of feedback, the teacher scored 100% during the next session.

Fading and reversal. To facilitate intervention maintenance, systematic fading of the number of passes was conducted with Peter as he responded immediately to the intervention and data were stable for three sessions. The teacher paired the fading procedure with a praise statement to increase the likelihood of student success (e.g., "you are doing so well at staying on-task that you don't even need this many passes, so today I want to see how well you do with only X number of passes"). Phases were labeled using "Fading 1" and "Fading 2" to indicate how many passes were faded out (e.g., "Fading 2" indicates that two passes were faded out, meaning that only one pass was provided during this phase). Stevie's teacher was willing to withdraw and reintroduce the intervention to examine whether immediate results would replicate. When the intervention was withdrawn, the teacher did not implement CPI or allow breaks and continued to use existing behavior management strategies as in the baseline phase. Reintroduction of the intervention was contingent on stable data or data trending toward baseline levels.

Results

Direct Observational Data on Disruptive Behavior and Academic Engagement

Figure 1 displays direct observational data (percentage of intervals) on disruptive behavior and academic engagement across three participants during targeted instructional periods. All three participants engaged in high levels of disruptive behavior and low levels of academic engagement during baseline. Immediately following introduction of the class pass, disruptive behavior decreased and academic engagement increased for all participants.

During baseline, on average, Peter's disruptive behavior occurred in 79.9% of intervals (range = 63.9%–87.5%). Academic engagement occurred in 32.1% of intervals (range = 6.7%–47.9%). When the CPI was introduced, an immediate level change occurred for both behaviors. Disruptive behavior decreased to 7.5% (range = 5%–13.8%). Academic engagement increased to 97.2% (range = 95%–100%). There were no overlapping data points between baseline and intervention. In the next phase, as targeted behavior was stable for at least three data points, Peter was provided with two class passes, instead of three class passes. Disruptive behavior (4.0%; range = 0%–8.9%) and academic engagement (97.4%; range = 93.8%–100%) maintained at the levels observed before fading. With only one class pass, Peter continued to maintain progress engaging in 4.7% of disruptive behavior (range = 2.5%–6.7%) and 98.1% of academic engagement (range = 96.7%–100%). Peter consistently used one class pass per target academic task.

Kirk engaged in disruptive behavior, on average, during 66.1% of intervals (range = 45.8%–88.2%) and in academic engagement during 44.6% of intervals (range = 27.5%–58.8%) in baseline. Once the CPI was introduced, disruptive behavior immediately decreased to 25.5% (range = 11.3%–37.5%). Academic engagement increased to 77.8% (range = 57%–98.4%). Overall, Kirk's behavior was the most variable as his teacher reported that his behavior was affected greatly by lack of sleep. There were no overlapping data points for disruptive behavior between

