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by

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Abstract

Behavioral disruptions are a common problem in most elementary classrooms. One effective intervention to reduce classroom disruption is the Good Behavior Game (GBG). In this study, the students of two early elementary classrooms experienced three versions of the GBG: an experimenter-led, a teacher-led, and a student-led version. The effects of the GBG on disruptive behavior and peer interactions were evaluated using a combined reversal and multielement design. Student preference for conditions was assessed via a group arrangement of the concurrent chains procedure. All versions of the game reduced disruption compared to baseline sessions, though disruption was slightly higher during the teacher-led sessions in Class 1. There was not a large effect found on peer interactions during the game; however, negative interactions increased slightly in both classes during the GBG. Students overwhelmingly preferred the student-led version. The results of this study add support to the effectiveness of the GBG at reducing disruption as well as the practicality of having students lead the game.

Keywords: classroom, disruptive behavior, Good Behavior Game, group contingency, preference

The Effects of Student- versus Teacher-Implemented Good Behavior Game on Classroom Disruptions and Peer Interactions in Early Elementary Students

Behavioral disruptions in the classroom are a threat to learning faced by elementary school teachers each day. The types of behaviors identified by teachers as the most disruptive, such as talking out of turn, are often harmless by nature but occur so frequently that an inordinate amount of teaching time is spent addressing them (Beaman et al., 2007). Disruptive behavior in the classroom has also been found to increase as students progress from early elementary to the upper levels of education (Beaman et al., 2007). Furthermore, childhood behavioral problems in the early years of education are correlated with a decreased likelihood of receiving a high school diploma and, subsequently, a college degree (McLeod & Kaiser, 2004). Together, these issues demonstrate the importance of interventions for problematic classroom behavior being introduced during the early elementary years.

Although there are many methods of reducing classroom disruptions, one common and effective intervention is the Good Behavior Game (GBG; Barrish et al., 1969). The GBG is a group contingency-based behavioral intervention that can be used to address several classroom behaviors, both appropriate and inappropriate. Many variations of the game have been effective at reducing disruptive behavior (Joslyn et al., 2019). However, there are generally four core components: rule explanation, feedback, criterion, and reward (Barrish et al., 1969). The rules of the game are delivered to the students with clear descriptions of the behaviors necessary for winning the game. Feedback is delivered for a rule violation by adding a mark to the team's score and reminding the class of the rule. A criterion for winning is set prior to the start of the game, and the team that remains below that criterion by the end of the session is declared the winner and receives a reward. If more than one team stays below the criterion, each of those

teams wins. According to a meta-analysis by Bowman-Perrott et al. (2015), the GBG has a large overall effect size, with modified versions of the game being generally as effective as the original. In addition, although the intervention is sometimes used to directly target appropriate behavior such as on-task behavior, there are usually larger effect sizes when attempting to decrease disruptive and other inappropriate classroom behaviors (Bowman-Perrott et al., 2015).

The immediate effectiveness of the intervention is not its only strength, however. Some studies have identified potential long-term benefits of the GBG. For example, disruptive behavior in the classroom setting is correlated with future risky sexual behavior and drug use, the likelihood of which are both reduced by participating in the GBG at a young age (Kellam et al., 2012). This decreased likelihood was found specifically in boys who showed persistent disruptive behavior, however, and was less impactful in boys with lower levels of disruption and girls (Kellam et al., 2012). Another particularly notable benefit of the game is that it has been found to be effective across several populations. Groves and Austin (2017) implemented the GBG in an alternative educational setting with children with severe problem behavior. They found a significant reduction in disruptive behavior as a result of the GBG (Groves & Austin, 2017). The GBG has also been found effective across multiple ages, from preschool (Wiskow et al., 2019) through early elementary (Collier-Meek et al., 2018) and high school (Groves & Austin, 2019).

It is important that the GBG not only reduce classroom disruptions but is also practical for teachers to implement. Fortunately, many studies have found that teachers rate the GBG as a highly reasonable classroom intervention and said they would play the game again in the future and recommend the GBG to other teachers (Lynne et al., 2017). In general, the GBG interventions with the lowest intensities of implementation effort are rated as having the highest

social validity (Maag, 2019). This aligns with the findings of teacher preference in Donaldson et al. (2020), in which most teachers preferred the two-team version of the GBG over a version with five teams. Because teachers are simultaneously implementing the GBG and teaching a lesson, their marking of rule violations and provision of vocal feedback is sometimes inconsistent (i.e., treatment integrity for those aspects of the game is lower than when an experimenter implements the game; Silva & Wiskow, 2020). Such inconsistencies have been shown to result in increased disruptive behavior among students (Silva & Wiskow, 2020).

Another potential method to reduce teacher implementation effort of the GBG is to have students lead the game (Donaldson et al., 2018). Donaldson et al. found that the student-led version of the GBG was equally effective at reducing disruptions as the teacher-led version. Having a version of the GBG that the students themselves lead could allowed the teacher to focus more of their attention on teaching the lesson. Students also reported a preference for the student-led GBG over the teacher-led version (Donaldson et al., 2018). Despite these advantages of a student-led GBG, some limitations of Donaldson et al. (2018) warrant further investigation. The students leading the game required substantial prompting, potentially because they were young (kindergarten), or the researchers did not provide the students with systematic training in implementation, or both. Perhaps older students with systematic training in implementing the GBG would be better equipped to lead the game independently.

