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The Impact of Teachers' Treatment Fidelity to the Good Behavior Game on Problem Behaviors Exhibited within a Self-Contained Classroom Setting

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by

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ABSTRACT

Challenging behavior in the context of education poses a number of significant issues for students and teachers, alike. Students who engage in significant challenging behaviors face poor educational outcomes and interpersonal conflict with peers. Educators must balance curriculum responsibilities and administrative duties while also addressing behavioral concerns that arise. Additionally, most educators are provided limited, if any specific training on the use of behavioral interventions. The proposed study aims to examine a classwide, behavioral intervention, the Good Behavior Game (GBG) and its utility in addressing challenging behaviors while informing research questions relevant to efficient practices for training educators.

CHAPTER ONE:

INTRODUCTION

Background Information and Rationale

Teachers routinely encounter students who exhibit challenging behavior in the educational setting thereby propelling the educator into the application of behavioral intervention. For most teachers, assuming the role of behavioral intervention implementer is often in the absence of explicit training and thorough supervision. When professionals are responsible for consulting with educators on addressing challenging behaviors, it is incumbent upon those stakeholders to provide effective, empirically supported interventions while also attending to an efficient use of the teacher's time. More simply, educators can benefit from behavioral interventions that renders the desired behavior change and do not require an excess in resources (e.g., monetary investment, implementation time, training time, additional staff). In consideration of the necessity for being frugal when consulting with classroom teachers on challenging behavior, training practices can often be an integral component of a successful collaboration. By allocating resources only towards those elements of an intervention thought to be the active ingredients (i.e., components of intervention thought to be most responsible and/or most directly related to achieving desired behavior change) when training teachers, the consultant can increase the likelihood of that educator having a better understanding of the material and subsequently increasing the chance that strategy will continue to be utilized following the conclusion of the consultation.

Specifically, for educators positioned in classrooms with the need for behavioral intervention across multiple students or when challenging behaviors are prevalent class wide, strategies applying group contingencies are both effective and efficient.

Key Definitions

Challenging behaviors can range from a mild annoyance to posing significant danger for students and staff. Challenging behaviors are typically individually defined but can include behaviors exhibited by students which pose a danger to themselves (e.g., head banging, self-biting, eye gouging), behaviors exhibited by students which pose a danger to others (e.g., hitting others, biting others, pulling hair), and behaviors exhibited by students which have the potential for damaging property (e.g., knocking over furniture, throwing items into surfaces). Additionally, challenging behaviors can include actions which are disruptive and/or inappropriate for the learning environment. These behaviors can include, but not be limited to, excessive talking during an academic activity, moving around educational environment without permission, and failure to adhere to educational activity norms (e.g., misuse of materials, sleeping during instruction).

Self-contained classroom setting can be defined as an educational context where all curriculum presentations and academic instruction is provided by a special education teacher, exhibits moderate restrictiveness in the range of programmatic options, and typically operate under a lower student to staff ratio (i.e., smaller number of students with higher numbers of staff) (Spencer, 2013).

Current Study

The current study extends the findings of the preliminary investigation by further examining the impact treatment fidelity implementation of the GBG has on student problem behavior. Although the previous study provided pilot data useful in developing suggestions for selecting the most effective approach to professional development which also reflected desired changes in student behavior, additional evidence is necessary. Furthermore, experimental manipulations of the independent variable, as proposed in the current study, could render more compelling results. Hence, the purpose of this study is to identify the extent to which the treatment fidelity implementation of the GBG by classroom teachers impact problem behavior exhibited by students in a self-contained setting with behavioral support.

CHAPTER TWO:

REVIEW OF THE LITERATURE

Significant implications accompany students exhibiting problem behavior in the school setting. Engaging in disruptive or inappropriate behavior can directly influence a student's educational experience as well as their interpersonal involvement with others. Failure to adhere to classroom expectations and norms can lead to numerous outcomes which have an immediate impact on the student. Additionally, students engaging in problem behavior sustain long-term effects after exiting from the educational system. These adverse consequences occur to students regardless of label or eligibility classification for educational support and services. Diverse student populations can benefit from an effective approach to diminishing problem behavior being applied in the classroom setting.

Federal legislation provides guidance on establishing an educational environment which ensures students a free and appropriate public education (FAPE) (IDEA, 2004). To further expand protections for all students, individuals deemed eligible to receive special education and contact related services, obtain protection under the Individuals with Disabilities Education Act (IDEA) (IDEA, 2004). Eligibility determinations fall within thirteen categories with the emotional disturbance (ED) classification describing students that exhibit inappropriate behaviors across academic, social, and emotional contexts which impact the student adversely. Students meeting the ED eligibility criteria can exhibit learning deficits, not otherwise explained by "intellectual, sensory, or health factors", difficulties establishing and sustaining social

relationships, and displays incongruent affect (IDEA, 2004). Documentation of symptoms must extend "over a long period of time and to a marked degree that adversely affects a child's educational performance" (IDEA, 2004). Although the federal statue utilizes ED as the term for categorizations, individual state education agencies will develop and utilize terminology specific for special education proceedings in their respective state (Wery & Cullinan, 2011). Given the regional variability in terminology, for the purposes of the current study, "emotional or behavioral disorders (EBD)" will be utilized to reference any student that meets the eligibility criteria outlined within federal legislation (IDEA, 2004).

The United States Department of Education provided data indicating that approximately 13.9% of students within the nationwide public-school system were receiving special education services between the years of 2017 and 2018 (U.S. Department of Education, EDFacts Data Warehouse [EDW] IDEA Part B Child Count and Educational Environments Collection, 2019). Despite reports suggesting 14-20% of children and adolescents confront behavioral or emotional complications during their compulsory educational career, under 1% of total enrollment consists of students being served under the EBD eligibility status (National Research Council and Institute of Medicine (NRC and IOM, 2009). More specifically, the most recent annual report issued in 2019 by the Office of Special Education Programs (OSEP) suggested 5.5% of students served under IDEA are eligible as EBD. The OSEP continues to describe that educational service for over 36% of students with EBD occurs in a self-contained educational setting. However, with the adoption of legislation and least restrictive teaching environments roughly 25% of students with EBD contact general educational settings for some portion of their time spent in school (Bradley, Doolittle, & Bartolotta, 2008; IDEA, 2004).

Student Problem Behavior and the Consequences

Students with EBD generally exhibit topographies of problem behavior in the classroom setting which promotes challenges, both academically and interpersonally (Landrum, Tankersley, & Kauffman, 2003; Lane, Wehby, & Barton-Arwood, 2005). Often complex behavioral presentations associated with this population of students can include aggressive (e.g., hitting peers, hitting staff, throwing items at others) or disruptive behaviors (e.g., breaking items, knocking over furniture, talking aloud during instruction). Other common maladaptive behaviors observed include withdrawn or noncompliant behaviors. Higher rates of problem behavior exhibited by students can influence educational functioning (Smith, Katsiyannis, & Ryan, 2011; Lane, Wehby, & Barton-Arwood, 2005). When students with EBD are compared to students without an EBD classification, problem behavior is often observed within the former population at higher rates.

The elevated rates of problem behaviors exhibited by students with EBD can impact immediate outcomes related to discipline and educational goals. This population of children and adolescents are documented to received higher numbers of discipline referrals, more frequent removals from academic settings (i.e., classroom), and increased suspensions from school (Lane, Wehby, & Barton-Arwood, 2005; Lhamon & Samuels, 2014; U. S. Department of Education, Office for Civil Rights, 2015). Discipline actions applied for students with EBD differ in the form and frequency when compared to other student populations. Furthermore, this difference in the educational experience for students with EBD can also be observed within academic practices. Research suggests students with EBD experience higher incidences of academic disengagement which is associated with low academic achievement and increased rates of school failure (McGrath & Van Bergen, 2015). With feedback (e.g., critical feedback; corrective

feedback, opportunities to respond) delivered less frequently by classroom educators for this population, students with EBD may be less inclined to exhibit academic engagement (Hirn & Scott, 2014).

When assuming a longitudinal perspective of students with EBD, these immediate consequences have resonating influence over life outcomes. Students with EBD exhibit a lower probability of attending post-secondary educational institutions (Wagner & Newman, 2012). Subsequently, an increase in unemployment rates and involvement with law enforcement (i.e., arrest records) are associated with this student population following the conclusion of their educational career (Quinn, Rutherford, & Leone, 2001; Wagner, Kutash, Duchnowski, & Epstein, 2005). The current and future outcomes for students with EBD provide ample rationale for extending the body of literature within this domain. Extensive investigations into improving the environmental circumstances, refining behavioral expectations, and cultivating the academic strategies employed with these individuals is warranted given the depth of poor forecasts.

Addressing Student Problem Behavior

Conroy and Sutherland (2012) outlined the utilization of evidence-based strategies across academic, behavioral, and interpersonal domains, as adhering to the use of best practices for students within self-contained settings with behavioral support. Research suggests the reinforcement of positive academic behavior and providing instructional opportunities to respond are effective, academically focused strategies supported by empirical evidence investigating the EBD populations (Lewis, Hudson, Richter, & Johnson, 2004). A consistent proposal to mitigating problematic behavior exhibited in self-contained classrooms serving students with EBD involved functional behavior assessment and subsequently, developing function-based behavior intervention plans (Kern, Childs, Dunlap, Clarke, & Falk, 1994; Lewis, Hudson,

Richter, & Johnson, 2004; Meyer, 1999). Although functional behavior assessments have been evaluated in the context of the classroom setting, this approach to addressing disruptive behaviors assumes somewhat of an individualized methodology (Bloom, Iwata, Fritz, Roscoe, & Carreau, 2011). In contrast, applying behavioral interventions for all students within a classroom could serve as a preventative strategy while also aligning with suggested best practices.

Recommendations for addressing problem behavior and academic deficits exhibited by students include establishing effective classroom management tactics (Marzano, Marzano, & Pickering, 2003; Wong & Wong, 2001). The extensive attempt by researchers to delineate the essential elements of effective classroom management has resulted in the adoption of practices, including positive reinforcement, explicit training, salient expectations, and consistent consequences (Marzano, Marzano, & Pickering, 2003; Wong & Wong, 2001). The increased frequency of problem behaviors exhibited by students positioned in self-contained settings serving students with EBD warrant more intensive behavior management training for educators and support staff serving in those classrooms.

Behavior management training is rarely comprehensive for pre-service teachers and even less commonly incorporated into continuing education for existing teachers (Henderson et al., 2015; Wei, Darling-Hammond, & Adamson, 2010). Specifically, responses provided on the Schools and Staffing Survey (SASS) indicated less than 50% (45.7%) of teachers contacted any form of professional development on classroom behavior management in 2008 (National Staff Development Council, 2010). Training practices in classroom behavior management for educators can vary dramatically based on countless variables (Nelson, 2003). Compounding the effects of a lack of continuity in how our educators are being prepared to manage problem behavior in their classroom, there is disconnection between the empirically supported strategies

and the strategies that teachers choose to implement. According to survey responses, teachers of students with EBD indicated a decreased ability to apply individualized and varied reinforcement schedules and further reported opposition to carry out behavior intervention plans (Baker, 2005). Researchers provide no shortage of evidence suggesting that teachers experience feelings of unpreparedness related to behavior management and students with EBD (Erden & Wolfgang, 2004; Gable, Tonelson, Sheth, Wilson, & Park, 2012; Little, 2005; Stormont, Reinke, & Herman, 2011). In conjunction with reporting low self-efficacy for providing effective behavioral support to students with EBD, teachers indicate that addressing discipline concerns results in increased stress levels (Lewis, 1999).

