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AN EVALUATION OF THE GOOD BEHAVIOR GAME USING AN INTERDEPENDENT GROUP CONTINGENCY WITH MIDDLE-SCHOOL CHILDREN WITH EBD

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by

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A Thesis
Submitted in Partial Fulfillment of the Requirements for the
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with Middle-School Children with EBD

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Master of Science

in the field of Behavior Analysis and Therapy

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TITLE: AN EVALUATION OF THE GOOD BEHAVIOR GAME USING AN INTERDEPDENT GROUP CONTINGENCY WITH MIDDLE-SCHOOL CHILDREN WITH EBD

MAJOR PROFESSOR: Dr. Jason M. Hirst

The present study evaluated the effectiveness of an interdependent group contingency commonly referred to as the "good behavior game" (GBG) on reducing disruptive behaviors in a dedicated classroom for students with emotional behavioral disorder (EBD). The participants were four eighth-grade middle school students, with a primary diagnosis of EBD. The intervention targeted inappropriate and disruptive behaviors during two class periods (math and science), as well appropriate alternative behaviors. The class was divided into two teams, with the four participants divided evenly amongst both teams. If a team met the criterion for both inappropriate and appropriate behavior during experimental sessions, each team member received an edible reinforcer (candy). In addition, teams that met the weekly goal of winning the most games earned a trip to a classroom with younger peers to participate in a social activity (pizza party, movie and popcorn, etc.). The results indicated a decrease in inappropriate behaviors, as well as an increase in appropriate behaviors. The results suggested that the GBG is a beneficial group interdependent contingency that can be implemented in many classroom settings, including an alternative EBD middle school classroom.

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CHAPTER 1

INTRODUCTION

The Individuals with Disability Education Act (IDEA) defines an emotional behavior disorder (EBD) as exhibiting one or more of the following characteristics over a long period of time and to a marked degree that adversely affects a child's educational performance:(a) An inability to learn that cannot be explained by intellectual, sensory, or health factors, (b) An inability to build or maintain satisfactory interpersonal relationships with peers and teachers, (c) Inappropriate types of behavior or feelings under normal circumstances, (d) A general pervasive mood of unhappiness or depression, and (e) A tendency to develop physical symptoms or fears associated with personal or school problems (IDEA, 2017). Literature suggests that students who have a diagnosis of EBD are among the most difficult students to teach, as well as the least desired population to engage with in school systems (Cancio & Johnson, 2013). As a group, students diagnosed with EBD have lower standardized testing scores compared to peers without any diagnosis who are placed in traditional classroom settings (Kaya, Blake, & Chan, 2015). Without early intervention, students with EBD can develop both academic deficits and negative behaviors (non-compliance, physical or verbal aggression, etc.) (Sutherland & Snyder, 2007). Students with a diagnosis of EBD, compared to students without any diagnosed behavioral problems, display increased rates of inappropriate behavior as well as decreased rates of positive behavior (Shinn, Ramsey, Walker, Stieber, & O'Neill 1987).

Children with a diagnosis of EBD have a difficult time succeeding in classroom settings from early childhood and especially in high school. Between 2006-2007, only 20% of high school students (14 to 21 years old) with a diagnosis of EBD graduated from high school with a

diploma (Hawkins et al., 2015). Students with EBD have a difficult time academically and socially throughout their academic journey.

Grey and Hastings (2005) discuss two approaches to treating behavioral disorders: the use of applied behavioral analysis (ABA) based interventions and pharmacological interventions. Although Risperidone may have relatively fast suppressing effects on behavior disorders in children with intellectual disabilities, there also may be side effects. Alternatively, behavioral intervention can also be effective and lacks similar side effects. Treatment approaches described in the review included functional communication training (FCT), choice-making, noncontingent reinforcement, and extinction (Grey & Hastings, 2005). The authors concluded that there is strong support for the use of comprehensive behavioral assessment and interventions to treat behavior disorders (Grey & Hastings, 2005).

Weiss (2001) describes methods to improve outcomes for children with developmental disabilities by incorporating Natural Environment Training and Fluency Based Instruction. Historically, treatment primarily took the form of discrete trial instruction. However, Weiss argues that the best outcomes are achieved only by expanding beyond the discrete trial format. The Natural Environment Training model emphasizes instruction in natural settings, which can help to promote generalization. In this model, the teacher capitalizes on current establishing operations and contrives additional establishing operations. Fluency Based Instruction emphasizes a higher standard of mastery by requiring responses to be made quickly. With these two learning models, individuals with different disabilities, such as autism, can build a stronger relationship with the trainers through immediate positive reinforcement, compliance, and the amount of responsiveness (Weiss, 2001).

Many classroom interventions incorporate token economies, whether general or special education classrooms. According to Kazdin and Bootzin (1969), a token economy can be defined as the use of tangible reinforcers (stickers, coins, etc.) that are used to positively reinforce a desired behavior for a person using a system that allows the tangible reinforcers to be exchanged for a more reinforcing item (food, items of value, etc.) with the ideology that the person will continue to produce desired behaviors even after the token system has faded away. Some advantages of token economies include: (1) tokens are portable and can be used in any environment, (2) the tokens value can relate to its magnitude permission. of reinforcement, (3) tokens can be transferred for a more desired reinforcement or person, (4) the number of tokens earned is infinite, and (5) tokens can be unique and arranged to be received in a structured manner (Ayllon & Azrin, 1968). Token economies have been implemented in a wide variety of settings, including classrooms, and have become a common feature of classroom behavior management methods. Birnbrauer and Lawler (1964) studied the effects of token economies in a classroom with students who had developmental disabilities to increase appropriate behaviors such as sitting attentively at their desk and entering the classroom in a quiet manner. They looked at the effects of edible reinforcers, such as M&Ms, and trinkets to use in this study for reinforcement of appropriate classroom behaviors.

Russo and Koegel (1977) helped a five-year-old student diagnosed with autism to transition into a regular education classroom of around 20 and 30 students. The proctor used a token system and this intervention was valuable because it can be used in the classroom to keep the individual motivated to work and participate. During the treatment phase, Russo and Koegel, (1977) saw a decrease in autistic mannerism, but an increase in appropriate social behaviors.

Group contingencies are another common category of classroom management methods, which build upon the token economy. Gresham and Gresham (1982) describe three variations of group contingencies: dependent, interdependent, and independent. A dependent group contingency is one in which the reinforcer is delivered to the whole group upon one or more select members meeting all criteria. An interdependent group contingency is defined as a contingency of reinforcement that is applied to the group's performance. Independent group contingencies are those in which the same contingency is applied to each individual member's behavior. Reinforcement is delivered to everyone who meets the contingency regardless of whether other group members did. These contingencies have been used in a classroom setting, whether in the general education population (Hawkins, Haydon, Denune, Larkin, & Fite, (2015), (Mitchell et al., 2015), special education (Williamson, Campbell-Whatley, and Lo 2009), or in an alternative school (Popkin & Skinner, 2003).