In evaluating whether a student-led GBG is a reasonable intervention, it is also important to consider the potential repercussions of having students placed in charge of monitoring the behavior of their peers. For example, the way students interact during or after the game may change as a result of the GBG and may be affected by who leads the game. Currently, only one study measured the effects of the GBG on peer interactions. Groves and Austin (2019)

implemented the GBG in two classrooms, one primary classroom containing students with intellectual disabilities and one secondary classroom of students with histories of aggressive behavior. In both classrooms, they observed positive peer interactions increase and negative peer interactions decrease as a function of the GBG. Additionally, some studies have collected data on peer nominations of aggression. In general, these studies have shown lower levels of peer-nominated aggression as a result of the GBG (Dolan et al, 1993; Leflot et al., 2010). These results suggest less aggressive or bullying behavior being directed towards other students during and after the game; however, these results do not address any resulting positive peer interactions. Donaldson et al. (2018) noted that no negative peer interactions were observed during sessions of the GBG in which the students led the game; however, observations of peer interactions were not systematically performed or recorded (Donaldson et al., 2018). These data could elucidate whether having students lead their peers in the game can successfully reduce disruptive behavior while also determining changes in peer interactions as a function of who implements the GBG.

The primary purpose of the current study was to determine the effects of teacher- and student-led versions of the GBG on disruptive behavior and peer interactions. A secondary purpose of this study was to determine teacher and student preference for the GBG and who implements it.

Method

Participants, Setting, and Materials

Participants were two general education teachers and their students. Class 1 consisted of 24 first-grade students (15 girls, 9 boys; 23 Black, 1 Latino) all between the ages of six and seven and their teacher, a 25-year-old White woman. All students spoke English as their primary language. Class 2 consisted of 19 second-grade students (9 girls, 10 boys; 12 Black, 7 Latino) all

between the ages of seven and eight and their teacher, a 42-year old Black woman. 13 of the students spoke English and six spoke Spanish as their primary language. Experimenters recruited classes in a local elementary school in which the research team had an established relationship. The principal notified all 1st and 2nd grade teachers about the opportunity to participate in a research study examining a game to reduce classroom disruptive behavior and improve peer interactions. Three interested teachers met with the experimenters to begin the consent process. Parents of students in the participating classes were notified of the research via handout in their child's school-home folder and had the opportunity to contact the experimenters with any questions or to opt out of participating (i.e., passive consent for students). All three teachers consented, and no parents opted out. After signing the consent form, one teacher indicated they did not want observers in their class and participation was discontinued prior to the start of data collection.

Experimenters conducted one to three sessions per day, two to three days per week. All sessions took place during whole group instruction or independent work time at a set time each day and lasted approximately 10 min.

Materials included a dry erase board and markers for keeping score, team labels for the groups, printed visuals of the rules, rewards for winning the GBG, and tablets containing Lily data collection software (a component of Multi Option Observational Software for Experimental Studies (MOOSES™)). Rewards rotated across sessions and were determined in conjunction with the teachers. Rewards included small tangible items (e.g., stickers, swipe of scented lip balm on the wrist) and brief special events (e.g., dance party).

Response Measurement and Interobserver Agreement

The primary dependent variables were rates of disruptive behavior and student interactions in responses per minute. Frequencies of both behaviors were recorded and converted to rates by dividing the total frequency by the session duration. Disruptive behaviors consisted of out-of-seat, talking out of turn, and playing with materials. Specific definitions for disruptive behavior in each class were determined in cooperation with the teachers. Out-of-seat behavior was defined as standing or getting out of seat for any reason without asking for permission, except to pick up dropped items. Talking-out behavior was defined as speaking or noisemaking without the teacher's permission (teachers often allowed free responding to questions and calling out answers was not scored as disruption unless teachers specified raising a hand was required prior to asking a question). Observers scored talking out at the start of each utterance and a new instance of talking out if the speaker stopped talking for three seconds. Playing with materials was defined as any manipulation of materials not required to participate in the lesson (e.g., tapping pencils, taking off masks, picking up or tilting Chromebooks). Teacher prompts were scored as a frequency during the student-led GBG if a teacher reminded the student leader to deliver a mark.

Student peer interactions consisted of both verbal and non-verbal behavior. Experimenters scored positive peer interactions for verbal behavior if a student complimented, encouraged, or congratulated another student during the game (e.g., "Good job Michael! You got all of the questions right!"). Experimenters scored nonverbal interactions such as high-fives or pats on another student's back in a congratulatory manner as positive interactions. Experimenters scored negative peer interactions if a student insulted, made-fun-of, threatened, or criticized another student during the game (e.g., "Michael, you're so aggravating, you keep giving us marks!"). Experimenters scored a negative interaction if a student hit, shoved, or made an

inappropriate gesture towards another student without speaking (e.g., sticks tongue out at another student).

Student selection response for experimental conditions was also measured, following implementation of both the teacher-led and student-led versions of the game, to determine student preference. Based on a method established by Layer et al. (2008), students indicated preference by writing their initials and the version of the game they wanted to play on a piece of paper and dropping their paper into a common receptacle. Selection responses were analyzed as cumulative selections across opportunities.

Interobserver agreement (IOA) was assessed by having two independent observers collect data during approximately 36% of total sessions in Class 1 and 38% of total sessions in Class 2. In both classes, IOA was collected in at least 20% of the sessions in each condition. IOA for disruptive behavior, peer interactions, and mark delivery was calculated using the proportional agreement formula. Total session time was divided into 10-second intervals. In each interval, the smaller frequency was divided by the larger frequency. Intervals in which both observers recorded zero responses were scored as a 1. These values were then added together, divided by the total number of intervals in the session, and converted to a percentage. In Class 1, IOA was as follows: disruptive behavior (M = 84%, range: 73%-95%), positive interactions (M = 100%), negative interactions (M = 99%, range: 97%-100%), mark delivery (M = 97%, range: 93%-100%), and teacher prompts (M = 98%, range: 94%-100%). In Class 2, IOA was as follows: disruptive behavior (M = 86%, range: 72%-100%), positive interactions (M = 99%, range: 98%-100%), negative interactions (M = 99%, range: 92%-100%), mark delivery (M = 98%, range: 85%-100%), and teacher prompts (M = 99%, range: 94%-100%). IOA for student selection responses was calculated using point-by-point product recording and was 100%.