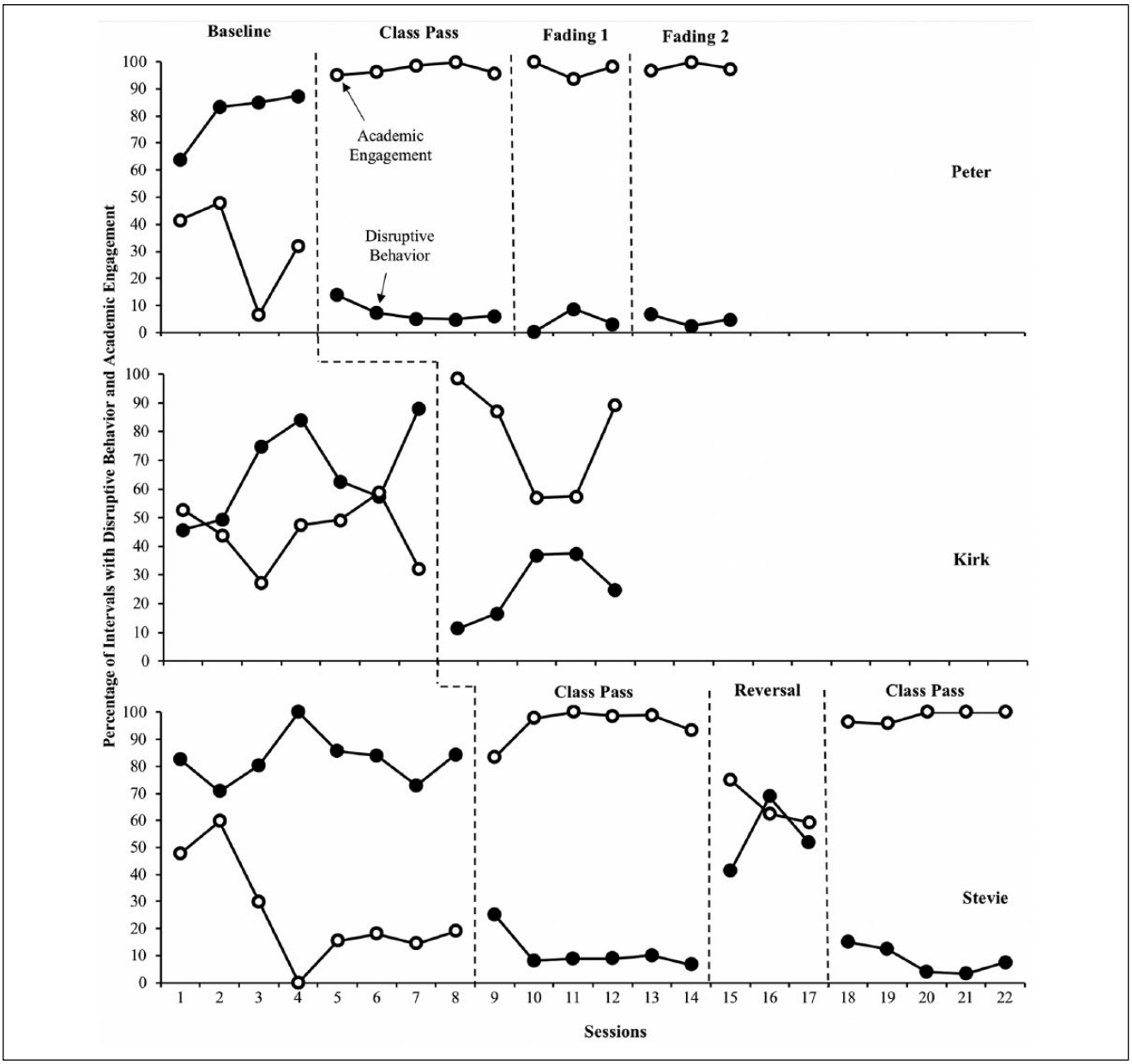

Figure 1. Percentage of intervals with disruptive behavior and academic engagement across conditions and participants.

baseline and intervention; however, there were two overlapping data points for academic engagement. Kirk used an average of 0.8 class passes (range = 0–1) per target academic time period.

In baseline, Stevie engaged in high levels of disruptive behavior (82.6%; range = 70.8%–100%) and low levels of academic engagement (25.6%; range = 0%–59.7%). During intervention, disruptive behavior immediately decreased to 11.3% (range = 6.7%–25%) and academic engagement increased to 95.3% (range = 83.3%–100%). When intervention was withdrawn, Stevie's target behaviors reversed toward baseline levels with increased disruptive behavior (53.9%) and decreased academic engagement (65.6%). Following the re-introduction of CPI, disruptive behavior decreased further to 8.4%. Academic engagement increased 98.5%. There were no overlapping data between the baseline and intervention phases. Stevie used an average of 0.82 class passes (range = 0–1) per target academic time period.

IBRST

Figure 2 displays IBRST data collected by teachers and the corresponding IBRST score following conversion from direct observational data. Data indicated that the teacher-collected rating scale data were similar to direct observational