Hawkins et al. (2015) implemented a randomized interdependent group contingency with high school students diagnosed with EBD, which showed a decrease in inappropriate behaviors and a more structured classroom for better instruction. With the previous study, the criterion was at a random number of students that needed to be prepared and ready to transition from lunch to class to gain access to the reinforcer. The use of the interdependent group contingency showed significant improvements in student transition. This study helped students with EBD learn a valuable skill of transitioning between settings, which is necessary to learn when approximately 1% of students that attend public schools receive services under the diagnosis of EBD (Hawkins et al., 2015). Denune, Hawkins, Donovan, McCoy, Hall, and Moeder (2015), implemented an interdependent group contingency, as well as self-monitoring, to decrease disruptive behaviors in a sixth-grade emotional behavior disorder (EBD) alternative school classroom.

A well-known group contingency that utilizes a variation of a token system is the Good Behavior Game (GBG). The GBG is an interdependent group contingency that has been used in numerous classrooms as a strategy to provide classroom management and improve student behavior (McKenna, 2014). The GBG was first demonstrated with a general education fourth-graders who were known as "problem children" focusing on out-of-seat and talking-out as the dependent variables (Barrish, Saunders, & Wolf, 1969). In this study Barrish et al. (1969) focused on using more realistic classroom rewards, instead of the more tangible reinforcers seen with different economies that do not provide any realistic social generalization (stickers, candy, etc.). The purpose of this study was to have socially appropriate reinforcers that were not dependent on only the teacher's constant verbal response. Between one and two observers stopped by the classroom for an hour three times a week during the end of reading class and the beginning of math class where all variations of classroom instruction were present (entire classroom instruction, individualized work, group work, etc.). Data were collected on frequency for every minute of instruction when inappropriate behaviors occurred as well as monitoring when the teacher provided a verbal response to the student's behavior. When the intervention was in place the teacher presented it as a game, dividing the class into two teams and telling them the rules of the game and what the prizes were (first in line for lunch, extra recess, etc.). The results showed a dramatic decrease in the out-of-seat and talking-out behaviors across both reading and math periods for the classroom (Barrish et al., 1969).

The GBG has been implemented and shown to be effective in elementary schools, middle schools and residential high schools with increased population of students with an emotional disturbance (McKenna, 2014). Lynch and Keenan (2015), referred to 2003 when the GBG became commercialized and published by Hzelton, leading to the game being present in over

8000 classrooms across the United States and Canada. Lynch and Keenan's (2015) study also focused on the teacher's delivery of positive comments during the game to determine if the student's behavior would change due to that verbal praise and can still occur once the intervention was removed. There are many variations of the GBG and each variation re-iterates the goal of a positive learning environment. Mitchell, Tingstrom, Dufrene, Ford, and Sterling (2015) implemented the GBG into the general education high school population, using an interdependent group contingency, by looking at the effects of the game across three different classrooms, all decreasing disruptive behaviors using teamwork completion (TC). Although there are numerous behavioral interventions that incorporate these different contingencies into their school settings, such as elementary and high school settings, little research has been done in middle schools involving alternative school settings.

Although there is little research about positive peer reinforcement and EBD, it can be an effective instructional method in today's classrooms (Miller, 2005). Although research in peer tutoring for EBD students is hard to find, the research that is found mainly focuses on using peer tutoring to improve academic deficits (Miller, 2005). To accurately use peer tutoring in the classroom appropriate steps need to be taken: (1) define the tutoring context, (2) define the objectives, (3) define the curriculum area, (4) select and match participants, (5) identify the tutoring technique and the student contact specifics, (6) select the tutoring materials, (7) train the tutors, (8) monitor the tutoring process and assess student learning, (9) evaluate the program, and (10) provide feedback (Miller, 2005). By allowing peers to work together to understand the material, not only works on positive social skills for both individuals, but also improve self-confidence from the tutor to use in other aspects of their lives. Along with peer tutoring, self-graphing has also been effective amongst students with EBD. Sutherland and Snyder (2007),

implemented peer tutoring and self-graphing, and looked at the effects of this intervention with middle school students who had been diagnosed with EBD. The study showed similar results, as seen by Miller (2005), but also saw that peer-tutoring such as Peer-Assisted Learning Strategies (PALS) had learning experiences such as structured activities, frequent interaction and feedback between tutor and tutees, as well as the ability to role change between the two. Self- graphing allows for the student to see their own growth over time, which in turn encourages them to continue to grow and succeed by actively participating in a positive learning an environment.

Purpose

The purpose of the study was to implement an interdependent group contingency into an alternative middle school classroom in the form of the GBG by using younger peer interaction as a positive reinforcement. The goal was to implement the game and observe a decrease in inappropriate behaviors, as well as observe an increase in appropriate behavior. The overall goal would be that the GBG can lead to a generalized expectation of classroom behaviors that can occur throughout the participant's day.

CHAPTER 2

METHOD

Participants and Setting

The present study was conducted in an alternative school, which included students in first grade through eighth grade. All the students in the school were enrolled at this alternative school because they displayed some non-compliance, physical aggression, verbal aggression, or inappropriate behavior that was unmanageable in regular schools. Each of the classrooms had a classroom teacher and a paraprofessional. Interventionists were occasionally also present in classrooms to support students with more severe problems, such as physical aggression.

The participating classroom was selected due to high rates of problem behavior, students being referred for targeted intervention, and suspensions from the previous school year. The classroom had a total of ten students. Additionally, consent was obtained from four students to collect individual data. These participants included three African American students (one male, two females) and one Caucasian (male). Although all 10 students were exposed to the intervention, data are presented here only for the students who provided informed consent. These data were used for data-based decision making.

All the participants had individualized education programs with the primary or secondary diagnosis of emotional behavior disorder (EBD), as well as another disability. None of the students were on any form of prescription medications to regulate their behaviors during the study. The experiment took place in the students' self-contained classroom located in the alternative school setting. The classroom had one classroom teacher, multiple classroom behavior interventionists (four) who rotated throughout the school, and one paraprofessional, who were all trained on the experimental procedures. All staff had possession of a walkie-talkie

communication device to be used in case of an emergency in their classrooms. The classroom consisted of 10 desks, one whiteboard at the front of the classroom, two tables in the back of the classroom, two teacher's desks, and one smartboard, as seen in Appendix A.

Sessions took place twice a day during classroom instruction during 30 min of the morning math class and 30 min of the afternoon science class. These two classes were chosen for the study because of their high frequency of inappropriate behavior from the students compared to their other classes taught throughout the day.