Experimental Design and Procedure

An ABAC reversal design, in which A phases were baselines and the GBG was implemented in B and C phases, was used to determine the effects of the GBG on disruptive behavior and peer interactions. During the B phase, an experimenter implemented the GBG to familiarize both the teacher and students with the basic rules and workings of the game. A multielement design was used during the C phase in which the teacher-led and student-led GBG conditions alternated each session. Finally, a choice phase occurred at the end of the experiment in a concurrent chains arrangement.

Baseline. During baseline, the teacher conducted class as usual. The teacher was not instructed to alter their regular teaching style or disciplinary habits in any way. Data were collected on disruptive behavior and peer interactions without the implementation of the GBG.

Good Behavior Game. The version of the GBG used in this study was based on an interdependent contingency, which has been found effective and preferred by both students and teachers (Groves & Austin, 2017). Thus, to start, the class was divided into equal teams. Both classes were already divided into six "tables" through grouping desks. Students sitting at the front three tables were considered Team 1 and students sitting at the back three tables made up Team 2. The implementer then described the rules to the students: raise your hand to speak, stay seated properly in your desk, and don't play with your materials. Students were then informed of the criterion for winning, which was five rule violations in both classes. After announcing the reward for winning, the teacher began the lesson and the game started. Whenever a student violated a rule, the implementer delivered vocal feedback reminding the team to follow the rule (e.g., "Blue Team, raise your hand to ask a question"), and a mark was added to their team's score. At the end of the game (i.e., the end of the lesson or approximately 10 min), the

implementer reviewed the scores of each team. Any team scoring below the criterion won. If no team stayed below the criterion, the team with the fewest marks won. Once the game was over and the winner(s) declared, the implementer delivered the reward to the winners.

Experimenter-Led. An experimenter led the GBG. During the first game, the experimenter ended the game at a point that ensured all teams won (Joslyn et al., 2020). In subsequent games, whichever team remained below the criterion by the end of the lesson won.

Teacher-Led. Teachers were trained to lead the GBG using multiple methods. First, they observed the experimenter during the experimenter-led phase, which provided modeling for how the game operates in the classroom. They then meet with researchers to receive tips for leading the game and have any questions answered. Finally, they implemented the game and received feedback from the experimenters after the session as necessary. Experimenters did not prompt the teachers during the session. However, immediately following reward delivery, the experimenter provided the teacher with specific praise for correct implementation of game components (e.g., “Excellent job reviewing the rules, stating the criterion, and keeping score during the game. The students seemed really excited about the prize, and it’s great that you delivered it right when the game ended.”) and brief corrective feedback for any missing components (e.g., “Don’t forget to tell the students the reward for winning before starting the game.”). Teachers were also given a checklist consisting of important components of the game that they could use to prompt themselves through the steps (Appendix A); however, anecdotally, neither teacher used the checklist.

The only difference between the teacher-led and experimenter-led versions of the game was that the teacher was not only responsible for conducting the lesson but also for observing

and scoring disruptive behavior. The game, however, followed the same format and rules as the experimenter-led version.

Student-Led. The students also received training for the GBG prior to implementation. They were introduced to the game during the experimenter-led version. Experimenters then instructed students on the responsibilities the leader was to have during the game (i.e., adding marks to the scoreboard and providing vocal feedback contingent on rule violations). At the beginning of each session, the teacher selected a student to lead the class in the game. The leaders followed the same protocol for implementing the game as in the experimenter and teacher versions. They were also provided the same checklist used by the teachers to prompt them through leading the game (Appendix A). Anecdotally, the student leaders also did not use the checklist during the game. Before each session, experimenters announced the reward. After each session, the leader announced both teams' scores and declared the winner(s). Teachers also prompted students during the session if necessary (M = 1 prompt per session, range = 0-2). Experimenters did not deliver prompts to the student leaders during the session. Finally, experimenters provided the students with feedback after the session in a similar manner as provided to the teachers during the teacher-led condition.

Student Choice. For the final phase of the experiment, we assessed student preference for the conditions experienced. After the students experienced each of the three GBG versions, the experimenter explained how they will choose what they experience next. The experimenter informed them of their four options and wrote them on the board: experimenter-led, teacher-led, student-led, or no GBG. They were then told to write which version they wanted to play on a slip of paper, which was added to the other students' and placed in an opaque bag. The experimenter informed the students that one paper will be chosen at random and that would be the version of

the game played that day. If "no GBG" was chosen, the GBG was not played that day. Data collection on disruptive behavior and peer interactions continued during this phase.

Treatment Integrity

Treatment integrity was assessed using a checklist created for the GBG (Appendix B). Treatment integrity was calculated for 40% of experimenter-led GBG sessions in Class 1 and 30% of experimenter-led GBG sessions in Class 2 and was 100% in both. Trial-by-trial exact IOA for treatment integrity was calculated for the checklist by comparing each observers' response to each checklist item, dividing the number of agreements by the total number of items, and multiplying by 100. IOA for treatment integrity was calculated for 25% of sessions with treatment integrity in Class 1 and 33% of sessions with treatment integrity in Class 2 and was 100% in both. In all but a few GBG sessions, the implementer scored fewer marks than the observers recorded (i.e., errors of omission). We calculated scoring accuracy by determining the percentage of disruptive responses that produced a mark in each session. We calculated scoring accuracy in 70% and 90% of experimenter-led sessions in Classes 1 and 2, respectively, and in 100% of teacher- and student-led sessions in both classes. In Class 1, the mean percentage of scored disruptive responses during the experimenter-led sessions was 77% (range: 56-100%). In Class 2, the mean percentage of scored disruptive responses during the experimenter-led sessions was 54% (range: 33-100%). In both classes, the mean percentage of scored disruptive responses during the teacher-led sessions was 28% (range: 13-52%) and 59% (range: 17-120%), respectively. The mean percentage of scored disruptive responses during the student-led sessions was 62% (range: 21-92%) in Class 1 and 64% (range: 6-100%) in Class 2.