Stress experienced by teachers of students with EBD can be manifested as a strict adherence to school expectations and a sharp emphasis on "the immediately observable behavior of the student" (Cheney & Barringer, 1995, p. 181). Aside from individual stress responses, teachers can explore options for employing interventions in the classroom setting that can address both student problem behavior and personal feelings towards behavior management. An effective strategy to addressing problem behavior, as a Tier 1 classroom strategy involves the application of group contingencies.

Group Contingencies

Research has indicated that evidence-based, group contingencies represent an effective behavioral intervention that can establish numerous benefits (e.g., acceptable to educators and students, few resources required, efficient) to teachers and students, alike (Groves & Austin; 2017; Litow & Pumroy, 1975; Little, Akin-Little, & O'Neill, 2015; Ramirez, Hawkins, Collins, Ritter, & Haydon, 2019). Group contingencies are applicable for establishing expectations to

avoid students' behaviors evolving as problematic as well as intervening for an established target behavior (e.g., decreasing talking aloud during direct instruction). A 2015 meta-analysis suggested that across a 30-year span, group contingencies were utilized within 182 studies (Little, Akin-Little, & O'Neill, 2015). Furthermore, Little, Akin-Little, and O'Neill (2015) provided an overall effect size for this format of behavioral intervention as 3.41, and solidified this promising statistic with suggesting "group contingencies are an effective intervention with children, particularly in the classroom, for a wide variety of academic behaviors, problem behaviors, and prosocial behaviors" (p. 335). Thus research findings provide support for group contingencies as a classroom behavioral intervention which highlight the need for further efforts to diminish the research to practice gap and to provide teachers a practical and accessible intervention.

Variations of group contingencies include dependent, independent, or interdependent, all of which differ on criteria for contacting reinforcement (Groves & Austin; 2017; Litow & Pumroy, 1975; Ramirez, Hawkins, Collins, Ritter, & Haydon, 2019). A dependent group contingency delineated by a common consequence, delivered to the entire group as a portion (i.e., one or more members) of the group adheres to a pre-determined criterion. For example, three students on Team A improve their test score by 10% and the entire group receives ten extra minutes at recess. The dependent group contingency variation was explored and suggested to be effective for increases in remaining in assigned work areas, staying quiet during instruction, and engaging with class materials to suggest academic engagement with students receiving special education services whom (Williamson, Campbell-Whatley, & Lo, 2009). Furthermore, Vidoni and Ward (2006) investigated the effects of dependent group contingencies on encouraging interpersonal exchanges (e.g., high fives, thumbs up, statements of reassurance, verbal praise)

between middle school teammates while playing volleyball games. Direct observation data displayed improvements in the frequency with which teammates demonstrated support for one another while responses on a social validity measure indicated that participants endorsed the dependent group contingency approach (87%) (Vidoni & Ward, 2006).

Independent group contingency implementation involves the presentation of a common consequence to all group members but only delivered to individuals within the group adhering to a pre-determined criterion. For example, three students on Team A receive ten extra minutes at recess for meeting the team goal of improving their test score by 10%. Independent group contingencies were explored by Groves and Austin (2017) when an alternating treatment design facilitated rotating the presentation of a team-based version of the GBG (i.e., interdependent contingency) and the presentation of an individualized version of the GBG (i.e., independent contingency). Inappropriate classroom behaviors (e.g., calling out, sitting on knees, not visually attending to instruction) were observed to decrease across the presentation of both the independent and interdependent group contingencies (Groves & Austin, 2017). Researchers highlighted the results obtained from the elementary school sample suggests that the independent group contingences can effectively produce desired behavior change (Groves & Austin, 2017).

The delivery of a common consequence once all group members adhere to a pre-determined criterion, describes an interdependent group contingency. For example, all students on Team A receive ten extra minutes at recess for all meeting the team goal of improving their test score by 10%. Joslyn, Vollmer, and Kronfli (2019) applied interdependent group contingencies by playing the GBG to address disruptive classroom behavior in the form of talking out in class and being out of assigned seating in the absence of adult permission. Researchers selected to format the game for the student participants with EBD, establishing a

single team as opposed to multiple teams, to maximize the smaller class size observed in this sample while also minimizing the potential for sabotaging (i.e., coaxing opponents to break the game rules) across teams. Results of the multiple baseline across classroom design suggested interdependent group contingencies are effective as a strategy for classroom management with EBD students in alternative settings.

Across the three versions, research clearly identifies advantages and disadvantages. A cited disadvantage to utilizing group contingencies pertains to providing a common consequence for a group of individuals (Copper, Heron, & Heward, 2007). This inattention to individual preferences may result in varying levels of reinforcing value across individuals. More simply, the reward provided may be a more potent reinforcer for Student A than for Student B. Radley, Dart, Battaglia, and Ford (2019) implemented individual preference assessments to circumvent the disadvantage of delivering a common consequence. Group contingencies, particularly dependent contingencies, can elicit negative social behaviors (e.g., retribution, peer pressure, isolation, ostracizing) among participants that can diminish the efficacious nature of the intervention (Davis & Blankenship, 1996; Williamson, Campbell-Whatley, & Lo, 2009; Romeo, 1998). Despite the drawbacks, research suggests the three formats of group contingencies are effective with managing problem behavior while also demonstrating efficiency when compared to the application of individual student interventions (Foley, Dozier, & Lessor, 2019). Students can develop working relationships with peers in that group contingencies establish common objectives and provide opportunities to obtain support from others seeking a shared goal (Skinner, Cashwell, & Dunn, 1996). Copper, Heron, & Heward (2007) suggests that stakeholders implementing group contingencies can intervene more efficiently with the capacity to provide consequences that are positive and negative, which subsequently decreases the workload.

Educators can easily identify a variation of group contingencies to address individual students, groups of students, or entire classrooms of students, which increases the flexibility and applicability of this intervention (Maggin, Johnson, Chafouleas, Ruberto, & Berggren, 2012).

Interdependent group contingencies display similar levels of effectiveness as noted across all three contingency variations, however empirical support would suggest preference exists for interdependent procedures and obtained outcomes (Little, Akin-Little, & O'Neil, 2015; Maggin, Johnson, Chafouleas, Ruberto, & Berggren, 2012). With the use of interdependent methods, social pressure is not evoked from peers as observed with dependent contingencies. Additionally, participant cooperation is encouraged and reinforced under interdependent contingencies which differs from observed responses of utilizing independent procedures.

The Good Behavior Game

The Good Behavior Game (GBG) utilizes group contingencies to address problematic behaviors across diverse populations and within various settings (Flower, McKenna, Bunuan, Muething, & Vega, 2014; Groves & Austin, 2017). The GBG is effective and feasible for teachers, instructional aides, and support staff (Flower et al., 2014). Over the five decades since the introduction of the GBG, application as a classroom-management strategy has extended past decreasing disruptive behavior exhibited by elementary students and is suggested to be practical for a diverse population (Barrish, Saunders, & Wolf, 1969; Joslyn, Donaldson, Austin, & Vollmer, 2019). Moreover, the GBG represents a group intervention that exhibits low impact on academic planning and sustains simultaneous implementation with any teaching curriculum (Casey et.al., 2012; Medland & Stachnik, 1972).

The most common application of the GBG includes dividing players into equivalent teams (i.e., not necessary equal numbers of students on each team but creating teams that

represent the same ability to win the game), establishing and broadcasting game rules, publicly acknowledging rule violations, and providing reinforcement for adhering to a pre-determined criterion for winning the game (Barrish, Saunders, & Wolf, 1969). As the GBG intervention has evolved, researchers have sought to isolate the active ingredient responsible for behavior change (Foley, Dozier, & Lessor, 2019; Harris & Sherman, 1973; Medland & Stachnik, 1972). Determining the essential mechanisms for desired outcomes could derive from conducting a component analysis, the comparison of "the effects of two or more independent variables" considered to be "elements of a treatment package" (Cooper, Heron, & Heward, 2007, p. 230). An early example of such a component analysis utilized rules, feedback, and consequences as the three primary components of the intervention (Medland & Stachnik, 1972). Across two research designs, Medland and Stachnik (1972) evaluated the GBG in its entirety as well as examining game rules in isolation and the use of classroom lights (i.e., component that served as an indicator of how students were progressing in the game) in conjunction with game rules. After individual intervention components, game rules and game rules paired with classroom lights, were linked with the behavioral intervention these components were successful in addressing the target behavior (Medland & Stachnik, 1972). A more recent component analysis indicated that all components were essential for observing a significant decrease in the target behavior, disruptions, for preschool aged participants (Foley, Dozier, & Lessor, 2019). While Foley, Dozier, and Lessor (2019) demonstrated the utility of the GBG for decreasing the disruptions of students in preschool, presentation of additive components prior to implementing the GBG and following the game, produced mixed results regarding effectiveness. The stability of components presented following implementation of the GBG, including rules, feedback, criterion, and

noncontingent reinforcement was noted to be beneficial for maintenance of behavior change (Foley, Dozier, & Lessor, 2019).

Treatment Fidelity

Gresham (1989) described treatment fidelity as the degree to which an independent variable is implemented as intended. Treatment fidelity can significantly impact resources allocated towards student behavioral interventions in that stakeholders must determine if interventions are ineffective or if implementation caused ineffective results (McIntyre, Gresham, DiGennaro, & Reed, 2007). Given the extent to which treatment fidelity can influence stakeholders, participants, and outcomes, assessment of this construct is essential. Treatment fidelity assessment methods include self-reporting, review of permanent products, and direct observations (Barnett, Hawkins, McCoy, Wahl, Shier, Denune, & Kimener, 2014). Stakeholders can utilize measures of self-reporting to demonstrate implementation of treatment components for inquiring investigators (e.g., researcher, support staff, consulting agencies). Self-reports can be either written or verbal accounts of implementation performance. Any occasion which involves "physical evidence that the treatment procedure was implemented" describes the use of permanent products to assess treatment fidelity (Barnett et al., 2014, p. 94). Direct observations can involve informal procedures or the application of checklists or rating scales which accompany the observation. Informal assessment methods refer to observing the treatment implementation in the absences of data collection procedures. Gresham, Dart, and Collins (2017) suggested that observers evaluating treatment fidelity through direct observation is considered a more rigorous examination when compared to utilizing permanent products or self-report.

Research has examined treatment fidelity, as it relates to the outcomes of an intervention, across several domains (Gansle & McMahon, 1997; Greenwood, Terry, Arreaga-Mayer, &

Finney, 1992; Noell, Gresham, & Gansle, 2002). Establishing a functional relationship between the implementation of an intervention and the observed changes in behavior does not rest entirely with promising treatment fidelity (Gresham, Dart, & Collins, 2017). Despite this inadequacy, the concept of treatment fidelity is integral to empirical suggestions referencing the efficacy of an intervention (Perepletchikova, 2011; Perepletchikova & Kazdin, 2005). Demonstrating the utility in evaluating treatment fidelity is observed with the ability to direct subsequent efforts (e.g., modify intervention, modify intervention delivery, deliver additional implementation training) for achieving desired treatment outcomes.