Dependent Variables

The primary dependent variable of this experiment was the frequency of inappropriate behaviors exhibited by the participants in the experiment. Inappropriate behaviors were defined as any behavior where the students exhibit non-compliance, inappropriate language, physical aggression, or outbursts. Non-compliance was recorded as any instance of a student doing something other than what was instructed by a teacher or staff member at the school. Inappropriate language included conversation that was unrelated to the subject being taught. Physical aggression was defined as any contact with another peer, staff, or own body resulting in an outward expression of pain or damage. Outbursts were defined as an instance where a student spoke at a volume louder than a conversational level and out of turn. Frequency data were also collected on appropriate classroom behaviors as a secondary dependent variable. Appropriate behaviors included being compliant, completing assigned tasks, and actively participating in classroom discussion.

The experimenter used the same data sheet throughout the study for the four participants and the entire class (Appendix B). Frequency was used as a measurement for this study to record the number of times the participants, as well as the entire class, presented inappropriate or an

appropriate behavior within the two chosen subjects of math and science. Frequency was used because of the ease of being able to implement it into the classroom, but also because frequency refers to the number of instances a behavior occurs, and the goal of the intervention was to manipulate how often the number of times these behaviors occurred.

Throughout the study, data were collected by the experimenter and staff. Data were then compared at the end of the day between the experimenter and the paraprofessional to make sure all interobserver agreement (IOA) data were consistent and monitored correctly. IOA data were calculated between two observers (paraprofessional and experimenter) and the frequency data were compared and calculated at the end of every 30-min session. IOA was calculated using the total count method by dividing the number of agreements by the number of agreements plus disagreements and multiplying by 100%. The IOA data were calculated by the experimenter and showed a participant average of 93.51% for inappropriate behavior. The participant average for appropriate behavior was 89.41% as seen in Table 1. These averages show that the IOA was reliable and these data collected provide an accurate measurement of the data collected by the experimenter and the paraprofessional.

Experimental Design

The present study used an ABCAC reversal design to compare the effects of a pre-existing classroom management system to the effects of an added interdependent group contingency on inappropriate and appropriate behaviors emitted by students in the classroom after being divided into two separate teams.

Procedure

Baseline. Several classroom management practices were being implemented prior to the experiment. During baseline, a level system was in place for behavior management. Each

student who entered the class began on Level one, day one and there are four levels total. As each student earned their daily goal, they moved up in days to the next level, which allowed them more privileges school-wide. Each level had a different daily behavior goal for the students to obtain. As the student reached these goals they advanced to the next level and so on. The daily points were also transferred and used in the weekly classroom store. The store contained tangible, reinforcing items that encouraged the students to practice appropriate behavior, so they can earn more daily points.

During baseline the experimenter attended the classroom twice per day to collect data. The experimenter sat in the back of the classroom at an empty table and observed the entire class. Using the chart in Appendix B, the experimenter measured the frequency of behaviors of the classroom (participants and non-participants).

Treatment. A version of the GBG was implemented in addition to the baseline classroom management practices. Staff members were instructed to continue to monitor students on an individual basis using the level system point sheets and school store, but to also incorporate the new group behavior intervention for the chosen 30-min class period. Two tally charts labeled "Appropriate" and "Inappropriate" were placed on the front board and it was available for any staff members to use. When it was time to implement the game, the experimenter stated the rules of the game, which were also displayed near the tally boards in the front of the room. The classroom was divided into two equal teams of five students, making sure that two participants were each placed on the two different teams.

The teacher stated the rules and that teams were given tally marks for any inappropriate or appropriate behaviors they exhibited. They were told that tally marks were dependent on their

entire team, and that one person's behavior affected the possibility of reaching their goal and that they would have to learn how to respectfully talk to each other to reach their goals.

During the treatment phase, the experimenter used two different criteria for the phase to show an effect of the implementation of the GBG in the classroom. The initial criterion for the game (10/10) required that for each team to gain a win, they needed to acquire at least 10 or more "appropriate" behavior tally marks, as well as 10 or less "inappropriate" behavior tally marks. The change from baseline data to the initial treatment phase (10/10) had a minimal effect on both behaviors. The experimenter then changed the criterion phase and made the new goal 10/5: 10 or more tally marks for "appropriate" behaviors and five or less tally marks for "inappropriate" behaviors.

During treatment phase, participants had two opportunities to earn a daily edible reinforcer. Edible reinforcements were used because the teacher stated she used edible reinforcers and they were used to increase desired appropriate behavior when necessary. Also, another part of the intervention was that participants who made their daily goal based on their level system sheets earned a piece of candy at the end of every school day. The daily winning team of the GBG were also rewarded a small bag of potato chips. Treatment phase also allowed the team with the most wins for the entire week to earn the opportunity to do a fun activity with younger peers during school on Fridays. The treatment phases allowed the students to obtain an immediate reinforcer, while the baseline phases did not. The study ended in the treatment phase because the desired behavior was obtained and the GBG provided data that supported the accomplishment of the target goal.

CHAPTER 3

RESULTS

Figure 1 depicts aggregate data for all four participants. During baseline, a slight increasing trend was obtained for inappropriate behaviors. Upon implementing the first treatment phase, an increase in appropriate behaviors was obtained, but data for inappropriate behaviors fully overlapped with baseline levels. The criterion was modified to require fewer inappropriate behaviors, which resulted in an immediate decrease in the frequency of inappropriate behaviors. Upon withdrawing the GBG, a decrease in appropriate behaviors and an increase in inappropriate behaviors occurred. The effect of the 10/5 criterion was replicated in a second treatment phase. Another important aspect of the data collected was the mean and ranges for each phase. During the first baseline phase (BL1), the mean for the frequency of "inappropriate" behaviors was 3.32 (range: 1.25-5.25), while the mean for the frequency of "appropriate" behaviors was 2.05 (range: 1-3.25). During the second phase of criterion "10/10" the mean for the frequency of "inappropriate" behaviors was 3.85 (range: 2-6.25), while the mean for the frequency of "appropriate" behaviors was 3.75 (range: 1.5-5.75). During the third phase of criterion "10/5" the mean for the frequency of "inappropriate" behaviors was 1.31 (range: 0.75-1.75), while the mean for the frequency of "appropriate" behaviors was 5.25 (range: 3.25-7.25). During the fourth phase where the experimenter returned to baseline (BL2), the mean for the frequency of "inappropriate" behaviors was 6.83 (range: 5.25-10), while the mean for the frequency of "appropriate" behaviors was 3.61 (range: 2.75-4.33). During the final phase where the experimenter returned the experiment to criterion "10/5", the mean for the frequency of "inappropriate" behaviors was 2.58 (range: 1.75-3.25), while the mean for the frequency of "appropriate" behaviors was 9.5 (range: 9-10).