Social Validity

Following the final sessions of the choice phase, teachers were given a short questionnaire to assess their views of the game and its impact that they completed on their own time. The questionnaire was similar to the one used by Tanol et al. (2010) and consisted of 11 Likert-style statements. Teachers rated the statements on a scale of 1 to 5, with 1 being "strongly disagree" and 5 being "strongly agree." Following the questionnaire, there were three questions in a multiple-choice format that assessed the teachers' preferences for who led the GBG. Finally, teachers were able to provide any further comments on the game and its components.

In addition to the student preference assessment, experimenters asked students to complete a brief social validity questionnaire. When teachers were given their questionnaires, students were asked to respond individually to four open-ended questions in an interview format (Appendix C).

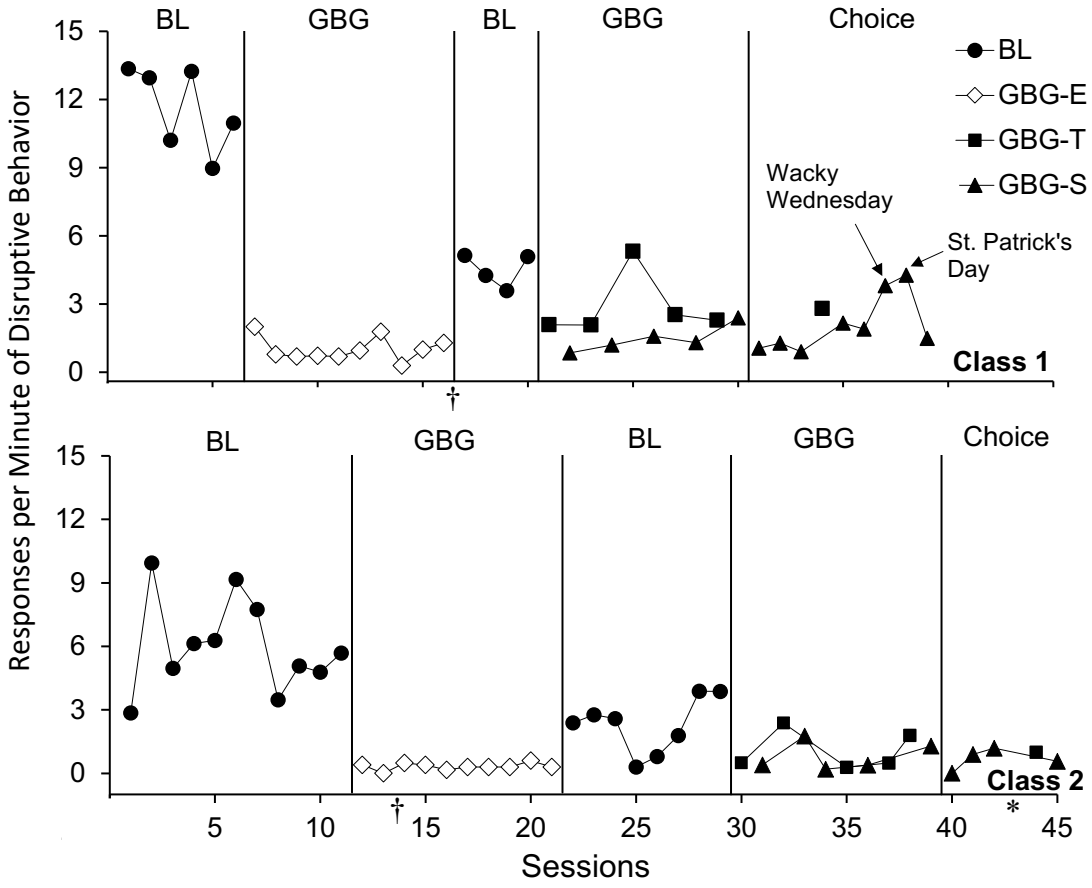
Results

Figure 1 shows the rates of disruption across sessions for both Class 1 and Class 2. In both classes, the initial baseline levels of disruption were high and variable, followed by an immediate reduction to near-zero levels following implementation of the experimenter-led GBG. Upon returning to baseline, disruptive behavior increased in both classes but not to the same levels as in the initial phase. In Class 1, disruptive behavior decreased again during both the teacher-led and student-led GBG to levels similar to that of the experimenter-led version. However, in Class 1 disruption was slightly higher during the teacher-led sessions compared to the student-led sessions, which corresponds with the differences in scoring accuracy (e.g., session 25 had the highest level of disruptive behavior during any version of the GBG and the lowest scoring accuracy: 13%). With the exception of a few days, disruption in Class 2 also decreased during the student and teacher-led GBG to levels similar to the experimenter-led

phase. Rates of disruption in this class were similar for both conditions during this phase. During the choice phase in Class 1, disruption was consistent with the previous student and teacher-led sessions. Rates of disruption in two of the later sessions, though, were closer to those of the second baseline phase. Anecdotally, the teacher attributed this rise in disruption to the students being dressed up for "Wacky Wednesday" and St. Patrick's Day.