Complications related to data interpretation, treatment planning, and participant training could occur as a result of low treatment fidelity (Collier-Meek, Fallon, Sanetti, & Maggin, 2013; Joyce & Showers, 1980). More specifically, stakeholders could struggle to clearly understand patterns and trends in data as questions arise surrounding intervention implementation. Researchers encounter interpretation difficulties as concerns arise with the "extent to which the independent variable is implemented or carried out as planned" (Cooper, Heron, & Heward, 2007, p. 235). In the absence of this certainty, the investigation outcomes may represent a false positive or false negative regarding the attempt to discern a functional relationship (Cooper, Heron, & Heward, 2007). Consideration for treatment fidelity prior to modifying intervention components serves as effective practice; undesired data trends may not reflect ineffective mechanisms but rather ineffective implementation. Additionally, poor treatment fidelity can suggest to participants or stakeholders the necessity of additional staff training (Collier-Meek, Fallon, Sanetti, & Maggin, 2013).

Professional development trainings that concurrently serves as an avenue for continuing educational credits, required by most state licensure boards are delivered as additional staff

training for educators (Hussar & Bailey, 2019; State, Simonsen, Hirn, & Wills, 2019). Professional development practices within education facilitate the persistent delivery of knowledge and new behaviors to students (Joyce & Showers, 2002). The prominent attention currently placed on delivering educational professional development continues to expand with the growing practices of professional learning communities, embedded job training, and peer coaching (Croft, Coggshall, Dolan, Powers, & Killion, 2010; Jensen, Sonnemann, Roberts-Hull, & Hunte, 2016; Killion, 2016). Researchers are seeking to address numerous questions surrounding the delivery format of professional development. Setting details, demographic composition of student population, prior training experiences, and level of training engagement can impact professional development effectiveness (Jensen, Sonnemann, Roberts-Hull, & Hunte, 2016). Evaluation of professional development trainings involves reviewing the treatment fidelity associated with the training topics or strategies. Prior investigations have suggested treatment fidelity decreases over time following professional development training (Noell et al., 1997).

Previous Study

The impetus to the current study was an investigation of professional development training for two classroom teachers implementing the GBG with students in a self-contained setting with behavioral support (Ginns, D.S., Hodnett, J.M., Scheel, N.L., & Gormley, M., 2019). The researchers examined tiered levels of support for two educators who reported difficulties managing the classroom behaviors exhibited elementary students (i.e., kindergarten, first grade, fourth grade, and fifth grade) with EBD. The three tiers of professional development support provided to the teachers included didactic training with an accompanying GBG manual (Tier 1), self-monitoring (Tier 2), and performance feedback (Tier 3). Data were collected on student

disruptive behaviors, student engagement behaviors, and teacher implementation behaviors. Both teacher participants received didactic training on the GBG however, contacting subsequent phases of professional development was contingent upon producing two, consecutive treatment fidelity scores below 80%. More simply, as the teachers evidenced requiring additional support (i.e., being unable to implement the GBG with fidelity at or above 80%, consistently) participants contacted the subsequent tier of support.

The concurrent, multiple baseline across classroom design suggested performance feedback (Tier 3) was necessary for both teacher participants to obtain and maintain acceptable fidelity scores when implementing the GBG. Additionally, data of student disruptive behaviors and student engagement behaviors failed to exhibit stable patterns or fall within desirable levels until teacher participants contacted the third tier (Performance Feedback) of support. Examining the possibility that changes in student behavior were the result of a compounded effect of exposure to the GBG given the classroom strategy was implemented eight times before tier three support was installed. Another potential justification for the desired change in student behavior pertains to the fidelity intervention implementation. In the face of the insufficient demonstrations of the treatment effect, or replication, for this introductory examination, the current study looks to remove this limitation and further explore the impact treatment fidelity has on GBG implementation for students being served within a self-contained setting.

CHAPTER THREE:

METHOD

Participants and Setting

A short-term, alternative educational environment in a local school district served as the setting for the current study. Students were enrolled in the educational program through a referral process, which targeted those students who exhibited significant challenging behavior that did not improve despite intensive interventions offered within the context of the referring school. Given the abbreviated design of the alternative program, students typically participated in one to two quarters before returning to their previous educational setting. However, individual reviews of student progress determined the length of their experience in the short-term, alternative educational environment within the current study.

Within that alternative setting, study procedures were implemented across two elementary classrooms and one middle school classroom. The alternative educational setting served students in grades pre-kindergarten up through 8th grade. Based on current enrollment, administration positioned multiple students within the same setting with varying assigned grade levels. This grouping practice resulted in students assigned to different elementary grade levels in a combined elementary classroom and students assigned to different middle school grade levels in a combined middle school classroom. All three of the participating classrooms were considered special education self-contained settings. Classroom 1 contained two middle school students with ESE eligibility (i.e., one student with EBD classification, one student with SLD

and EBD classification) and a teacher participant with 10 years of teaching experience. Classroom 2 contained three elementary school students with ESE eligibility (i.e., two students with EBD classification, one student with ASD classification) and a teacher participant with 11 years of teaching experience. Additionally, the teacher participant for Classroom 2 reported holding a master's degree in Child and Adolescent Behavior Health with a Positive Behavior Support certificate. Classroom 3 contained one elementary school student with ESE eligibility (i.e., EBD) and a teacher participant with 1.5 years of teaching experience. The teacher participant from Classroom 3 also reported 1.5 years of experience as a teaching assistant and 13 years as a school administrator. All teacher participants held their ESE Professional Certification. No additional demographic information (e.g., age, ethnicity) was collected for either student participants or teacher participants.

Response Definitions

Data were collected on teacher and student behavior. An investigator designed data sheet (see Appendix A) was utilized for both teacher participant and student behavior data collection. The teacher participant behavior included GBG treatment implementation fidelity.

For the GBG treatment implementation fidelity exhibited by each teacher participant was collected on the occurrence and nonoccurrence of the 16 procedural steps within the GBG. Although 14 of the 16 procedural steps related to teacher treatment implementation were dichotomous, establishing that a teacher accurately acknowledged game rule infractions and accurately identified the student responsible for the rule violation was considered less straightforward due to the multiple opportunities they had to do so during each session. To determine if the teacher participant accurately carried out identifying rule violations and those students responsible for said violations, the frequency of occurrences, as recorded by the primary

data collector, was divided by the frequency with which the teacher participant acknowledged a rule violation and identified the responsible student participant. This figure was then multiplied to obtain a percentage of opportunities. If teachers acknowledged at least 80% of student rule violations and identified the student violated the rule during at least 80% of opportunities, each step was scored as accurately implemented, respectively. The researcher established the criteria of teachers acknowledging at least 80% of student rule violations in consideration of the realistic nature of a classroom. More simply, the researcher wanted to institute practical expectations for teachers who are often balancing other responsibilities while implementing instruction and interventions.

Student participant behaviors included challenging behaviors and academic engagement and were operationally defined based on the specific needs of each participating classroom. Challenging behavior included instances in which a student exited their assigned area, emitted audible vocalizations without prior teacher approval, emitted profanity, and/or wore COVID-19 personal protective equipment (i.e., face masks) incorrectly. More specifically, although students could self-select to sit in their assigned desk or stand, individuals were considered outside of their assigned areas when they stepped outside of the established boundary around their desk. More specifically, the classroom teacher established a visual boundary by placing colored tape on the floor around the desk of each student. This practice was specific to the classroom teacher and was already in place prior to the onset of the current study. Each occasion in which a student emitted a vocalization (e.g., verbal language, noises) without first obtaining teacher approval would be scored as an instance of challenging behavior. Coughing, sneezing, choral responding, and verbally responding to a teacher after being called upon are all non-examples of challenging behavior. Additionally, each use of profanity by students was considered an instance of

challenging behavior. Any instances in which a student's nostrils and/or mouth were visible as a result of improper facial mask placement was recorded as a challenging behavior. For each interval across the observation period with a student's facial mask in an improper placement, a new occurrence was scored.

Academic engagement was defined as instances when students were attending to academic assignments. Students were considered engaged when their heads were positioned toward instructional staff and/or instructional materials and were observed using academic materials appropriately to complete tasks, including but not limited to writing on paper, reading an assigned book, raising hand, asking staff questions related to current activity, conversing with peer about current activity, and using technology in approved manner which is related to current activity. Students who positioned their heads on their desk surface would not have been recorded as exhibiting academic engagement.

Data Collection

Data Collection Training. Data collection training was conducted by the primary investigator prior to in-vivo observations in the classroom setting. Graduate students in a school psychology program were recruited as data collectors for the current study. Data collectors were trained on all operational definitions (i.e., student behaviors and teacher behavior) and data collection procedures. Utilizing a behavior skills training format (e.g., Parsons, Rolyson, & Reid, 2012), the primary investigator provided each data collector an explanation of all procedural steps required for accurate data collection, demonstrated each of those procedural steps, and provided opportunities to practice each step with feedback.

Data Collection Procedures. The primary investigator scheduled data collection observations consistently (i.e., morning hours of each Thursday) throughout the study in an effort

to avoid confounding variables and to address the most problematic academic subjects identified by the teacher participants. The GBG was implemented across 10-minute intervals. Student behavior data was collected utilizing a continuous measurement technique, specifically frequency recording of challenging behavior. That is to say, each occurrence of student behavior which met operational definitions was recorded as a separate instance of challenging behavior. Subsequently, the frequency of challenging behavior was converted to a rate per minute by dividing the total count by 10 at the end of each session. Academic engagement data collected for students utilized a planned activity check (PLA-CHECK; Doke & Risley, 1972). The PLA-CHECK data collection procedure occurred at the end of each minute during the classroom observation. Data collectors utilized programmable interval timers (e.g., Gymboss, electronic applications) to signal the end of the interval, thereby prompting data collection. To begin the PLA-CHECK, data collectors scanned the environment, left to right, across a duration of 3-5s. Upon identifying a student exhibiting off-task behavior during the 3-5s scan, the data was recorded in the corresponding interval. Data collectors used printed paper data sheets (see Appendix A).

Treatment fidelity data for implementing the GBG were collected by the primary data collector on all teacher participants through direct observation. The GBG task analysis (see Appendix B) was utilized to establish the number of procedural steps (i.e., 16 total steps) required to accurately implement the class-wide behavioral intervention. Teacher participants were provided the GBG task analysis, in checklist format, as a form of support for use during implementation. Data were collected on the number of correct procedural steps a teacher participant made during each game interval. Procedural fidelity data were collected across all phases of the study to reflect the adherence to study procedures. The primary investigator

completed a self-report checklist (see Appendix G) of the occurrence or nonoccurrence associated with study procedures (e.g., providing the teacher with appropriate checklist, accurately timing duration of game) once during each phase of the study. An average score of 100% self-reported fidelity was recorded across each phase of the study, for each teacher participant and participating classroom.