Figure 2 depicts individual data for Participant B. During baseline, a high frequency of "inappropriate" behaviors was observed. The treatment phase of the original criterion, 10/10, resulted in an increase in appropriate behaviors, but did not reduce the occurrence of inappropriate behaviors below baseline levels. Upon implementing the second criterion, 10/5, a decrease in "inappropriate" behavior was observed. Data for both behaviors returned to baseline levels when the GBG was withdrawn. The effect of the 10/5 criterion was then replicated in the second treatment phase. Another important aspect of the data collected was the mean and ranges for each phase. During the first baseline phase (BL1), the mean for the frequency of "inappropriate" behaviors was 6.17 (range: 2-10), while the mean for the frequency of "appropriate" behaviors was 1 (range: 0-2). During the second phase of criterion "10/10" the mean for the frequency of "inappropriate" behaviors was 7.6 (range: 5-11), while the mean for the frequency of "appropriate" behaviors was 3.2 (range: 0-6). During the third phase of criterion "10/5" the mean for the frequency of "inappropriate" behaviors was 2.25 (range: 0-4), while the mean for the frequency of "appropriate" behaviors was 4.5 (range: 2-7). During the fourth phase where the experimenter returned to baseline (BL2), the mean for the frequency of "inappropriate" behaviors was 10.3 (range: 8-12), while the mean for the frequency of "appropriate" behaviors was 2.67 (range: 2-3). During the final phase where the experimenter returned the experiment to criterion "10/5", the mean for the frequency of "inappropriate" behaviors was 3.67 (range: 2-5), while the mean for the frequency of "appropriate" behaviors was 7.33 (range: 7-8).

Figure 3 depicts individual data for Participant L. During baseline, levels of "inappropriate" and "appropriate" behaviors were variable. The treatment phase of the original criterion, 10/10, resulted in an increase in appropriate behaviors, but the occurrence of

inappropriate behaviors was not reduced below baseline levels. Upon implementing the second criterion, 10/5, a decrease in "inappropriate" behavior was observed. Data for both behaviors returned to baseline levels when the GBG was withdrawn. The effect of the 10/5 criterion was then replicated in the second treatment phase. Another important aspect of the data collected was the mean and ranges for each phase. During the first baseline phase (BL1), the mean for the frequency of "inappropriate" behaviors was 3.69 (range: 0-13), while the mean for the frequency of "appropriate" behaviors was 2.5 (range: 0-8). During the second phase of criterion "10/10" the mean for the frequency of "inappropriate" behaviors was 4.75 (range: 2-9), while the mean for the frequency of "appropriate" behaviors was 3.75 (range: 2-7). During the third phase of criterion "10/5" the mean for the frequency of "inappropriate" behaviors was 1 (range: 1-3), while the mean for the frequency of "appropriate" behaviors was 4.67 (range: 3-7). During the fourth phase where the experimenter returned to baseline (BL2)," the mean for the frequency of "inappropriate" behaviors was 6.67 (range: 3-10), while the mean for the frequency of "appropriate" behaviors was 3 (range: 2-4). During the final phase where the experimenter returned the experiment to criterion "10/5", the mean for the frequency of "inappropriate" behaviors was 1 (range: 0), while the mean for the frequency of "appropriate" behaviors was 8 (range: 7-9).

Figure 4 depicts individual data for Participant M. During baseline, a high frequency of "inappropriate" behaviors observed, but still sessions where no "inappropriate" behaviors occurred. The treatment phase of the original criterion, 10/10, resulted in an increase in "appropriate" behaviors, one session had a higher frequency of "inappropriate" behaviors. Upon implementing the second criterion, 10/5, a decrease in "inappropriate" behavior was observed. Data for both behaviors returned to baseline levels when the GBG was withdrawn. The effect of

the 10/5 criterion was then replicated in the second treatment phase. As previously stated, another important aspect of the data collected was the mean and ranges for each phase. During the first baseline phase (BL1), the mean for the frequency of "inappropriate" behaviors was 3.61 (range: 0-4), while the mean for the frequency of "appropriate" behaviors was 1.71 (range: 0-9). During the second phase of criterion "10/10" the mean for the frequency of "inappropriate" behaviors was 2.2 (range: 1-3), while the mean for the frequency of "appropriate" behaviors was 4.2 (range: 0-6). During the third phase of criterion "10/5" the mean for the frequency of "inappropriate" behaviors was 1.5 (range: 1-2), while the mean for the frequency of "appropriate" behaviors was 6.75 (range: 4-10). During the fourth phase where the experimenter returned to baseline (BL2)," the mean for the frequency of "inappropriate" behaviors was 4 (range: 1-6), while the mean for the frequency of "appropriate" behaviors was 4.67 (range: 4-6). During the final phase where the experimenter returned the experiment to criterion "10/5", the mean for the frequency of "inappropriate" behaviors was 2.33 (range: 0-4), while the mean for the frequency of "appropriate" behaviors was 10 (range: 9-11).

Figure 5 depicts individual data for Participant N. During baseline, a high frequency of "appropriate" behaviors was observed, along with two sessions with a higher frequency of "inappropriate" behaviors. The treatment phase of the original criterion, 10/10, resulted in an increase in appropriate behaviors. Upon implementing the second criterion, 10/5, a decrease in "inappropriate" behavior was observed. Data for both behaviors returned to baseline levels when the GBG was withdrawn. The effect of the 10/5 criterion was then replicated in the second treatment phase. Another important aspect of the data collected was the mean and ranges for each phase. During the first baseline phase (BL1), the mean for the frequency of "inappropriate" behaviors was 1.07 (range: 0-4), while the mean for the frequency of "appropriate" behaviors

was 3.93 (range:0-8). During the second phase of criterion "10/10" the mean for the frequency of "inappropriate" behaviors was 3.75 (range:1-8), while the mean for the frequency of "appropriate" behaviors was 5.75 (range: 3-8). During the third phase of criterion "10/5" the mean for the frequency of "inappropriate" behaviors was 0.5 (range: 0-1), while the mean for the frequency of "appropriate" behaviors was 7.75 (range: 4-11). During the fourth phase where the experimenter returned to baseline (BL2)," the mean for the frequency of "inappropriate" behaviors was 3.5 (range: 2-5), while the mean for the frequency of "appropriate" behaviors was 4 (range: 2-6). During the final phase where the experimenter returned the experiment to criterion "10/5", the mean for the frequency of "inappropriate" behaviors was 1.33 (range: 0-2), while the mean for the frequency of "appropriate" behaviors was 12.67 (range: 12-13).