Figure 1

Rates of Disruptive Behavior across Classes

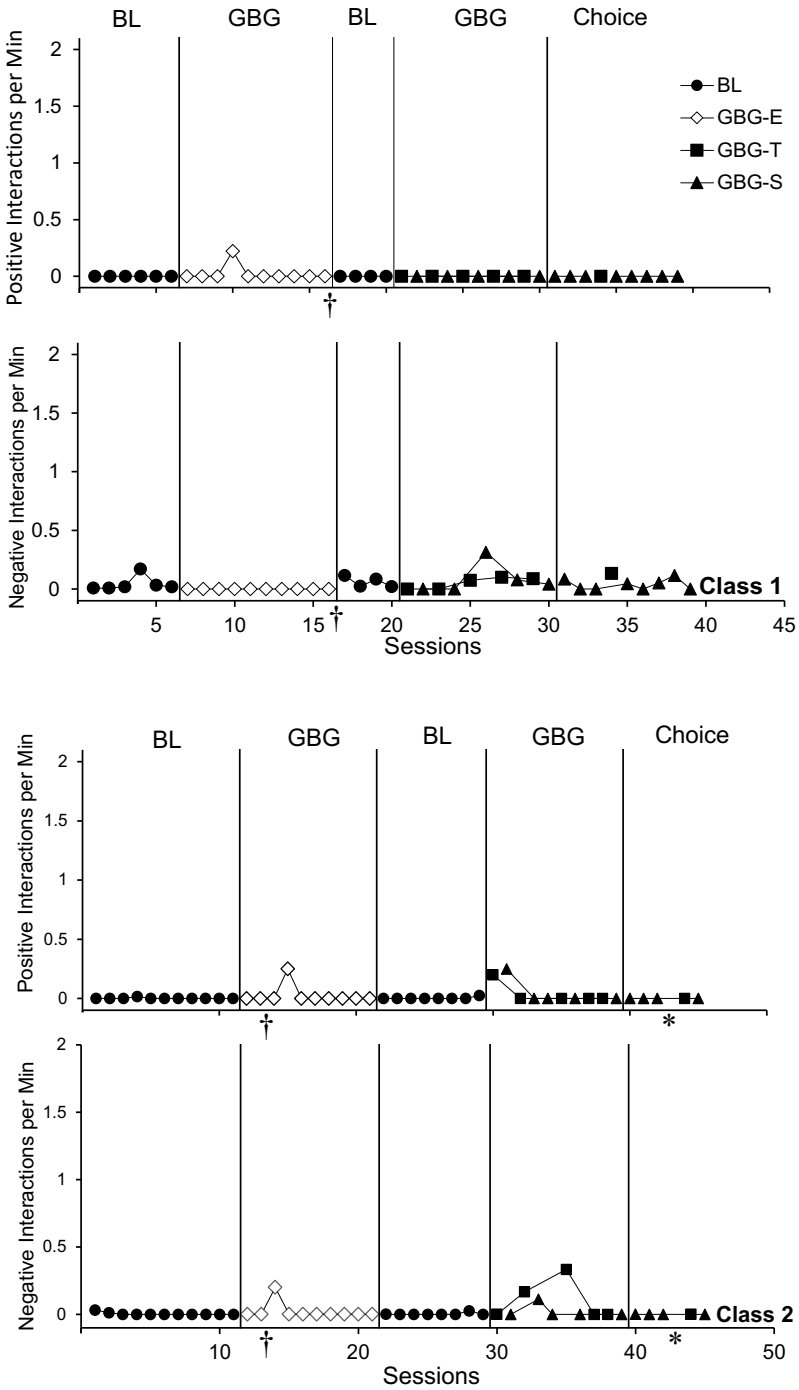


Note. BL= baseline, GBG = Good Behavior Game, GBG-E= experiment-led GBG, GBG-T= teacher-led GBG, GBG-S= student-led GBG, *No GBG was drawn on session 43 but no data were collected, †Winter break.

Figure 2 shows the number of positive and negative interactions during the GBG in each class. In Class 1, very few positive interactions occurred across all phases and negative interactions occurred at low levels across phases, except no negative interactions occurred during the experimenter-led GBG sessions. In Class 2, some positive interactions occurred in a single session of each GBG condition but otherwise did not occur. Negative interactions in Class 2 very rarely occurred during baseline phases but did occur at higher rates during several GBG sessions.