Interobserver Agreement. Interobserver agreement (IOA) was calculated separately for student behavior and teacher behavior. Agreement between two, independent observers was captured and calculated utilizing two different methods (i.e., proportional IOA, exact IOA). Proportion of total IOA was calculated by dividing the smaller number of occurrences (i.e., student challenging behavior, student off task behavior) recorded by the larger number of occurrences recorded and converting into a percentage. Exact IOA was calculated by dividing the number of intervals where both observers recorded the same number of occurrences (i.e., student challenging behavior, student off task behavior), divided by the total number of intervals, and converting into a percentage. Due to constraints related to the on-going COVID-19 pandemic, only the primary researcher was positioned within the participant classrooms. Secondary data collectors utilized teleconferencing technology to conduct their independent observations.

As shown in Figure 1, IOA was collected for 35% (i.e., 29 sessions with IOA out of a total of 84 sessions conducted) of all sessions. To further delineate, IOA was collected for 37% of baseline sessions, 12% of full implementation sessions, 50% of proximal and distal condition sessions, and 38% of distal sessions. Both proportional and exact IOA of teacher implementation fidelity was calculated to be 98%. Proportional IOA of off-task student behavior was calculated to be 84% while exact IOA of off-task student behavior was calculated to be 94%. Proportional

IOA of challenging student behavior was calculated to be 73% and exact IOA of challenging student behavior was calculated to be 76%. A further explanation of exact IOA data across the duration of the current study is included (see Table 2). A further explanation of proportional IOA data across the duration of the current study is included (see Table 3).

Procedure

Baseline. During baseline (i.e., no intervention), classroom teachers implemented general classroom behavior management strategies. Trained data collectors collected data on student behavior (i.e., challenging behavior, off-task behavior). The primary investigator calculated the average number of instances students exhibited problem behavior during classroom observations prior to introducing the GBG. The average response rate for the baseline phase was presented to each teacher participant which facilitated an individual conversation regarding the rule infraction threshold (i.e., number of challenging behaviors allowed and still considered game winners). The average number of occurrences of challenging behaviors observed in Classroom 1 during baseline sessions was 15 which resulted in a game point allotment of 7. The average number of occurrences of challenging behaviors observed in Classroom 2 during baseline sessions was 32 which resulted in a game point allotment of 8. The average number of occurrences of challenging behaviors observed in Classroom 3 during baseline sessions was 18 which resulted in a game point allotment of 5.

Participant Training

Teacher Participant Training. Following baseline data collection, teacher participants were exposed to behavioral skills training (BST) delivered by the primary investigator, for general procedures exercised while implementing the GBG (Sarokoff & Sturmey, 2004). This was a group format training which allowed for all teacher participants to be exposed to the same

instructions simultaneously. BST consisted of verbal instructions on implementing the GBG, models of GBG implementation, opportunities to rehearse the GBG, and performance feedback on GBG implementation. This training occurred prior to introducing the intervention and was accompanied by written materials containing the procedures of intervention implementation that were presented within the training. Each teacher participant demonstrated 100% implementation fidelity during the rehearsal stage of BST. Given the exemplary performance of each teacher participant no additional training was required. Procedural fidelity of training provided to teacher participants was measured as 100%, directly aligned with the pre-determined training task analysis (see Appendix C). Data collected relevant to procedural fidelity for training teacher participants on the implementation of the GBG utilized a researcher designed data sheet (see Appendix H). Immediately following the initial training, the primary investigator facilitated the development of intervention materials (i.e., classroom rules, reinforcement menu, intervention delivery schedule, visual aids for classroom setting).

Student Participant Training. The primary investigator assumed the role of the teacher participant across all participating classrooms for the introductory game presentation (i.e., first game played in each classroom). Serving as the 'game master' across all of the participating classrooms the first time the GBG was played, functioned as an authentic model for each of the teacher participants. Additionally, the primary investigator was available to provide any additional instructions and details directly to students as they became acquainted with the new class wide behavioral intervention. More specifically, the primary investigator provided an introduction to the game by clearly stating the rules of the game, revealing the game duration of 10-minutes, and indicating to students the physical location of the posted rules. Next, the primary investigator informed the classrooms they were all positioned on a single team, working together

to meet their pre-determined goal. Each class team was prompted to select a team name which was written in the same location as the game rules. Then, the classrooms were notified of how many points were allocated and the requirement for winning the game (i.e., having at least one point left at the expiration of the 10-minute game). Finally, the primary investigator shared details of the items available for game winners and addressed any student questions. Data were not retained for initial game presentations conducted by the primary investigator. The onset of data collection procedures across all participating classrooms coincided with the first introduction of the GBG by the teacher participants.

Full Implementation Baseline. All participating classrooms were exposed to all 16 steps of the GBG following the baseline condition. Prior to the onset of the game, the teacher participant announced the onset of the GBG, read the rules of the game from the posted game rules, stated the duration of game play was ten minutes, identified the students were playing as a collective team, described the criteria for winning the game, and provided a reminder of the potential reinforcement provided to the game winners. Next, the teacher participant announced the game had begun as they started a timer. Any rule infractions resulted in the teacher participant audibly identifying what rule was broken and which student was responsible for the violation. All rule infractions were tallied in a manner visible to student participants. At the conclusion of the game, the teacher announced the winning team, provided verbal praise to winning team, and immediately provided reinforcement. Teacher participants were provided the GBG full implementation task analysis checklist with all components included at the onset of the study condition (see Appendix D).

Component Analysis Evaluation. Steps involved with implementing the GBG were divided into three primary components, antecedent components, proximal consequence

components, and distal consequence components. Each of the 16 components of implementing the GBG were assigned to one of three primary component groupings (i.e., antecedent components, proximal consequence components, and distal consequence components). The considerable body of empirical evidence supporting the use of the GBG was instrumental in establishing the three component groupings (Foley, Dozier, & Lessor, 2019; Harris & Sherman, 1973; Medland & Stachnik 1972). More simply, primary component groupings were designated after reviewing literature examining the effectiveness of the GBG. While previous researchers investigated the impact of singular GBG elements (Medland & Stachnik, 1972) or combinations of game components (Foley, Dozier, & Lessor, 2019), examining the impact of the GBG conceptualized as three primary component groupings was a more novel endeavor. The current study sought to investigate the segments of the intervention or the steps leading up to the game (i.e., antecedent components), features presented during the game (i.e., proximal consequence components), and the actions taken as the game was ending (i.e., distal consequence components). Antecedent components consisted of stating game rules, verbally stating the criteria for winning, identifying team assignments, providing game duration, and announcing the start of the game. Proximal consequence components consisted of verbally acknowledging rule infractions as they occur, verbally acknowledging the student participant responsible for the infraction, and visually indicating a rule violation has occurred. Distal consequence components consisted of announcing the end of the game, an audible indicator that the game has ended, verbally announcing the game winners, providing verbal praise to the winners, and providing game winners access to reinforcement.

These components were systematically introduced and withdrawn in an effort to examine effects of varying levels of implementation fidelity. All components of the GBG were initially

introduced across all participating classrooms which provided insight into the intervention being implemented with 100% fidelity. Through the systematic withdrawal of the antecedent components, implementation fidelity was examined at 50%. More specifically, by removing the antecedent components (i.e., stating game rules, verbally stating the criteria for winning, identifying team assignments, providing game duration, and announcing the start of the game) the participant teachers could only execute half of the total number of intervention components. Through the systematic withdrawal of the antecedent and proximal components, the distal consequence component phase examined the GBG implementation fidelity at 31%. Similarly, when participating teachers were instructed to only introduce the distal consequence components (i.e., announcing the end of the game, an audible indicator that the game has ended, verbally announcing the game winners, providing verbal praise to the winners, and providing game winners access to reinforcement) as opposed to employing all steps of the intervention, implementation fidelity was being examined at 31%.

The order of phase variations was held constant across all participating classrooms. Prior to the onset of the observation, teacher participants were provided directions on which components of the GBG implementation were required for the current phase. Specifically, each teacher participant was provided a written list of the components intended to be included during each specific game presentation. Teacher participants were instructed to ignore all student inquiries pertaining to differences in game presentations. Teacher treatment fidelity data collection aligned with components being evaluated across phase changes.

Proximal and Distal Consequence Component Phase. All antecedent components were removed during this phase. Specifically, the teacher participant omitted stating game rules, criteria for winning, and team assignments. Additionally, no information was provided to

students regarding the game duration and students were not alerted to the onset of the game. All proximal and distal consequence components were implemented within this phase. Specifically, teacher participants verbally acknowledged any rule infractions, verbally acknowledged those student participants responsible for the rule violations, and visually indicated a rule violation (i.e., removed a point from the score board) as well as announced the end of the game, ensured the conclusion of the game was accompanied by an audible indicator (e.g., alarm from timer is audible to students), verbally announced the game winners, provided verbal praise to the winners, and provided game winners access to reinforcement. Teacher participants were provided the GBG task analysis checklist with proximal and distal consequent components included at the onset of the study condition (see Appendix E).

Distal Consequence Component Phase. Subsequently, all proximal consequence components were removed resulting in the presentation of only distal consequence components being implemented. Within this phase teacher participants only announced the end of the game, ensured that the conclusion of the game is accompanied by an audible indicator (e.g., alarm from timer is audible to students), verbally announced the winners of the GBG, and subsequently provided students on winning team access to reinforcement. Teacher participants were provided the GBG task analysis checklist with the distal consequent components included at the onset of the study condition (see Appendix F).

Research Design

This study combined analytic approaches to explore the use of the GBG, in particular the effectiveness of specific component groupings. A component analysis was conducted dynamically with an embedded reversal design. The design was conducted in a concurrent fashion and examined the components across an A-B-C-D-A-D-A design. The primary

investigator employed a “dynamic and ongoing” (p. 98) evaluation of trends observed within participant data which directed phase changes and intervention modifications (Johnson & Cook, 2019). Specifically, the primary investigator identified specific data trends (e.g., stable, increasing, decreasing) using visual analysis which informed phase change decisions as opposed to relying on a pre-specified number of data points per phase. Movement across phases included reversals to previously presented phases, to demonstrate both replication and experimental control. Phase changes were also determined by the similarity in participant responding across similar phases. More specifically, once a participant exhibited responding in a current phase that mimics responding in a previous phase with the same or similar contingencies, the investigator selected to change phases. This was often accomplished with fewer data points obtained in the subsequent, similar phases as were obtained in the initial phase.

The component analysis involved systematically withdrawing components of the GBG and reversing to implementing all components of the class wide intervention. Appendix B delineates the components of the GBG. The primary investigator applied a dynamic approach for evaluating the impact of teacher fidelity implementing the GBG on the behavior of students with EBD. Specifically, dynamic decision making throughout the component analysis involved changing phases upon stable trends in challenging student behavior data, in an effort to exhibit functional control of participant behavior (Johnson & Cook, 2019). As opposed to selecting phase lengths a priori, the research team visually analyzed student and teacher behavior data to determine the most appropriate placement of phase changes.

Analytic Strategy

Visual inspection was utilized to evaluate the impact of implementation of the GBG components on the challenging and academic engagement behaviors of students with EBD. Data were plotted in a linear graph prior to visual analysis. Specifically, data were analyzed through visually examining differences in level, trend, and variability across various conditions. Additionally, visual inspection of the immediacy of effect following phase changes and observed consistency of responding when comparing similar phases was employed throughout the investigation. As you will see in Table 1, effect sizes were obtained through calculating percent of goal obtained (Ferron, Goldstein, Olszewski, & Roher, 2020). Data analysis was evaluated on a continuous basis to support the dynamic approach to evaluation.