CHAPTER 4

DISCUSSION

Previous research has demonstrated the effectiveness of the GBG in high school and elementary school settings with EBD populations. Children with an emotional disorder (ED) have a more difficult time being successful in school settings from early childhood and especially in high school. Between 2006-2007, only 20% of high school students (14 to 21 years old) with a diagnosis of EBD graduated from high school with a diploma (Hawkins et al., 2015). With that said, students with a diagnosis of EBD have a very difficult time focusing and completing their work in their classroom settings compared to other students in their class. The rationale behind the study was that the implementation of the GBG has been used and results show that it is a positive intervention across different populations over the years. Although previous literature presents the use of the GBG in other classroom environments, especially in public schools, there is not much research where the GBG is implemented into alternative school settings, which leads to the importance of the experimenter's study being completed. The purpose of the study was to decrease the frequency of inappropriate behaviors occurring amongst the students in the EBD middle school classroom, as well as increase the frequency of appropriate behaviors.

Results of the study showed a positive effect of the GBG being implemented in the classroom. The initial criterion failed to produce substantial changes in inappropriate behavior. However, inspection of the data suggests that the criterion was not stringent enough to produce the desired behavior change. That is, baseline levels of inappropriate behavior still technically met the requirement for reinforcement during 10/10. Each participant's graph showed some variation of effects of the GBG during their second treatment phase, "10/5", as well as their

"reversal to baseline" phase of the study. There was consistency of data seen during the last phase of "10/5" of the study, which showed more consistent positive effects of the GBG being implemented into the classroom.

A few limitations should be noted. One limitation involved relatively poor attendance rates among the staff. Teachers were occasionally absent during the study for various reasons. When the classroom teacher was absent, responsibilities for collecting data and implementing the intervention shifted to classroom aides. This also could have contributed to some of the variability in the data. Another limitation was the ongoing enrollment of new students throughout the school year. New students joining the classroom tended to result in increases in inappropriate behaviors in general for the classroom. These occurrences may also account for variability in the data. Additionally, the experimenter was only able to acquire four participants out of the ten total students in the class. The reinforcement contingencies were dependent on the behavior of the entire class, rather than directly on the behavior of the participants. Time constraints imposed by the academic schedule resulted in a lack of maintenance probes or follow-up, which prevents conclusion about the long-term effects of the intervention or generalization.

Data were recorded and compared at the end of the day between the experimenter and the paraprofessional for calculating IOA. As stated earlier, IOA data were calculated by the experimenter with data from the experimenter and the paraprofessional showing a participant average of 93.51% for inappropriate behavior. The participant average for appropriate behavior was 89.41% as seen in Table 1. When referring to Table 1, there were some ranges that resulted in lower ranges. For example, during the baseline phase for Participant M, there was an IOA range of inappropriate behavior of 60%-100%, and appropriate behavior range of 66.6%-100%. This phase and other phases of lower IOA percentages occurred earlier in the study when the

paraprofessional was taking data, but still may have been uncertain about the operational definitions of the target behaviors. When this was noticed the experimenter provided the staff with extra training to provide the staff with more confidence when data were collected, which resulted in more reliable data being collected for the study.

The limitations also pose suggestions for future research. First, future researchers might replicate the study using a whole classroom and for a longer period to evaluate the maintenance and generalization of the effects. In addition, the present study did not include measures of social validity, so it is unknown whether the teachers or aides liked using the intervention or would continue to use it after the conclusion of the study. This could also be addressed in a future study. Finally, future research might investigate whether the behavioral improvements would be maintained after fading out the intervention, or when students transition out of the specialized school setting. The goal for individuals in specialized schools is to move back into general education settings, or to be independent and successful after they graduate.

EXHIBITS

Participant	BL		10/10		10/5		BL		10/5	
	IP	AP	IP	AP	IP	AP	IP	AP	IP	AP
B	84.58% (80%-100%)	100%	85.7% (71.4%-100%)	100%	100%	80.35% (75%-85.7%)	82.5% (82%-83%)	83% (67%-100%)	90% (80%-100%)	92.85% (85.7 %-100%)
L	96.6% (83.3%-100%)	92.5% (75%-100%)	95.23% (85.7%-100%)	100%	83.35% (66.7%-100%)	94.45% (88.9%-100%)	80.35% (75%-85.7%)	83.3% (66.6%-100%)	100%	86.6% (85.7%-87.5)
M	78.24% (60%-100%)	95.23% (66.6%-100%)	100%	100%	100%	85.57% (66.7%-100%)	100%	91.6% (83.3%-100%)	100%	83.35% (66.7%-100%)
N	93.57% (75%-100%)	87.73% (80%-100%)	100%	80%	100%	84.33% (80%-90.9%)	100%	83.3%	100%	83.95% (83.3 %-84.6%)