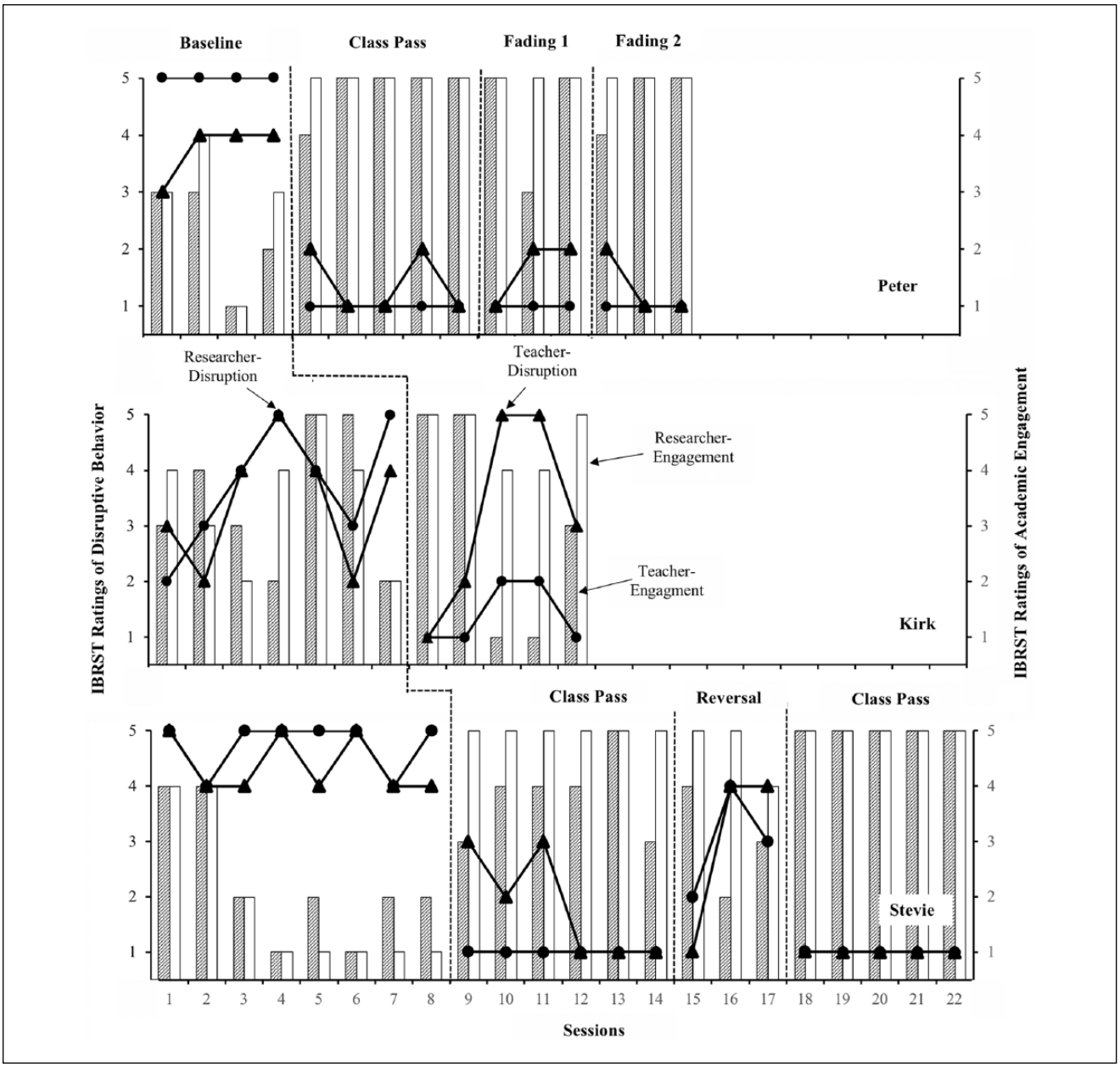

Figure 2. IBRST scores on disruptive behavior and academic engagement across conditions and participants as scored by the researcher and teacher.
Note. IBSRT = Individualized Behavior Rating Scale Tool.

data, as evidenced by similar patterns shown between data paths and with one or two anchor points away in a few sessions. Teachers rated disruptive behavior consistently higher across participants in baseline than in intervention. Once the CPI phase was introduced, teachers' scores of disruptive behavior decreased by 2 to 3 points, on average. It should be noted that Kirk's teacher ratings on disruptive behavior were higher and academic engagement was lower than baseline in two sessions. Teachers' scores of academic engagement increased by approximately 2 to 3 points once the CPI was introduced.

Social Validity

Students rated the CPI high in that they liked using the class pass, it was easy to use, and they would like to continue using the CPI, rating their experience with the CPI as 4.67, on average, out of 5 possible points, ranging from 3.75 to 5.

Students reported that the best part about using the class pass was that they could take a break at any time; however, they disliked having to catch up on work and having a timer as it signaled when the break was over. One student reported that he did not dislike any aspect of the CPI. The teachers also rated the CPI as highly acceptable and effective, as an intervention they would suggest to other teachers, and that it would be appropriate for a variety of children and classrooms. Teachers reported that the CPI did not result in any negative side effects for children in their classroom and required the student to be accountable for their behavior. They liked the idea of students being able to save up passes within a target period and the flexibility of the CPI to meet the needs of all individual students. Overall, teachers rated their experience with this intervention as 5.6, on average, out of 6 possible points, ranging from 5.07 to 6.