CHAPTER FOUR:

RESULTS

Classroom 1

Baseline data obtained from Classroom 1 reveal an average of 94% of intervals capturing off-task student behavior and an average of 14.6 instances of challenging behavior per session. The introduction of the Full Implementation Baseline phase resulted in a significant decrease in both challenging behavior and off-task behavior. Specifically, an average of 14% of intervals within the phase contained students exhibiting off-task behavior and an average of 1.8 instances of challenging behavior per session. Data collected during the Proximal and Distal Consequence Component Phase reflect an average of 6% of intervals capturing off-task student behavior and an average of 0.2 instances of challenging behavior per session. For Classroom 1, the Distal Consequence Component Phase reveal an average of 1.7% of intervals in which students demonstrated off-task behavior and an average of 1.3 instances of challenging behavior per session. A return to baseline conditions was initiated to both demonstrate experimental control and for replication purposes. Although the phase length does not adhere to the WWC Standards minimal number of data points per phase, the data captured does resemble data obtained within the original baseline phase. Specifically, returning to baseline conditions resulted in an average of 60% of intervals where students demonstrated off-task behavior and an average of 12 instances of challenging behavior per session. Reverting back to the Distal Consequence Component Phase again captured low and stable rates of student behavior responding. This replication revealed no students exhibiting off-task behavior and an average of 2.5 instances of

challenging behaviors per session. A final phase change to a third baseline phase resulted in an average of 20% of intervals where students demonstrated off-task behavior and an average of 20 instances of challenging behavior per session. For Classroom 1, a percent of goal obtained effect size was calculated at 91% (see Table 1). A further explanation of the student data collected from Classroom 1 across the study phases for the current study is included (see Figure 2).

Teacher fidelity data captured in Classroom 1 reflect percentages which very closely align to the projected implementation fidelity expectations for each study condition. While the Full Implementation Baseline phase was designed to represent implementation fidelity at 100%, the teacher participant for Classroom 1 implemented the GBG at an average of 95% across all five game presentations, whereas only two of the three games dropped below 100% (i.e., 93.75%, 81.25%). The Proximal and Distal Consequence Component Phase was designed to reflect the GBG being implemented at 50% implementation fidelity and Classroom 1 implemented the class wide intervention at an average of 46.25%, with only one of the five game presentations dropping below the designated 50% fidelity expectation. Classroom 1 demonstrated the most consistent adherence to the implementation fidelity expectations within the Distal Consequence Component Phase. Across all eight game presentations within the two Distal Consequence Component phases, the teacher participant for Classroom 1 implemented the GBG at the prescribed 31%. A further explanation of the teacher implementation fidelity data collected from Classroom 1 across the study phases for the current study is included (see Figure 3).

Classroom 2

Baseline data obtained from Classroom 2 reveal an average of 100% of intervals capturing off-task student behavior and an average of 32 instances of challenging behavior per session. The introduction of the Full Implementation Baseline phase resulted in a significant decrease in challenging behavior. Specifically, an average of 51.7% of intervals within the phase contained students exhibiting off-task behavior and an average of 6.3 instances of challenging behavior per session. Data collected during the Proximal and Distal Consequence Component Phase reflect an average of 8.3% of intervals capturing off-task student behavior and an average of 3 instances of challenging behavior per session. For Classroom 2, the Distal Consequence Component Phase reveal an average of 1.7% of intervals in which students demonstrated off-task behavior and an average of 3.3 instances of challenging behavior per session. A return to baseline conditions was initiated to both demonstrate experimental control and for replication purposes. Since three presentations of the GBG occurred during the return to baseline conditions, the phase meets WWC standards with reservations. Returning to baseline conditions resulted in an average of 16.7% of intervals where students demonstrated off-task behavior and an average of 8.3 instances of challenging behavior per session. Reverting back to the Distal Consequence Component Phase revealed 40% of intervals where students were observed to exhibit off-task behavior and an average of 1.5 instances of challenging behaviors per session. A final phase change to a third baseline phase resulted in no intervals where students demonstrated off-task behavior and an average of 19 instances of challenging behavior per session. For Classroom 2, a percent of goal obtained effect size was calculated at 82.5% (see Table 1). A further explanation of the student data collected from Classroom 2 across the study phases for the current study is included (see Figure 4).

Teacher implementation fidelity for the Full Implementation Baseline phase was implemented in Classroom 2 at an average of 91% across the six game presentations. With the Proximal and Distal Consequence Component Phase designed to reflect the GBG being implemented at 50% implementation fidelity, Classroom 2 implemented the behavioral intervention at an average of 40%. Finally, Classroom 2 implemented the GBG with an average of 26% across the nine game presentations during the Distal Consequence Component Phase. Despite the consistent deficits observed across the study phases in teacher implementation fidelity, no additional teacher participant training was provided. The primary investigator noted the procedural step which was most often omitted involved the use of an audible timer, subsequently decreasing the prescribed implementation fidelity of each game presentation. Specifically, Classroom 2's teacher participant utilized her smart watch to track the duration of each game presentation which did not emit a sound audible to the students within the classroom. A further explanation of the teacher implementation fidelity data collected from Classroom 2 across the study phases for the current study is included (see Figure 5).

Classroom 3

Baseline data obtained from Classroom 3 reveal an average of 38% of intervals capturing off-task student behavior and an average of 17.6 instances of challenging behavior per session. The introduction of the Full Implementation Baseline phase resulted in a significant decrease across both off-task and challenging behavior exhibited by the student. Specifically, no intervals across the entirety of the phase which contained students exhibiting off-task behavior and an average of 2.2 instances of challenging behavior per session. Data collected during the Proximal and Distal Consequence Component Phase reflect an average of 12% of intervals capturing off-task student behavior and an average of 1.4 instances of challenging behavior per session. For

Classroom 3, the Distal Consequence Component Phase reveal an average of 22% of intervals in which students demonstrated off-task behavior and an average of 0.4 instances of challenging behavior per session. A return to baseline conditions resulted in no intervals across the three game presentations producing off-task student behavior however an average of 11 instances of challenging behavior. Reverting to the Distal Consequence Component Phase again revealed no intervals where students were observed to exhibit off-task behavior and an average of 0.5 instances of challenging behaviors per session. Given that three presentations of the GBG occurred during the return to baseline conditions, the phase meets WWC standards with reservations. However, the final Distal Consequence Component Phase consisted of two game presentations. For Classroom 3, a percent of goal obtained effect size was calculated at 91% (see Table 1). A further explanation of the student data collected from Classroom 3 across the study phases for the current study is included (see Figure 6).

Teacher implementation fidelity for the Full Implementation Baseline phase was implemented in Classroom 3 at an average of 96% across the six game presentations. With the Proximal and Distal Consequence Component Phase designed to reflect the GBG being implemented at 50% implementation fidelity, Classroom 3 implemented the behavioral intervention at an average of 43%. Finally, Classroom 3 implemented the GBG as prescribed, with an average of 31% across the seven game presentations during the Distal Consequence Component Phase. A further explanation of the teacher implementation fidelity data collected from Classroom 3 across the study phases for the current study is included (see Figure 7).

CHAPTER FIVE:

DISCUSSION

Implications

The GBG is a well-researched and highly supported behavioral intervention for classrooms supporting diverse student populations (Barrish, Saunders, & Wolf, 1969; Flower, McKenna, Bunuan, Muething, & Vega, 2014; Groves & Austin, 2017; Joslyn, Donaldson, Austin, & Vollmer, 2019). Results obtained across the three classrooms in the current study offer support to the already expansive body of literature for this group contingency intervention. Decreases were observed within each participating classroom in both off-task behavior and challenging behavior with the introduction of the GBG. While there were some fluctuations across the phase changes examining the varying levels of implementation fidelity, rates of student behaviors (i.e., off-task and challenging behavior) remained low and somewhat stable, throughout. Experimental control was most clearly demonstrated by the data captured in Classroom 1. While Classroom 2 produced more variable data in the Full Implementation Baseline phase, the subsequent treatment phases (i.e., Proximal and Distal Consequence Component and Distal Consequence Component) were clearly differentiated as compared to the initial Baseline phase. Overall, student responding observed in Classroom 3 consisted of lower rates. This difference can most likely be attributed to a single student comprising the student body for the classroom across 23 of the total 26 game presentations. However, even in the

presence of low rates of responding differentiation can be discerned between the Baseline study phases and the implementation of the various GBG study phases.

Treatment fidelity continues to be a construct susceptible to misconceptions. More specifically, despite conjecture, optimal treatment outcomes do not rest solely on the shoulders of high treatment fidelity (Gresham, 2014). In the absence of specific guidance on the levels of treatment fidelity required to obtain and maintain desired behavior change, researchers continue to explore the resistance of specific interventions (Gresham et al 1993, Sanetti & Kratochwill, 2009; Schulte et al. 2009). Similarly to the research efforts of Joslyn and Vollmer (2019), the current study sought to explore the effect the GBG has on student behavior when implemented with low levels of teacher fidelity. The current dataset indicates the GBG is a resilient group contingency intervention which continues to demonstrate effectiveness at suppressing off-task behavior and challenging behavior even when implemented with less than 50% implementation fidelity. By identifying behavioral interventions which are resistance to the inevitable lapses in procedural adherence (Gresham, 1989; Peterson, Homer, & Wonderlich, 1982), interventionists and practitioners could more precisely recommend treatments for specific stakeholders and within certain settings (e.g., inclusion classrooms; classrooms with behavioral support).

The current study revealed the effectiveness of a behavioral intervention operating under group contingencies and the constraints of intentionally manipulating treatment fidelity. While the primary investigator devised a contrived scenario where treatment fidelity would systematically decrease over time, generally this situation mirrors the realistic implementation of a class-wide intervention in a typical classroom. Educational stakeholders unintentionally exhibit lapses in treatment fidelity for a number of reasons (e.g., cumbersome treatment, insufficient training, and personal beliefs regarding steps in the treatment). The primary investigator posits

that inadvertent, real-life lapses in classroom intervention implementation often occur in clusters. That is to say, it may be more likely for groups of single steps within a strategy to be omitted as opposed to a single step. Again, this potential hypothesis was considered as the primary investigator developed the methods and procedures for the current study.

While interpreting the current dataset as another illustration of resistance for the GBG could be accurate, another perspective suggests the distal consequence component grouping may be the primary agents of change. In consideration of potential order effects, evaluation across the three participating classrooms could suggest the most potent elements in the group contingency intervention rest within the distal consequence component grouping. Though additional research could further examine the current component groupings, the present dataset suggests that a systematic withdrawal over time could render the same effective results in decreasing challenging student behavior and increasing academic engagement. Specifically, practitioners could intentionally guide educators to implement all components of the GBG upon initial introduction and remove components over time. Future research could evaluate the necessity of all GBG steps in obtaining desired results which could direct practitioners in providing a more concise and abbreviated classroom intervention.