Table 1. Interobserver agreement average and range for inappropriate (IP) and appropriate (AP) behaviors by phase. IOA data were calculated by the experimenter and showed a participant average of 93.51% for inappropriate behavior. The participant average for appropriate behavior was 89.41%. An overall IOA average of both behaviors was 91.46% for all four participants in the study.
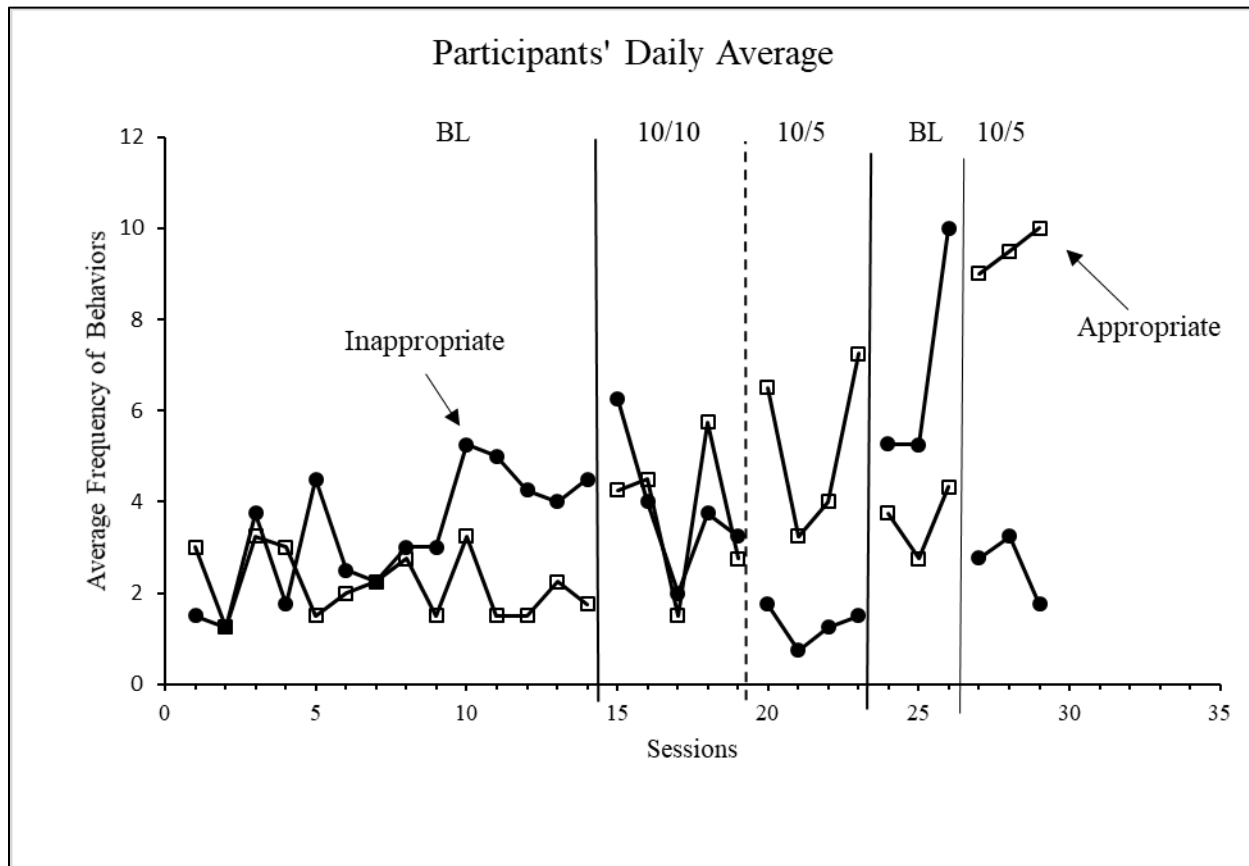
Figure 1. Participant's Daily Average. Above are the four-participant's daily total during the entire study. The closed circles represent inappropriate behavior and the open squares represent appropriate behaviors. The phase entitled "10/10" is when criterion was set at 10 or more "appropriate" (positive) behaviors were needed and 10 or less "inappropriate" (negative) behaviors were needed. The criterion then was changed to "10/5" where 10 or more "appropriate" (positive) behaviors were still needed and 5 or less "inappropriate" (negative) behaviors were now needed.
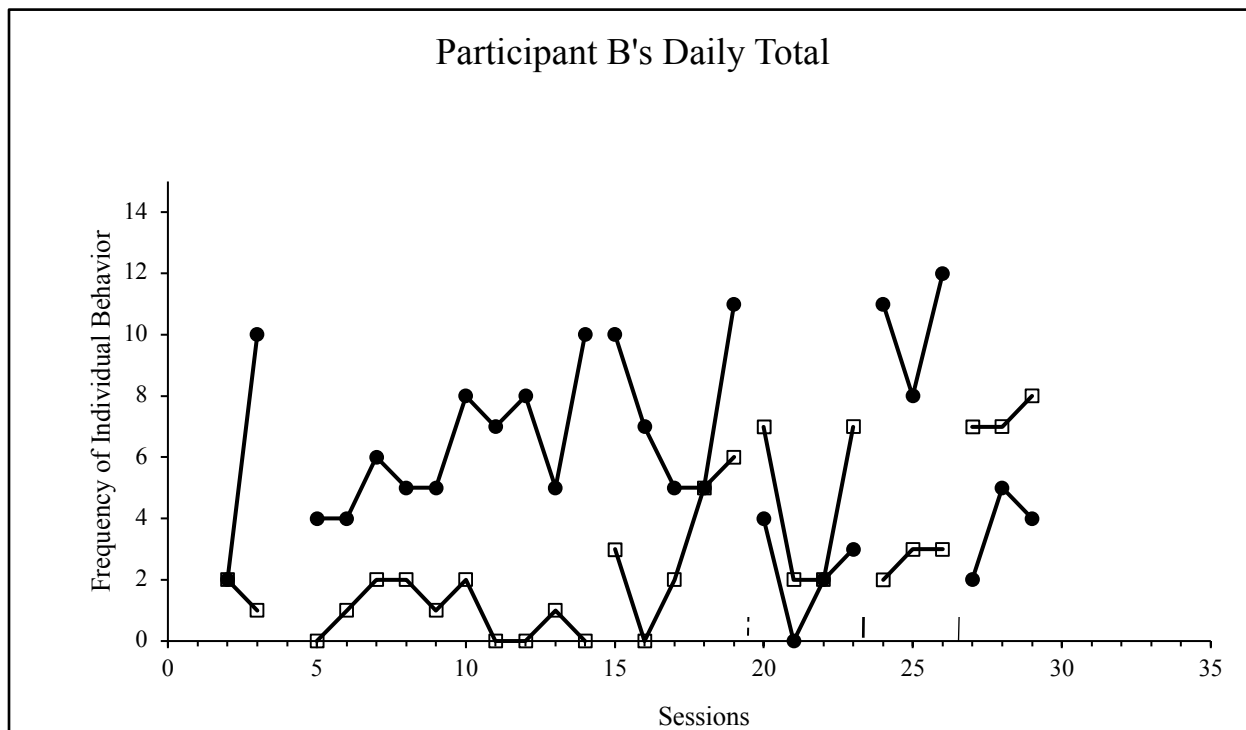
Figure 2. Participant B's Daily Total. Above is participant B's daily total. Closed circle represents inappropriate behavior and open squares represent appropriate behavior. The phase entitled "10/10" is when criterion was set at 10 or more "appropriate" (positive) behaviors were needed and 10 or less "inappropriate" (negative) behaviors were needed. The criterion then was changed to "10/5" where 10 or more "appropriate" (positive) behaviors were still needed and 5 or less "inappropriate" (negative) behaviors were now needed.
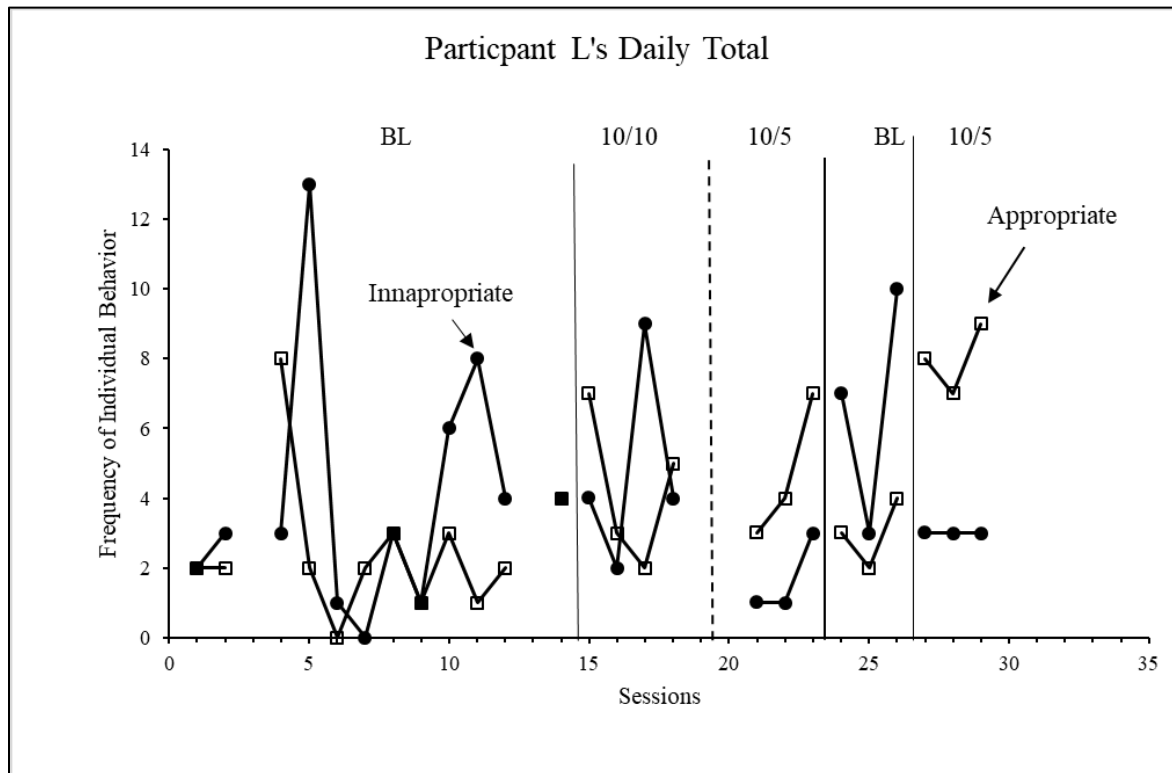