Figure 2

Positive and Negative Peer Interactions across Classes

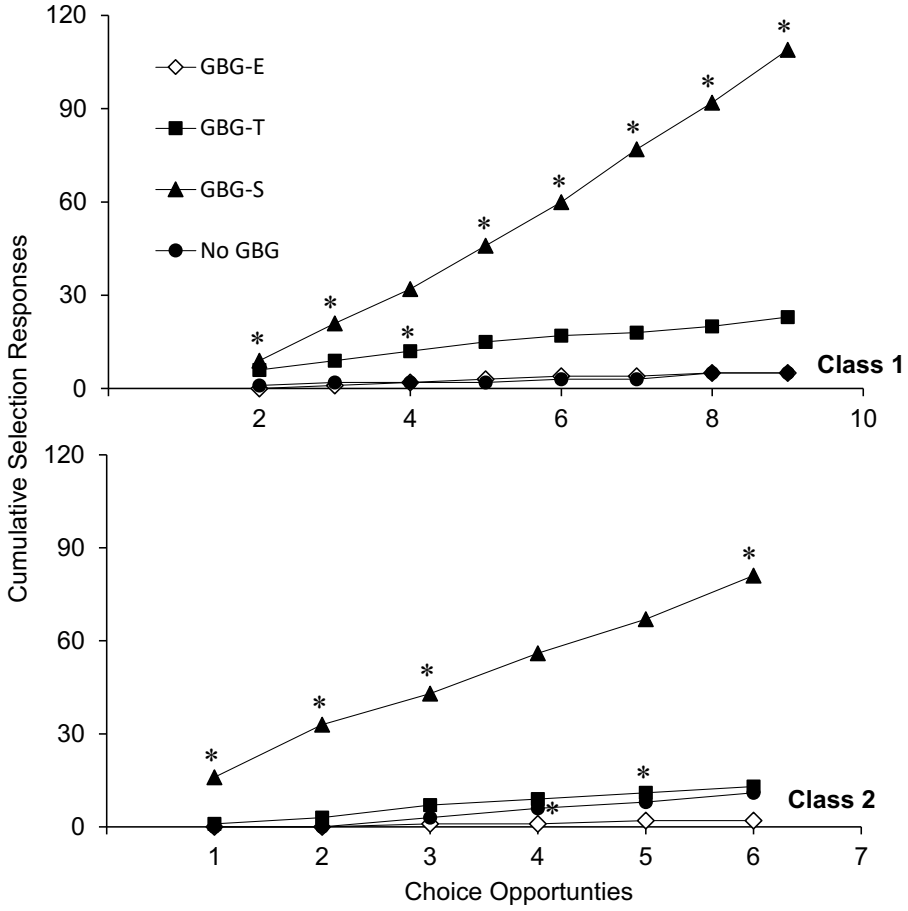


Note. BL= baseline, GBG = Good Behavior Game, GBG-E= experiment-led GBG, GBG-T= teacher-led GBG, GBG-S= student-led GBG, *No GBG was drawn on session 43 but no data were collected, †Winter break.

Figure 3 shows the class wide cumulative selections for GBG condition during the choice phase. In Class 1, selections for GBG condition during the first choice session were discarded before the experimenter recorded them; thus, cumulative choice selections start at session on the top panel. Overall, the vast majority of students selected to play the student-led version of the GBG at each opportunity in both classes. There were very few selections of the experimenter-led GBG or "No GBG;" however, some students selected the teacher-led GBG each session in Class 1 (M = 2.88, range = 1-6) and two students selected the teacher-led version in the second choice session in Class 2.

Figure 3

Students' Cumulative Selections for Conditions



Note. BL= baseline, GBG = Good Behavior Game, GBG-E= experiment-led GBG, GBG-T= teacher-led GBG, GBG-S= student-led GBG., * indicates condition experienced.

Students responded to open-ended questions at the conclusion of the study. Many students reported that what they liked most about the game was being the leader and keeping score at the board. Conversely, some students described not being chosen to lead the game as what they didn't like about the GBG. For the majority of students, their favorite part was receiving prizes and their least favorite part was losing. Teacher responses to the Likert-style questionnaire can be found in Table 1. Furthermore, the teacher of Class 1 preferred being the implementer of the game and indicated that the versions she found most effective were the

teacher- and experimenter-led GBGs. She mentioned that she believed the students did not take the game as seriously when another student was leading. The teacher of Class 2 preferred the student- and teacher-led GBGs and found those versions of the game to be the most effective.

Table 1

Results of Teachers' Social Validity Surveys

	Number of Responses				
Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I enjoyed having the research team implement the Good Behavior Game (GBG) in my classroom.	0	0	0	0	2
I plan to use the GBG in my classroom in the future.	0	0	0	0	2
After using the GBG in my classroom, I was able to see immediate changes in my student's behavior.	0	0	0	2	0
The addition of the GBG has increased positive peer interactions in my classroom.	0	0	0	2	0
The addition of the GBG has increased negative interactions in my classroom.	0	1	0	1	0
The addition of the GBG has improved the atmosphere in my classroom.	0	0	0	2	0
The addition of the GBG has improved behavior in my classroom.	0	0	0	2	0
The GBG was a good fit for the students in my classroom.	0	0	0	0	2
Adding the GBG did not interfere with academic instruction and routines in my classroom.	0	0	0	1	1
Using the GBG did not take up too much of my time.	0	0	0	0	2
I would recommend the GBG to other teachers.	0	0	0	0	2

Discussion

This study replicated the findings of Donaldson et al. (2018) by demonstrating that the GBG can be successfully implemented by both teachers and students to reduce disruptive behavior and extended those findings to demonstrate student-led successful implementation with no experimenter prompting during the game. With relatively minimal training, consisting of modeling, instructions, and feedback, first and second grade students implemented the GBG with sufficiently high scoring accuracy to produce intervention effects consistent with the experimenter-led version and found to be meaningful to the classroom teachers. This study failed to replicate Groves and Austin (2019) in that the GBG produced some increases in negative peer

interactions and did not increase positive peer interactions. Overwhelmingly, students preferred to play the GBG and have the game led by their peers, but the teacher of Class 1 preferred to lead the game herself.

The GBG reduces disruptive behavior because it employs a collection of simple behavioral contingencies. First, the GBG promotes rule-governed behavior by stating clear rules and the consequences for following and not following those rules. Second, the game arranges a differential reinforcement of low rates of behavior contingency in which engaging in few instances of the target behavior produces immediate reinforcement (Joslyn et al., 2019). The differential reinforcement continency is arranged as an interdependent group contingency, meaning the outcome for a team is dependent on the behavior of multiple students, which may change behavior due to unprogrammed social contingencies provided by teammates in addition to the differential reinforcement contingency. Additionally, immediate feedback during the game about rule violations may function similarly to an error correction procedure by immediately reducing the likelihood of that response while increasing the future likelihood of contacting reinforcement.

The student-led GBG was generally as effective as (Class 2) or more effective (Class 1) than the teacher-led version. One potential reason is that the students were considerably more accurate in scoring disruptive responses than the teachers (i.e., engaged in fewer errors of omission during the game). This could be because students' singular task was leading the game, whereas teachers must simultaneously lead the game and teach the lesson. Studies have shown that, even with low scoring accuracy, the GBG tends to maintain its effectiveness (Joslyn & Vollmer, 2020). However, students being able to focus exclusively on scoring rule violations

may have been the reason for the student-led version being slightly more effective than the teacher-led game.

The absence of positive and negative peer interactions in the initial baseline and across most phases is likely because sessions occurred during whole-group teacher-led instruction in which the general expectation is that students are not interacting with one another. Although there was not a large effect on positive and negative interactions observed during the GBG, negative interactions during the GBG were slightly more frequent than positive interactions in both classes. These results contradict that of Groves and Austin (2019), which found increases in positive interactions and decreases in negative interactions. Anecdotally, most negative interactions involved students blaming their peers for rule violations or losing the game, which seemed to be exacerbated when teachers singled out students for rule violations rather than their team as a whole. Future researchers should record when teams lose in order to evaluate the relation between game outcome and peer interactions.