Discussion

The results of the study indicate that the first component (negative reinforcement) of the CPI alone decreased disruptive behavior and increased academic engagement for all participants. Although the study team planned on introducing the second component (positive reinforcement) if the students' target behaviors did not adequately improve, this was not necessary. If participants' behaviors were primarily maintained by social positive reinforcement (e.g., access to preferred tangibles) instead of social negative reinforcement in the form of escape to neutral items or activities, the second component, providing positive reinforcement with highly preferred items or activities, may have been needed to see desired results. This supports that the CPI might be a more effective strategy for behavior maintained by negative reinforcement than for behavior maintained by positive reinforcement. In addition, one participant (Stevie) experienced an embedded reversal design. Disruptive behavior and academic engagement trended toward baseline levels when intervention was withdrawn and returned toward original treatment levels when the CPI was reintroduced. Furthermore, intervention outcomes maintained when the magnitude of the intervention (number of passes) decreased with one participant (Peter).

The current study adds to the literature on the CPI by assessing treatment outcomes with students with disabilities. Previous studies examined the effects of the CPI on escape-maintained disruptive behavior (Cook et al., 2014), attention-maintained disruptive behavior (Andreu & Blair, 2017), and behavior in which the function was not identified (Collins et al., 2016). In the current study, all students' disruptive behavior was primarily hypothesized to be maintained by escape, and breaks were designed to provide students with an opportunity to appropriately access escape using the class pass. However, it should be noted that although attention was not formally provided during breaks, Kirk's disruptive behavior was secondarily hypothesized to be maintained by attention, and the teacher provided one-on-one attention in the form of taking him to the break area while talking to him about the activity. It is unclear whether this use of attention was responsible for the variability in Kirk's data. Systematically evaluating the impact of attention on his behavior in a subsequent phase may have helped clarify the role of positive reinforcement on his behavioral outcomes when using the CPI.

Results of this study are consistent with previous studies. A functional relationship was established between the CPI and disruptive behavior, and between the CPI and academic engagement. However, the functional relationship was established with only one component of the CPI rather than with the multi-component CPI used in the previous studies. This suggests that the simplified, single-component CPI may be sufficient for use as a Tier 2 intervention. Social validity was rated highly, as in previous studies. Kirk's teacher was observed using the class passes with her entire self-contained classroom students, indicating that she approved of the intervention. Social validity may have been high due to the low response effort associated with implementing the CPI. Stevie's teacher reported that Stevie requested to use the class passes during mathematics, a non-target academic time period. She also reported that once the CPI was introduced in mathematics, Stevie's behavior improved across settings, lending support to the expectation that this intervention could be effective across multiple settings or academic periods or generalizable. Treatment integrity was high for all teacher participants with minimal support (e.g., some feedback was provided), further indicating that the CPI may be simple to use. It should further be noted that instructional assistants were not trained in the CPI and, thus, they did not support the teachers in implementing the CPI. Yet, the teachers implemented the intervention with high treatment integrity. This may be due, in part, to only implementing the first component of the CPI, which might have prevented the potential problem of implementing a complex and labor-intensive intervention (Fisher et al., 2016). The teachers often requested feedback; however, feedback was only required for one teacher in one session to increase the integrity to acceptable levels. This further supports that the CPI can be used as a cost-effective Tier 2 intervention because it does not require much teacher time and effort to implement during instructions nor much external coaching. Lower response effort was required for teachers to train students on how to exchange passes, arrange for exchanges, and keep track of the number of passes used. Higher social validity could have resulted from the lower response effort associated with desired outcomes (Benazzi, Horner, & Good, 2006; Foster & Mash, 1999).

Implications for Practice

Throughout the process of determining exactly how, where, and what each participant's break would look like, the research team found it critical to provide items that were neutral but with which students had been observed successfully transitioning back to an academic task. This is one of the most crucial aspects in individualizing the CPI considering that it is designed to be easy to use for the student and teacher. If students have difficulty transitioning back to the academic task, the ease of use of CPI is compromised as the teacher must then put in more effort to prompt the student back to the task. Unlike Collins et al. (2016), the students in the current study frequently did not use all of their passes. Typically, only one pass was used. Considering that provision of too many passes can result in a significant loss of instructional time, it might be better for teachers to begin with more passes and fade the number of passes systematically than to start with too few and increase the number of passes. This approach will help teachers avoid potentially reinforcing disruptive behavior. Fading may also be more successful if the decrease in number of passes is paired with praise statements contingent on maintained behavior change, as in the present study. Peter maintained behavioral progress during fading, indicating that teachers may be able to systematically thin the schedule of reinforcement while maintaining desired outcomes. Desired outcomes may maintain due to increased academic stamina or accessing natural contingencies more often, such as differential reinforcement for staying on-task instead of disrupting the class (Lane, Smither, Huseman, Guffey, & Fox, 2007).