Figure 3. Participant L's Daily Total. Above is participant L's daily total. Closed circle represents inappropriate behavior and open squares represent appropriate behavior. The phase entitled "10/10" is when criterion was set at 10 or more "appropriate" (positive) behaviors were needed and 10 or less "inappropriate" (negative) behaviors were needed. The criterion then was changed to "10/5" where 10 or more "appropriate" (positive) behaviors were still needed and 5 or less "inappropriate" (negative) behaviors were now needed.
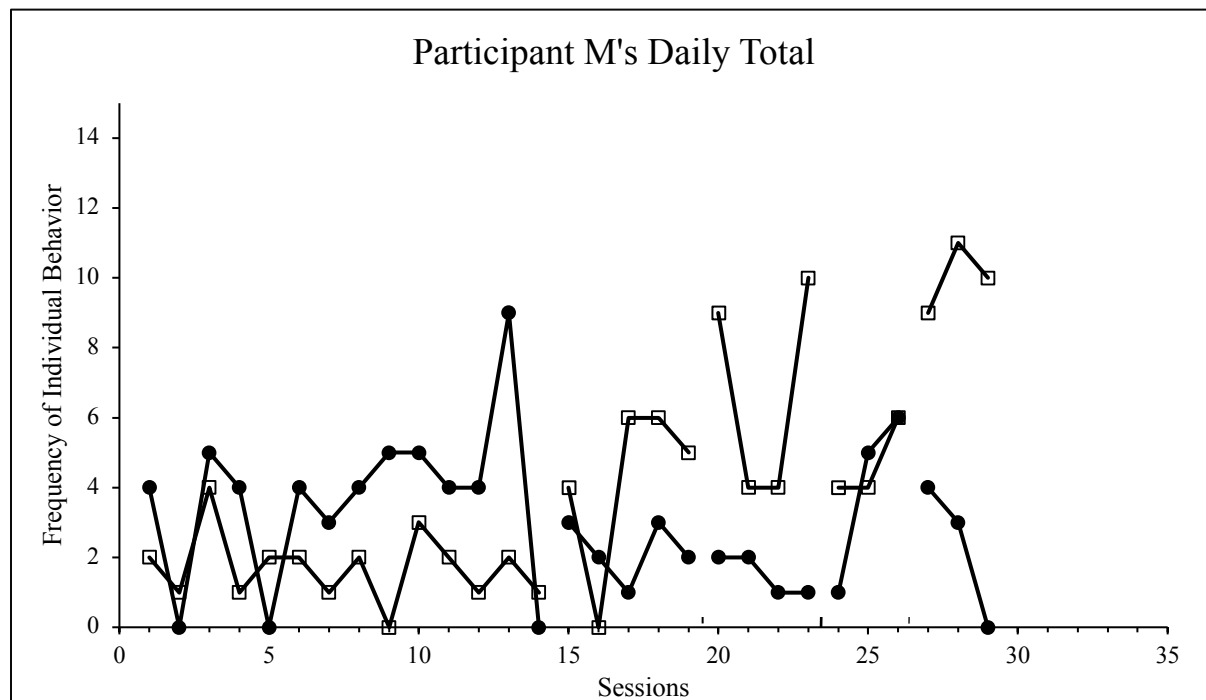
Figure 4. Participant M's Daily Total. Above is participant M's daily total. Closed circle represents inappropriate behavior and open squares represent appropriate behavior. The phase entitled "10/10" is when criterion was set at 10 or more "appropriate" (positive) behaviors were needed and 10 or less "inappropriate" (negative) behaviors were needed. The criterion then was changed to "10/5" where 10 or more "appropriate" (positive) behaviors were still needed and 5 or less "inappropriate" (negative) behaviors were now needed.
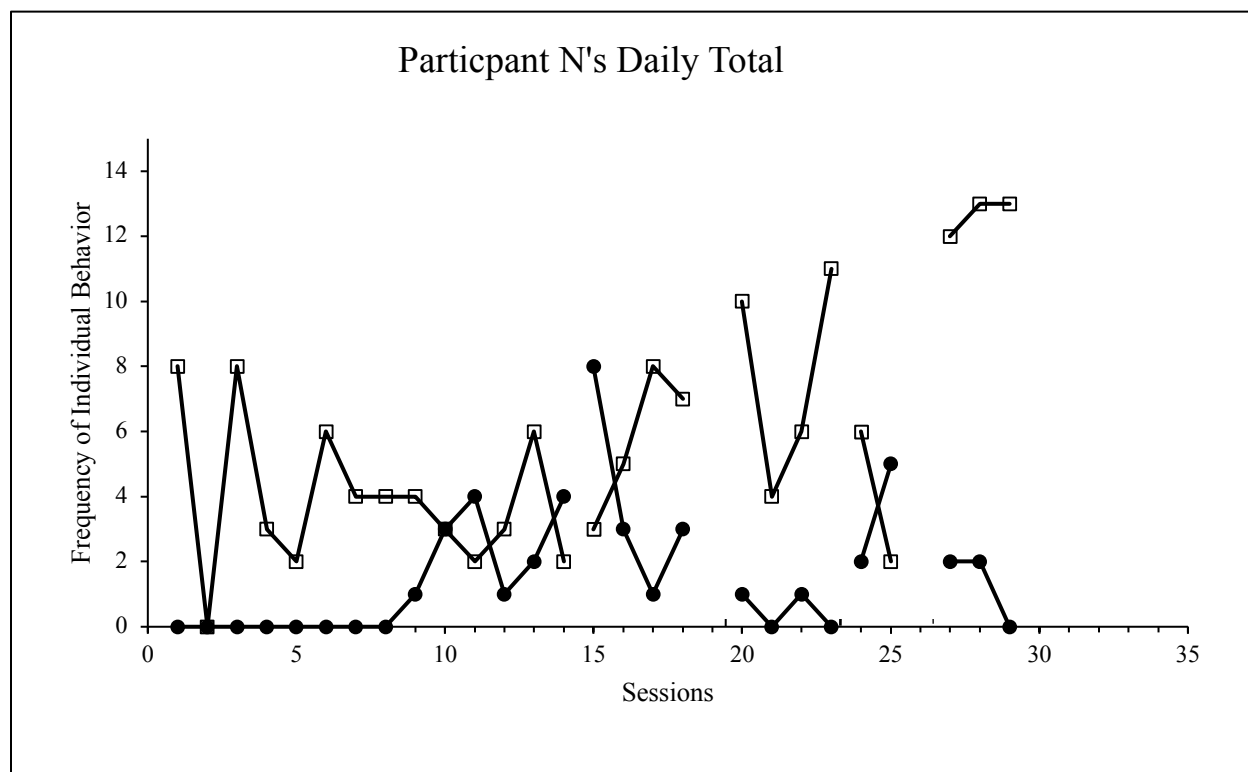
Figure 5. Participant N's Daily Total. Above is participant N's daily total. Closed circles represent inappropriate behavior and open squares represent appropriate behavior. The phase entitled "10/10" is when criterion was set at 10 or more "appropriate" (positive) behaviors were needed and 10 or less "inappropriate" (negative) behaviors were needed. The criterion then was changed to "10/5" where 10 or more "appropriate" (positive) behaviors were still needed and 5 or less "inappropriate" (negative) behaviors were now needed.