Students showed a clear preference for the student-led version of the game. Students may prefer playing the game over baseline contingencies for several reasons. First, the GBG adds an opportunity to earn a prize that is otherwise not available. Second, the GBG provides clear rules and consequences for following and not following the rules and students may prefer consistency in the correspondence between the rules and the consequences. Third, the corrective feedback provided during the GBG is helpful in that it is tied to reinforcer delivery, unlike corrective feedback during baseline. Recent research suggests conditions with corrective feedback are preferred over conditions with no feedback or positive feedback only (Simonian & Brand, 2022). There are a few potential reasons students preferred the version in which a peer led the game. Students may have preferred governance from their peers rather than their teacher or an

experimenter. The student-led version also provides an opportunity to serve as the game leader, which some students may prefer. In addition, serving as leader presents the opportunity to receive attention from both teacher and classmates. Despite the overall preference for the student-led version, some students were visibly upset when one of their peers was chosen to lead the game instead of themselves. Future research should consider the effects of different processes for selecting who leads the game (e.g., a pre-determined rotation, lottery, auction of class points/tokens, or peer nomination as in Phillips et al., 1973).

There were several limitations to this study. One limitation was experimenters failing to collect baseline data on the day "No-GBG" was selected during the choice phase in Class 2. Additionally, experimenters failed to utilize the treatment integrity checklist during the teacher- and student-led GBG sessions. Had a step been forgotten during a session in either of these phases, experimenters would have prompted the leader to perform the task. This, however, did not happen. Anecdotally, the teachers would occasionally prompt the student leaders to add a mark for a rule violation they missed or to speak louder when announcing a rule violation. Furthermore, the scoreboard was in the front left corner of the classroom, which may have resulted in over-scoring the students closest to the board and under-scoring the students farther away. Future research could institute a more centrally located position for the implementer to keep score or provide them with a portable scoreboard to carry as they survey the classroom. Another limitation is that during the student-led version, the student leading the game could not fully participate in the educational activity occurring. The teachers selected students to lead whom they were not concerned about potentially missing the instruction. Future research direction could include implementing a student-led version of the GBG in small groups. Each group would have its own student-leader solely responsible for scoring the behavior of the few

students in his/her group. Having fewer peers to observe may make it easier for students to successfully score and participate in the educational activity. Additionally, more students would have the opportunity to serve as leader each time the game is played.

The results of this study add support for including students as implementers of the GBG in elementary classrooms. The student-led version was both effective and preferred by the students. Allowing students to participate in shared governance is an important step in providing trauma-informed behavior analytic practice (Rajaraman et al., 2022). Behavior analysts supporting implementation of the GBG may consider additional ways to promote shared governance in the GBG, such as having students determine the rules. Future researchers may consider evaluating the direct and indirect effects of such practices.

References

Barrish, H. H., Saunders, M., & Wolf, M. M. (1969). Good behavior game: Effects of individual contingencies for group consequences on disruptive behavior in a classroom. *Journal of Applied Behavior Analysis*, *2*(2), 119-124. https://doi.org/10.1901/jaba.1969.2-119

Beaman, R., Wheldall, K., & Kemp, C. (2007). Recent research on troublesome classroom behaviour: A review. *Australasian Journal of Special Education*, *31*(1), 45-60. https://doi.org/10.1080/10300110701189014

Bowman-Perrott, L., Burke, M. D., Zaini, S., Zhang, N., & Vannest, K. (2015). Promoting positive behavior using the good behavior game. *Journal of Positive Behavior Interventions*, *18*(3), 180-190. https://doi.org/10.1177/1098300715592355

Collier-Meek, M. A., Fallon, L. M., & DeFouw, E. R. (2018). Assessing the implementation of the good behavior game: Comparing estimates of adherence, quality, and exposure. *Assessment for Effective Intervention*, *45*(2), 95-109. https://doi.org/10.1177/1534508418782620

Dolan, L. J., Kellam, S. G., Brown, C. H., Werthamer-Larsson, L., Rebok, G. W., Mayer, L. S., Lawrence, S., Laudoff, J., Turkkan, J. S., Ford, C., Wheeler, L. (1993). The short-term impact of two classroom-based preventive interventions on aggressive and shy behaviors and poor achievement. *Journal of Applied Developmental Psychology*, *14*(3), 317-345. https://doi.org/10.1016/0193-3973(93)90013-l

Donaldson, J. M., Holmes, S. C., & Lozy, E. D. (2020). A comparison of good behavior game team sizes in preschool classes. *Behavior Analysis: Research and Practice*, *21*(1), 1-12. https://doi.org/10.1037/bar0000187

Donaldson, J. M., Matter, A. L., & Wiskow, K. M. (2018). Feasibility of and teacher preference for student-led implementation of the good behavior game in early elementary classrooms. *Journal of Applied Behavior Analysis*, *51*(1), 118-129. https://doi.org/10.1002/jaba.432

Groves, E. A., & Austin, J. L. (2017). An evaluation of interdependent and independent group contingencies during the good behavior game. *Journal of Applied Behavior Analysis*, *50*(3), 552-566. https://doi.org/10.1002/jaba.393

Groves, E. A., & Austin, J. L. (2019). Does the good behavior game evoke negative peer pressure? Analyses in primary and secondary classrooms. *Journal of Applied Behavior Analysis*, *52*(1), 3-16. https://doi.org/10.1002/jaba.513

Joslyn, P. R., Donaldson, J. M., Austin, J. L., & Vollmer, T. R. (2019). The good behavior game: A brief review. *Journal of Applied Behavior Analysis*, *52*(3), 811-815. https://doi.org/10.1002/jaba.572