Aside from understanding more about the resistance of the GBG, this research could inform teacher training practices and impact the level of burden placed on those educational stakeholders implementing this behavioral intervention. Implications associated with such findings can influence which procedural steps of the GBG are utilized during implementation and which procedural steps are emphasized within teacher training practices. Decreasing the response effort on the part of the implementer could increase their acceptability for the behavioral intervention. More simply, by decreasing the number of steps teachers are required to

implement while still producing favorable behavioral changes, it is possible to increase the likelihood said intervention will be used. Likewise, by decreasing the resources (e.g., time, energy) required of a teacher while being trained to implement an intervention it is possible to increase their acceptability of the treatment (Noell & Witt, 1999). Overall, a reduction in the burden placed on educators working in highly specialized settings such as a self-contained classroom where behavior support is required can greatly influence their acceptability of the intervention.

Literature exploring best practices for serving students with emotional and behavioral disorders highlight the utility for sound behavioral support and interventions (Lewis, Hudson, Richter, & Johnson, 2004; Marzano, Marzano, & Pickering, 2003; Wong & Wong, 2001). Behavioral interventions capitalizing on the advantages of group contingencies have been viewed as favorable for this student population (Joslyn, Vollmer, and Kronfli, 2019). Additionally, research suggests instructional staff regardless of the duration of their tenure, rarely receive explicit training on selecting, implementing, or modifying behavioral interventions (Henderson et al., 2015; Wei, Darling-Hammond, & Adamson, 2010). Findings from the current study align with trends visible in this body of literature. The short-term, alternative educational environment which served as the setting for our investigation was considered a highly specialized setting. Furthermore, the participating classrooms were all considered self-contained classrooms, and all required behavioral support, throughout.

Limitations

Although the results are encouraging for researchers and practitioners seeking to maximize the efforts of teachers rendering behavioral support, some limitations should be noted regarding the current study. Most notably, conducting single-case research amidst a global

pandemic introduced variables which restricted elements of the study's methodology. One such example involved the collection of interobserver agreement data. In-person, classroom observations were limited to a single, district-approved researcher. Although the primary investigator served as the primary data collected and observed from inside each classroom, all secondary data collectors recorded their data via video conferencing platforms. This posed a number of problems, in that disruptions to internet service significantly impacted both the collection of IOA data and the quality of the IOA data which was captured. Another barrier encountered with the use of video conferencing platforms involved the onset of data collection. It proved to be quite cumbersome to ensure the primary data collector and secondary data collector started interval timers, simultaneously. Despite the obstacles encountered while conducting the current study in the applied setting, overall IOA was observed to be adequate and frequently high levels of agreement amongst data collectors was obtained.

Another limitation identified was on the topic of the number of game presentations and classroom observations conducted across the study. The primary investigator specifically selected a dynamic research design to offer the highest degree of flexibility to navigate the academic calendar during a pandemic. At the onset of the study, each teacher participant agreed that two GBG sessions each day were feasible. This stipulation along with the school district's academic calendar and once per week data collection, directly influenced the total number of GBG sessions. Despite data collection spanning over 16 weeks, experimental rigor was decreased due to phase lengths towards the conclusion of the study. Specifically, internal validity was weakened due to the final phases across all three classrooms involved phase lengths not adhering to the WWC standards without reservations.

Future Directions

Despite the barriers presented by technological difficulties across the current study, there are practical demonstrations of just how useful technology can be for conducting applied research. Theoretically, the application of video conferencing platforms could assist researchers in conducting studies with 100% interobserver agreement. Eliminating the requirement for two, independent observers to be present in an applied setting during the same time span could decrease resource burden for the researchers (e.g., travel time, travel expenses), thereby allowing reliability to be examined throughout an investigation as opposed to a fraction of the study. Additionally, removing a second novel observer from an applied setting could reduce participant reactivity. Further, by expanding the possibility to have multiple observers to collect data throughout the course of a study could promote allocating resources towards other forms of data collection (e.g., treatment fidelity, procedural fidelity).

Additionally, the current study could be examined more closely to inform how professional development and behavioral intervention training is presented to educators. Classroom teachers presently contend with a host of responsibilities and expectations which extend well beyond their student-facing obligations. When reflecting upon that daily balance teachers must strike, any additional time and resources allocated elsewhere is highly valuable. More specifically, by learning more about the active ingredients and necessary for behavior change in a behavioral intervention stakeholders can more accurately train teachers to apply those strategies.

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APPENDIX A:

OBSERVATION DATA SHEET

Classroom/Participant		Observation Date	
Number of Students		Game Duration	
Data Collector		Condition/ Session#	

Announce GBG	State Rules of GBG	State GBG Duration	State Team Assignment	State Winning Criteria	State Winning Prize	Announce Start of GBG	Start Timer
Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N

Off-Task: TALLY at end of each 60 second interval									
1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00
Challenging Behavior: TALLY									
1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00

States Broken Rule	Names Student

Keeps GBG Score on Board	End of Game Timer is Audible	Announces GBG is Over	Announces Winning Team(s)	Provides Verbal Praise for Winners	Immediately Provides Prize
Y/N	Y/N	Y/N	Y/N	Y/N	Y/N

APPENDIX B:

TASK ANALYSIS FOR IMPLEMENTING THE GOOD BEHAVIOR GAME

1. Teacher announces GBG
2. Teacher states rules of GBG
3. Teacher states duration of GBG
4. Teacher states team assignments
5. Teacher states game winning criteria (i.e., how many violations can occur and teams still win GBG)
6. Teacher states winning prize
7. Teacher announces the start of the GBG
8. Teacher starts game timer
9. Teacher keeps GBG score visible to all teams
10. GBG timer audibly announces end of the game
11. Teacher announces that GBG has concluded
12. Teacher announces winning team(s)
13. Teacher provides verbal praise for winning team(s)
14. Teacher provides immediately access to prize
15. Teacher states a rule has been broken
16. Teacher names student responsible for broken rule

APPENDIX C:

PROCEDURAL FIDELITY

TASK ANALYSIS OF BEHAVIOR SKILLS TRAINING FOR TEACHER PARTICIPANTS

Didactic

1. The primary investigator will provide concise details of the Good Behavior Game (GBG) and its effective history.
2. Each step of the GBG will be outlined with opportunities for teacher participants to have questions addressed.

Modeling

1. The primary investigator will provide video examples of teachers implementing the GBG in classroom settings.
2. The primary investigator will provide brief demonstrations of implementing each step of the GBG.
3. Demonstrations will include example statements which teachers can utilize when implementing with their students.

Rehearsal

1. Each teacher participant will have an opportunity to practice each step of implementing the GBG.

Feedback

1. The primary investigator will provide individual feedback based on the rehearsal implementation of the GBG.
2. Final questions or concerns posed by teacher participants will be addressed prior to concluding training.

APPENDIX D:

FULL IMPLEMENTATION CHECKLIST

Steps	Implemented?
1. Announce the game	
2. State rules of the game	
3. Announce the duration of the game	
4. Tell students who is on which team	
5. State criteria for winning game	
6. Tell students what they are playing for (reward)	
7. Announce start of the game	
8. Start timer	
9. Verbally indicate which rule was violate	
10. State which student was responsible for the rule violation	
11. Place a mark on the board when a student violates a rule	
12. Ensure that the conclusion of the game is accompanied by an audible indicator (e.g., alarm from timer is audible to students)	

13. Announce the conclusion of the game	
14. Announce winning team(s) at conclusion of the game	
15. Provide verbal praise to winning team(s)	
16. Immediately provide rewards	
Number of Steps Performed	_____

APPENDIX E:

PROXIMAL AND DISTAL IMPLEMENTATION CHECKLIST

Steps	Implemented?
1. Verbally indicate which rule was violate	
2. State which student was responsible for the rule violation	
3. Place a mark on the board when a student violates a rule	
4. Ensure that the conclusion of the game is accompanied by an audible indicator (e.g., alarm from timer is audible to students)	
5. Announce the conclusion of the game	
6. Announce winning team(s) at conclusion of the game	
7. Provide verbal praise to winning team(s)	
8. Immediately provide rewards	
Number of Steps Performed	_____

APPENDIX F:

DISTAL IMPLEMENTATION CHECKLIST

Steps	Implemented?
1. Audible timer indicates the conclusion of the game (e.g., alarm from timer is audible to students)	
2. Announce the conclusion of the game	
3. Announce winning team(s) at conclusion of the game	
4. Provide verbal praise for winning team(s)	
5. Immediately provide rewards to winning team(s)	
Number of Steps Performed	_____

APPENDIX G:

PROCEDURAL FIDELITY DATA SHEET: IMPLEMENTATION SELF-REPORT

Steps	Implemented?
1. Provided the correct implementation checklist to the teacher participant	
2. Addressed any questions posed by the teacher participant prior to the onset of the GBG	
3. Collected direct observation data for teacher participant behavior and student behavior independent of a secondary data collector	
4. Provided teacher participant any necessary feedback based on implementation fidelity exhibited by teacher participants	
5. Addressed any questions posed by the teacher participant following the conclusion of the GBG	
Number of Steps Performed	_____

APPENDIX H:

PROCEDURAL FIDELITY DATA SHEET: TRAINER SELF-REPORT

School:	**Date:**
Teacher/Classroom:	**Trainer:**
Grade:	

Steps	Implemented?
1. Spoke clearly to ensure trainees could hear throughout presentation	
2. Provided all trainees with a personal copy of supplemental GBG Training Tool (see Appendix D)	
3. Trainer outlined each step of the GBG with opportunities to address questions from trainees	
4. Trainer modeled each step of the GBG with opportunities to address questions from trainees	
5. Trainer provided video examples of the GBG with opportunities to address questions from trainees	
6. Trainer ensured that trainees were provided opportunities to practice each step of implementing the GBG	
7. Trainer provided individual feedback for teachers rehearing each step of the GBG	
8. Trainer ensured that trainees were provided opportunities to discuss hypothetical situations and troubleshoot barriers	
9. Trainer addressed all questions or concerns prior to concluding the training	
Number of Steps Performed	_____

APPENDIX I:

TABLES AND FIGURES

Table 1

Single-Case Effect Estimate: Percent of Goal Obtained

Classroom 1	Classroom 2	Classroom 3
91%	83%	91%

Table 2

Average Exact Interobserver Agreement across Study Phases

Study Phase: Baseline			
	Teacher Fidelity	Off-Task Student Behavior	Challenging Student Behavior
Classroom 1	N/A	87	100
Classroom 2	N/A	92	44
Classroom 3	N/A	90	55
Study Phase: Full Implementation			
	Teacher Fidelity	Off-Task Student Behavior	Challenging Student Behavior
Classroom 1	N/A	N/A	N/A
Classroom 2	N/A	N/A	N/A
Classroom 3	97	100	85
Study Phase: Proximal and Distal Consequence			
	Teacher Fidelity	Off-Task Student Behavior	Challenging Student Behavior
Classroom 1	94	100	100
Classroom 2	100	90	43
Classroom 3	96	93	87
Study Phase: Distal Consequence			
	Teacher Fidelity	Off-Task Student Behavior	Challenging Student Behavior
Classroom 1	100	98	93
Classroom 2	100	100	90
Classroom 3	100	100	90