A feasible method for teachers to make data-based decisions regarding the outcomes of interventions should be considered. This study assessed the correspondence between direct observational data and IBRST and noted a distinction in a few sessions across participants. All teachers reported some difficulty with estimating the percentage of time each target behavior occurs during "very bad" days versus "so-so" days and so forth when developing the anchors. Although all teachers reported that a percentage of time measure would be easier to conceptualize than duration and frequency measures, they often based IBRST scores on previous performance instead of the set anchors, unless reminded. This became prevalent as most teachers verbally reported why they scored a certain rating following each session and sometimes reported statements similar to the following: "Well, he had a better day today than yesterday so I'm going to put a 2 instead of 3 for disruptive behavior" or "He was doing so well with the passes, but today he seemed sort of off, so I'm going to put academic engagement lower."

As the teachers scored using the IBRST based on only the time period when the first author was present to compare direct observational data to rating scale data, teachers might have had more difficulty rating student behavior based on the restricted time period compared with scoring based on the entire academic period. For example, if a student was engaging in disruptive behavior before the researcher arrived, teachers might have rated disruptive behavior as a 5 ("very bad" day) instead of a 3 ("so-so" day). This may indicate that although teacher ratings may have seemed biased, IBRST ratings may be used in data-based decision making as the teachers' ratings corresponded well to the researcher's converted ratings, a crucial component in multi-tiered intervention models (Iovannone et al., 2014).

Limitations

One limitation of the current study is the low percentage of sessions observed with a second observer for two of the participants (Peter and Kirk) during baseline. However, IOA was assessed for over 50% of sessions in the next phases, and IOA was high, lending support to the conclusion that the data collected during baseline were reliable. A confounding variable, lack of sleep, was reported to affect Kirk's behavior during Sessions 10 and 11 in intervention, leading to variability in Kirk's data. These were the only sessions in which the teacher reported the presence of the establishing operation. Providing more passes was discussed when this establishing operation for increased disruptive behavior was prevalent following Session 10. However, the research team and teacher decided not to increase the number of passes to avoid potentially reinforcing the increase in disruptive behavior and decrease in academic engagement.

Future Research

Future research should replicate this study to lend support for the CPI to become an evidence-based practice, which could lead to a wider use in the classroom setting. More socially valid Tier 2 interventions are needed to improve student behavior and prevent the use of limited resources within Tier 3 interventions (Bruhn, Lane, & Hirsch, 2014). The current study and previous studies have only examined the CPI with elementary and high school students. It would be beneficial to evaluate the CPI with younger students or middle school students. It would also be beneficial to evaluate the efficacy of this intervention with other types of disabilities (e.g., emotional and behavioral disorders). This study examined the effect of one component. Future researchers should conduct a component analysis to examine the relative impact of each component of the CPI to determine which is necessary to produce desired results. It should be noted that this study showed that the first component by itself was effective. This lends support to the expectation that if components can be removed and remain effective, the intervention will be even easier to implement and, therefore, potentially more socially valid (Foster &

Mash, 1999). It is unknown how participant variables mediated the component(s) that may have been necessary to see desired results for a given student in this study. Thus, a recommendation for future researchers is to examine the use of the CPI with more severe forms of problem behavior than those of the students in this study. Stevie's teacher reported that he requested to use the class passes during mathematics class, and his behavior consequently improved during this class as well, suggesting that this intervention may be effective across multiple instructional periods. Therefore, another recommendation for future researchers is to use a multiple baseline across instructional periods design to examine the generality of the CPI. Whereas fading to a lower number of passes was successful for one participant, fading should have been completed with all participants to examine the maintenance effects. It is unknown whether fading would be successful without praise because praise was provided when introducing the next phase of fading. It is possible that pairing praise may only be effective when employing the first component of CPI. Future research should examine whether praise would compete with the opportunity to access a backup reinforcer.

This study showed that the provision of a limited number of passes still led to desired behavior change. Therefore, future research should focus on the determination of passes based on student preference or the presence of establishing operations instead of baseline data. It may be beneficial to vary the number of passes provided each day depending on changes in the environment. If establishing operations were present or if more preferred activities were scheduled, teachers could increase or decrease the number of passes, respectively. Allowing the teacher to avoid reinforcing disruptive behavior by providing more number of passes might have been advantageous in Kirk's case when he experienced a lack of sleep. Despite the limitations, the results of this study indicate the CPI was highly effective in improving classroom behavior of elementary school students with disabilities. The current study was the first to exclusively examine the first component of the CPI.

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