Joslyn, P. R., & Vollmer, T. R. (2020). Efficacy of Teacher-Implemented Good Behavior Game Despite Low Treatment Integrity. *Journal of Applied Behavior Analysis*, *53*(1), 465-474. https://doi-org.libezp.lib.lsu.edu/10.1002/jaba.614

Kellam, S. G., Wang, W., Mackenzie, A. C., Brown, C. H., Ompad, D. C., Or, F., Ialongo, N. S., Poduska, J. M., Windham, A. (2012). The impact of the good behavior game, a universal classroom-based preventive intervention in first and second grades, on high-risk sexual behaviors and drug abuse and dependence disorders into young adulthood. *Prevention Science*, *15*(S1), 6-18. https://doi.org/10.1007/s11121-012-0296-z

Layer, S. A., Hanley, G. P., Heal, N. A., & Tiger, J. H. (2008). Determining Individual Preschoolers' Preference in a Group Arrangement. *Journal of Applied Behavior Analysis*, *41*(1), 25-27. https://doi.org/10.1901/jaba.2008.41-25

Leflot, G., van Lier, P. A., Onghena, P., & Colpin, H. (2010). The role of teacher behavior management in the development of disruptive behaviors: An intervention study with the good behavior game. *Journal of Abnormal Child Psychology*, *38*(6), 869-882. https://doi.org/10.1007/s10802-010-9411-4

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

Maag, J. W. (2019). Why is the good behavior game used for bad behavior? Recommendations for using it for promoting good behavior. *Beyond Behavior*, *28*(3), 168-176. https://doi.org/10.1177/1074295619870258

McLeod, J. D., & Kaiser, K. (2004). Childhood emotional and behavioral problems and educational attainment. *American Sociological Review*, *69*(5), 636-658. https://doi.org/10.1177/000312240406900502

Phillips, E. L., Phillips, E. A., Wolf, M. M., & Fixsen, D. L. (1973). Achievement Place: Development of the elected manager system. *Journal of Applied Behavior Analysis*, *6*(4), 541-561. https://doi.org/10.1901/jaba.1973.6-541

Rajaraman, A., Austin, J. L., Gover, H. C., Cammilleri, A. P., Donnelly, D. R., & Hanley, G. P. (2022). Toward trauma-informed applications of behavior analysis. *Journal of Applied Behavior Analysis*, *55*(1), 40-61. https://doi.org/10.1002/jaba.881

Silva, E., & Wiskow, K. M. (2020). Stimulus presentation versus stimulus removal in the good behavior game. *Journal of Applied Behavior Analysis*, *53*(4), 2186-2198. https://doi.org/10.1002/jaba.709

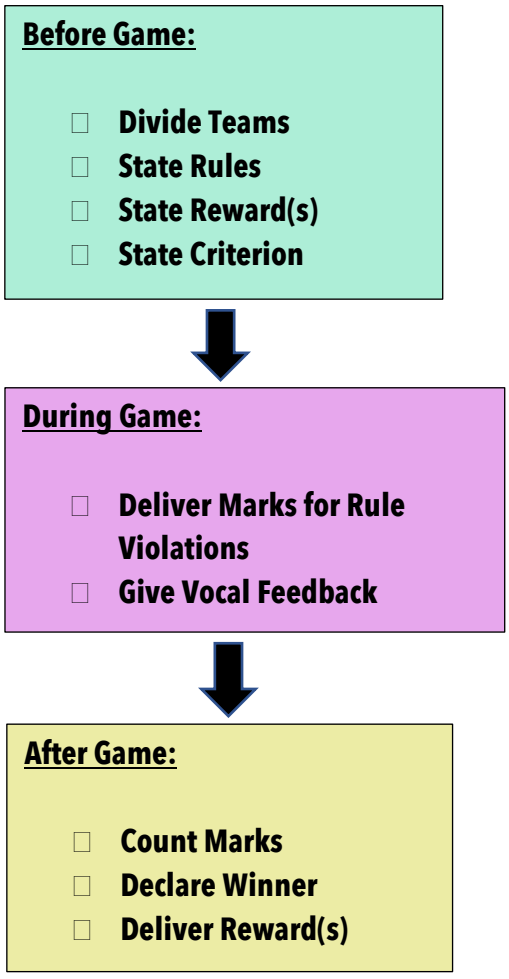
Simonian, M. J., & Brand, D. (2022). Assessing the efficacy of and preference for positive and corrective feedback. *Journal of Applied Behavior Analysis*. Published online ahead of print. https://doi.org/10.1002/jaba.911

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

Wiskow, K. M., Matter, A. L., & Donaldson, J. M. (2019). The good behavior game in preschool classrooms: An evaluation of feedback. *Journal of Applied Behavior Analysis*, *52*(1), 105-115. https://doi.org/10.1002/jaba.500

Appendix A

GBG Treatment Integrity Checklist for Teachers & Students



Appendix B

GBG Treatment Integrity Checklist for Experimenter

Instructions:

- If the implementer successfully completed the component, place a **check mark** in the box.
- If the implementer did not complete the component, **circle** the box.

Prior to starting the game:

- ☐ State the teams
- ☐ Review the rules
- ☐ State the reward(s) available for winning
- ☐ State how to win (criterion)

During the game:

- ☐ Delivered marks to the team(s) when violating the rules and did not deliver marks to the team(s) following the rules
- ☐ Provided vocal feedback to the team(s) when delivering marks

After the game:

- ☐ Count the marks for each team
- ☐ State the winner(s)
- ☐ Deliver the reward to the winner(s)

Who won?

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Appendix C

Social Validity Interview for Students

(1) What did you like about the GBG?

(2) What did you not like about the GBG?

(3) What did you like about leading the GBG?

(4) What did you not like about leading the GBG?