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APPENDICES

Appendix A
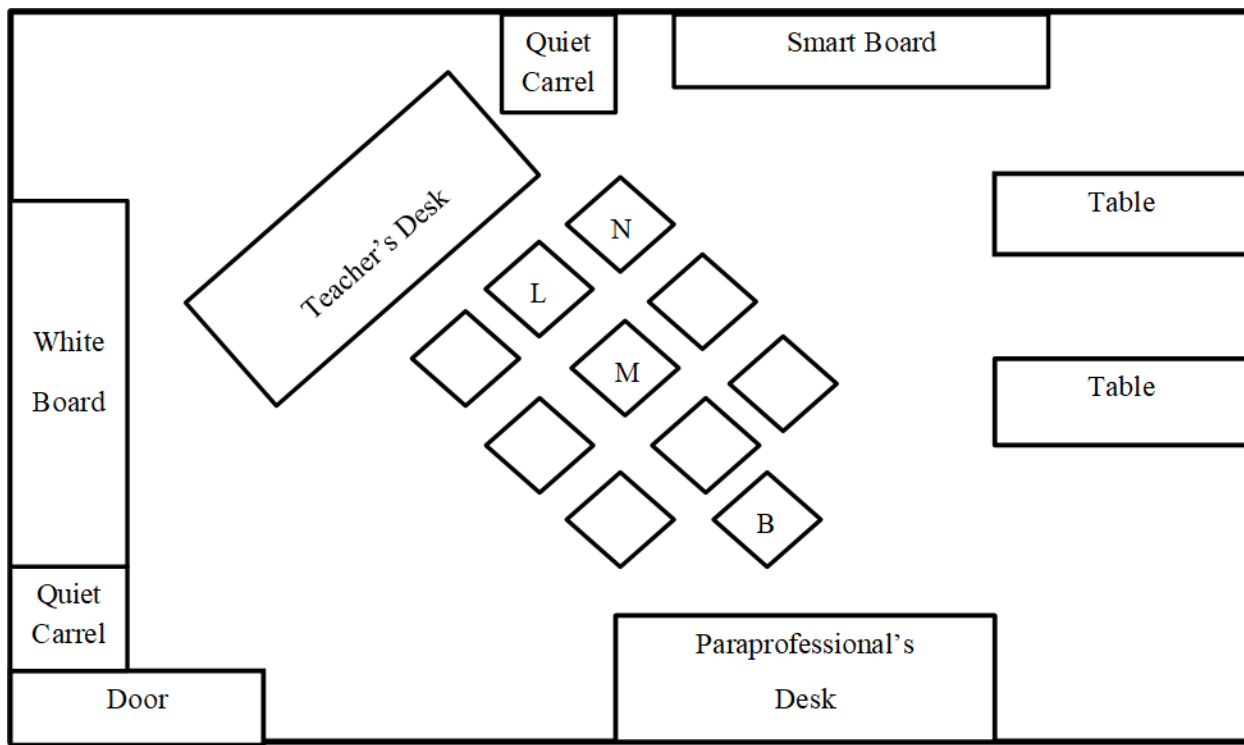
Setting. Above is a layout of the classroom where the study was implemented. The four participant's desks are labeled about where they were situated in the classroom during the completion of the study.

Appendix B

Baseline/ Treatment Data for Group Contingency "GBG" Classroom Intervention (30 min)
Date: _____
Session: _____

POSITIVE BEHAVIORS	**NEGATIVE BEHAVIORS**	
MATH (AM)		
NOVEL TIME/ SCIENCE (PM)		

	STUDENT B	**STUDENT L**	**STUDENT M**	**STUDENT N**
MATH				
NOVEL/SCIENCE				

(MATH) Non-Participant Behaviors: Inappropriate (Negative):
                                     Appropriate (Positive):
(NOVEL/SCIENCE) Non- Participant Behaviors:
                                     Inappropriate (Negative):
                                     Appropriate (Positive):

Data Chart. Above is the data chart used by the experimenter and IOA data collector to record frequency data during baseline and treatment phase of the study.

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Thesis Title:
An Evaluation of the Good Behavior Game Using an Interdependent Group Contingency with
Middle- School Children with EBD

Major Professor: Jason M. Hirst