Table 3

Average Proportional Interobserver Agreement across Study Phases

Study Phase: Baseline			
	Teacher Fidelity	Off-Task Student Behavior	Challenging Student Behavior
Classroom 1	N/A	67	100
Classroom 2	N/A	57	63
Classroom 3	N/A	83	65
Study Phase: Full Implementation			
	Teacher Fidelity	Off-Task Student Behavior	Challenging Student Behavior
Classroom 1	N/A	N/A	N/A
Classroom 2	N/A	N/A	N/A
Classroom 3	97	100	88
Study Phase: Proximal and Distal Consequence			
	Teacher Fidelity	Off-Task Student Behavior	Challenging Student Behavior
Classroom 1	94	100	100
Classroom 2	100	73	50
Classroom 3	96	89	53
Study Phase: Distal Consequence			
	Teacher Fidelity	Off-Task Student Behavior	Challenging Student Behavior
Classroom 1	100	97	94
Classroom 2	100	100	100
Classroom 3	100	100	33

Figure 1

Percentage of Interobserver Agreement Collected by Study Condition

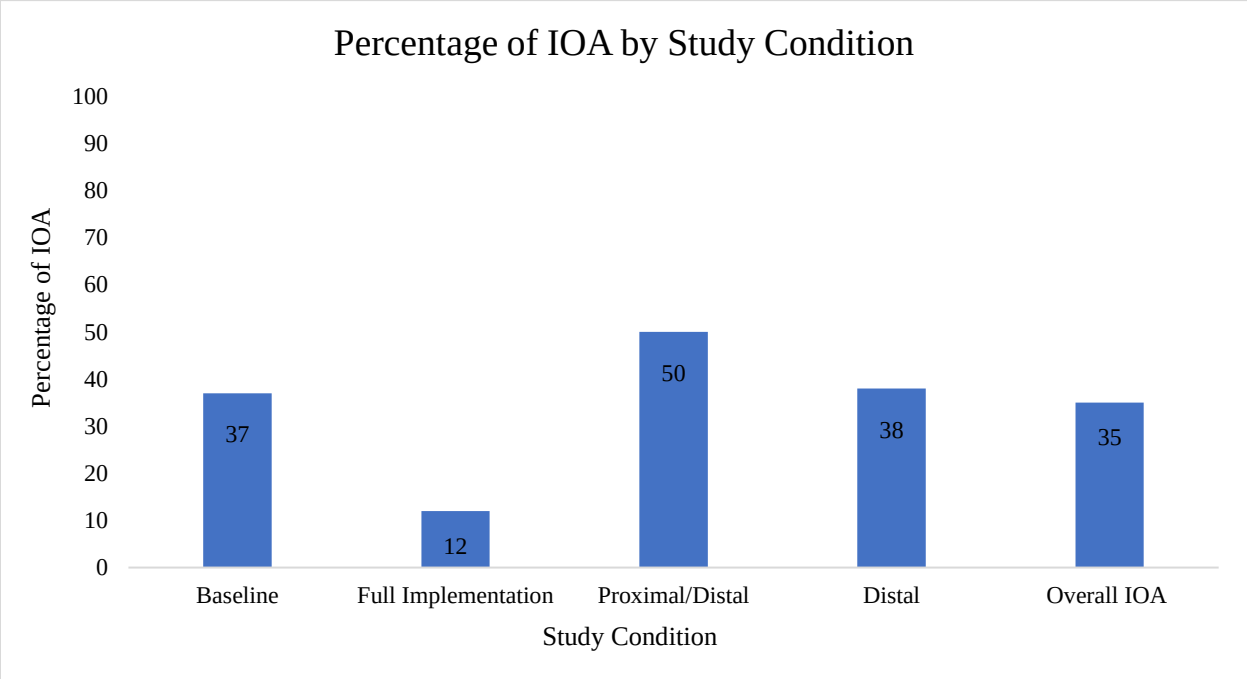

Figure 2

Classroom 1: Student Behavior Data

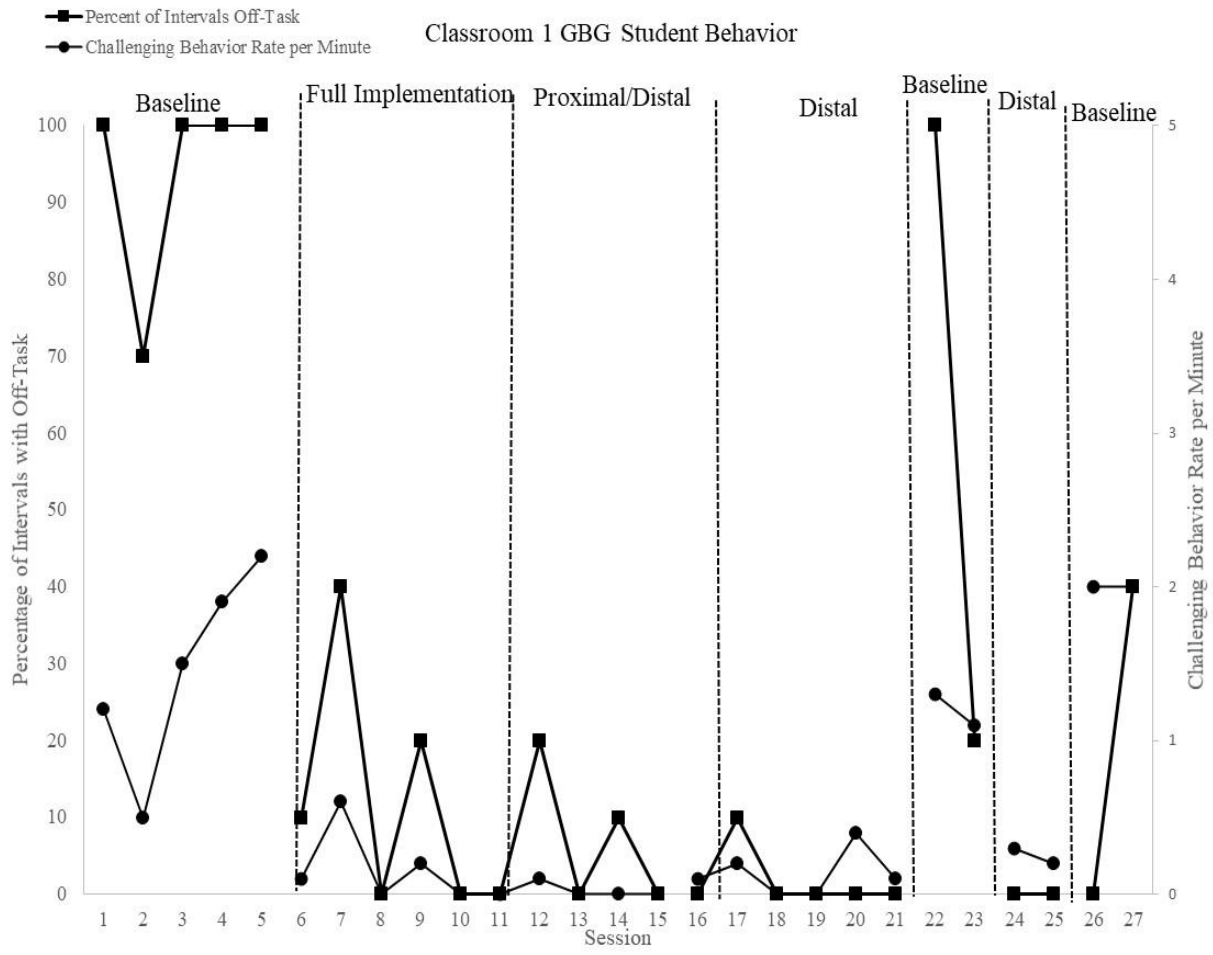

Figure 3

Classroom 1: Teacher Implementation Fidelity Data

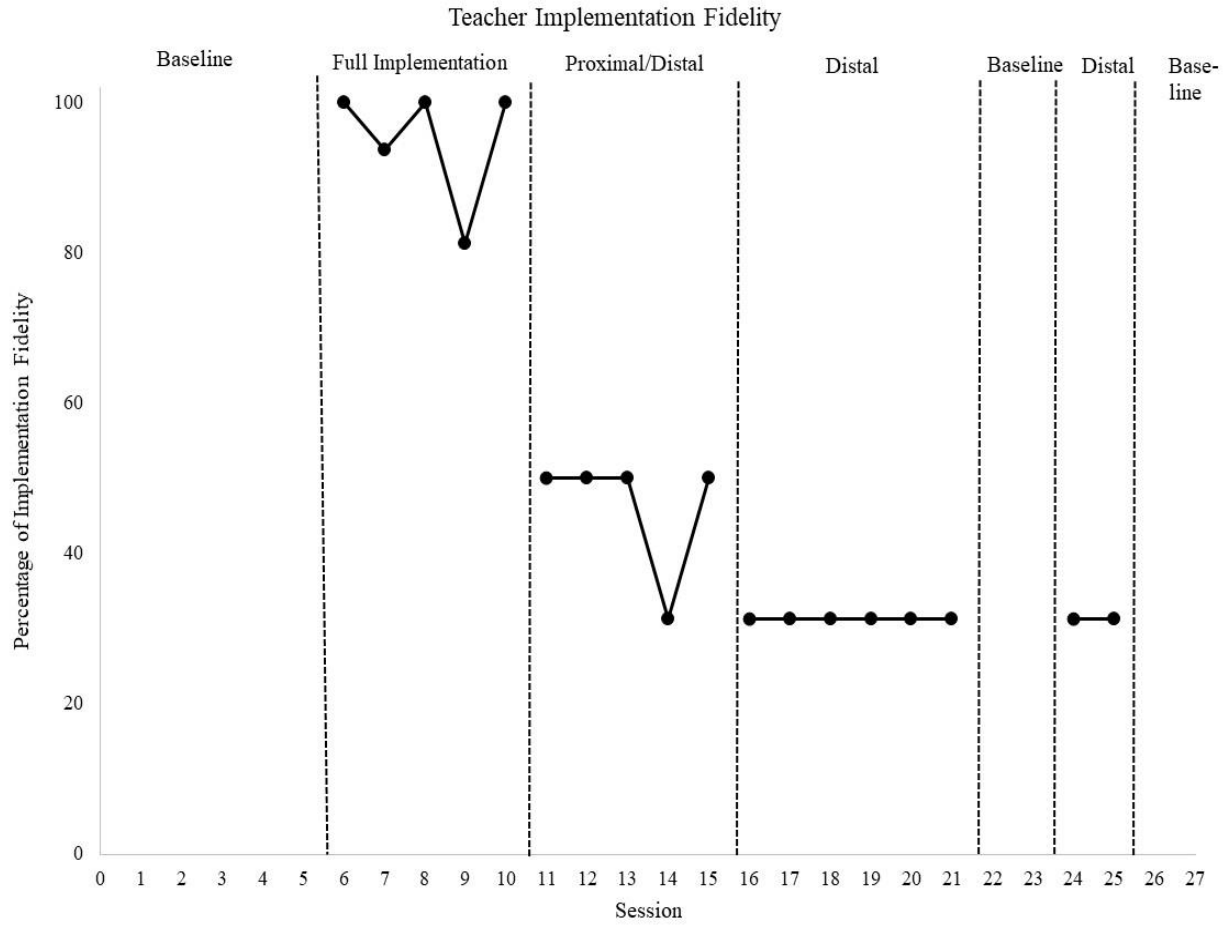

Figure 4

Classroom 2: Student Behavior Data

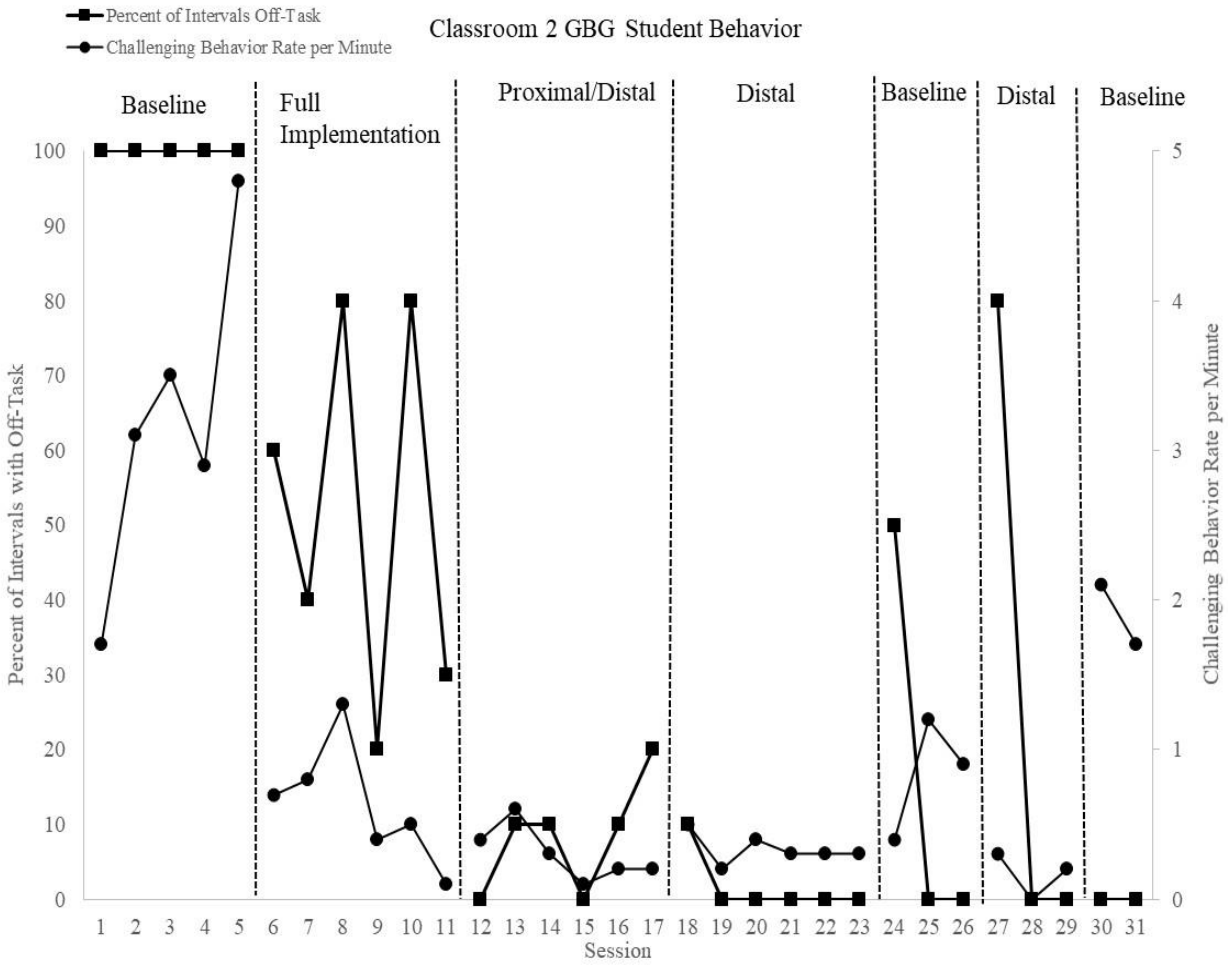

Figure 5

Classroom 2: Teacher Implementation Fidelity Data

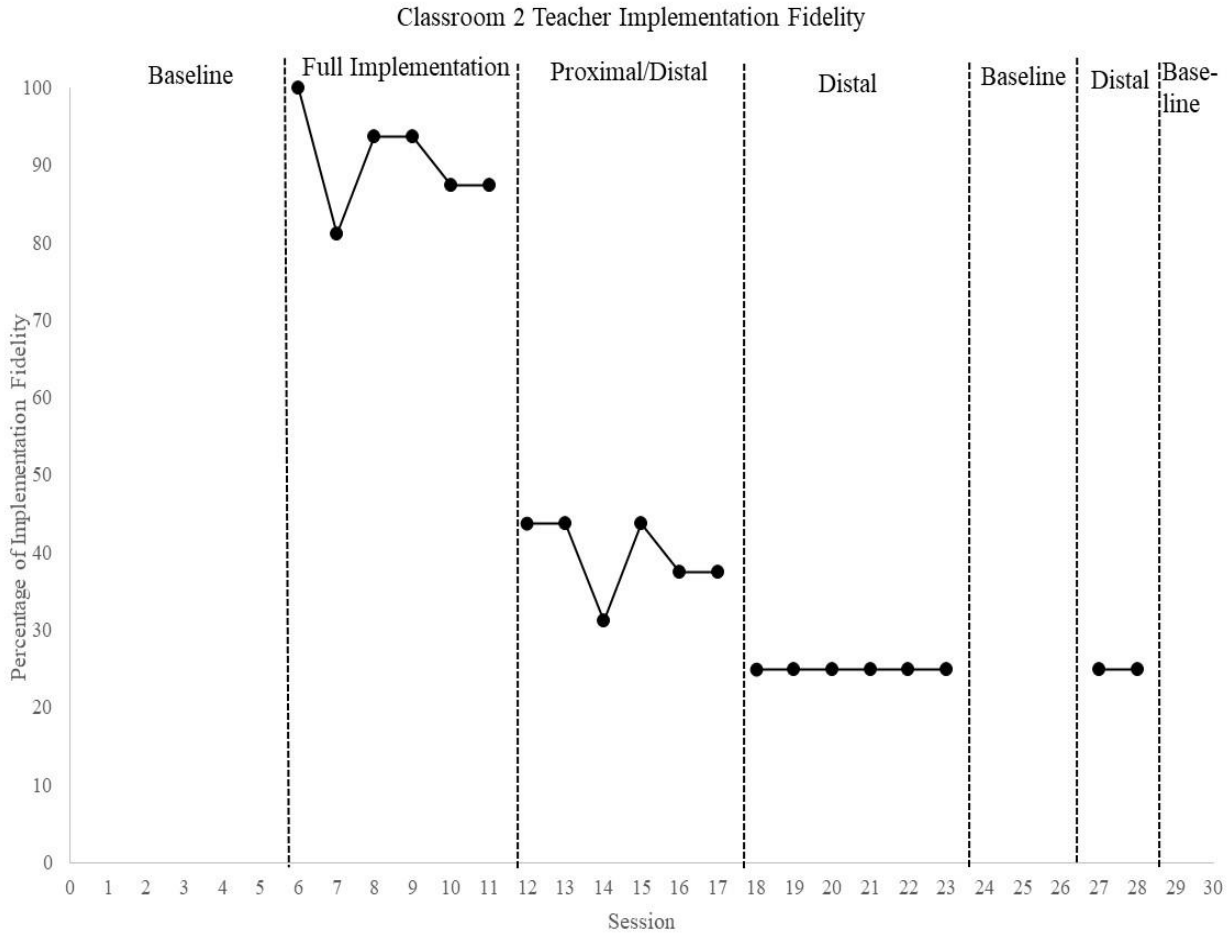

Figure 6

Classroom 3: Student Behavior Data

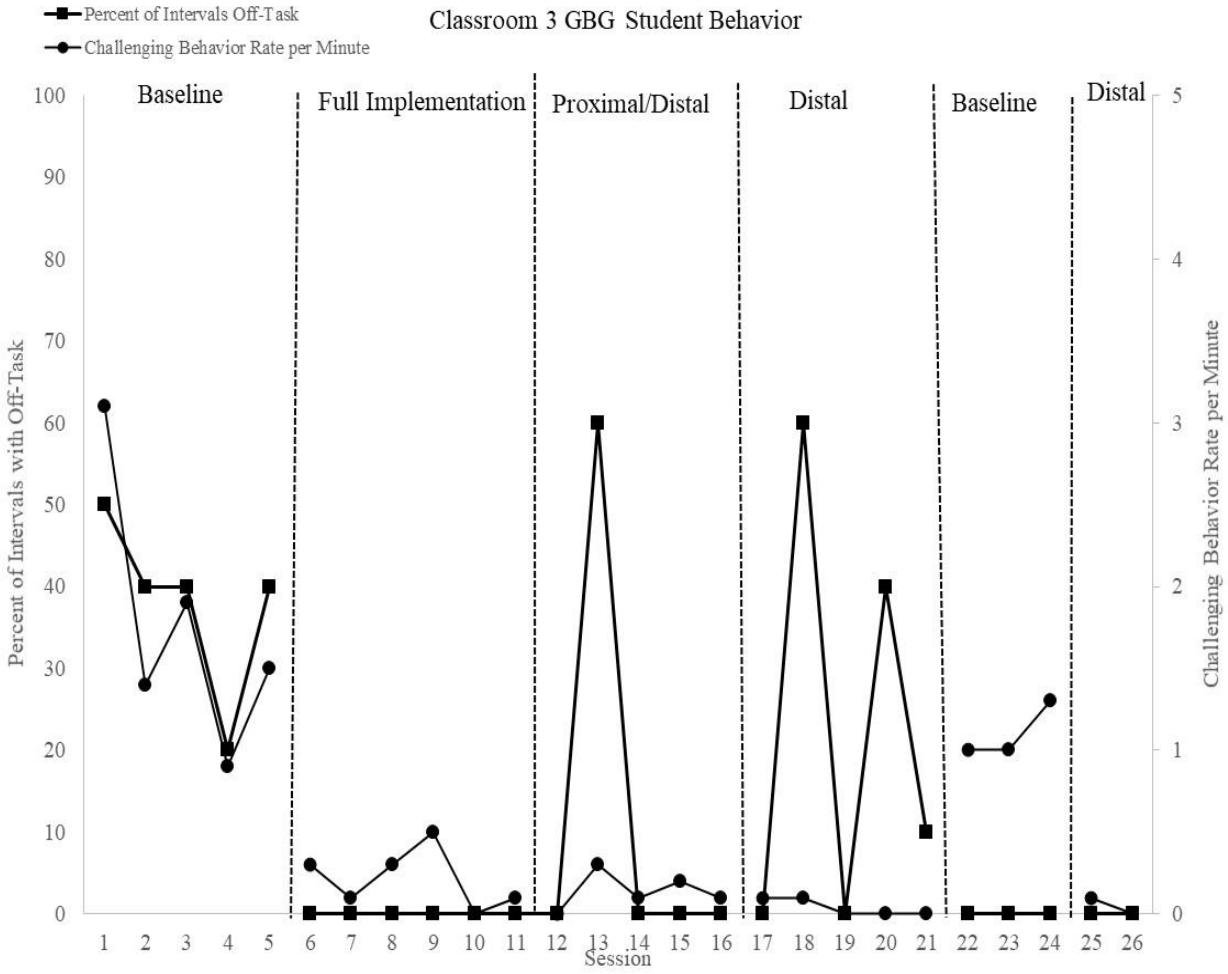

Figure 7

Classroom 3: Teacher Implementation Fidelity Data