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Evaluating the Independent Group Contingency: "Mystery Student" on Improving Behaviors in Head Start Classrooms

Jamie Pasqua
University of Southern Mississippi

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EVALUATING THE INDEPENDENT GROUP CONTINGENCY: “MYSTERY
STUDENT” ON IMPROVING BEHAVIORS IN HEAD START CLASSROOMS

by

Jamie Lynn Pasqua

A Thesis
Submitted to the Graduate School
and the Department of Psychology
at The University of Southern Mississippi
in Partial Fulfillment of the Requirements
for the Degree of Master of Arts

Approved:

Dr. Brad A. Dufrene, Committee Chair
Professor, Psychology

Dr. Keith Radley., Committee Member
Assistant Professor, Psychology

Dr. Evan H. Dart, Committee Member
Assistant Professor, Psychology

Dr. Karen S. Coats
Dean of the Graduate School

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ABSTRACT

EVALUATING THE INDEPENDENT GROUP CONTINGENCY: “MYSTERY STUDENT” ON IMPROVING BEHAVIORS IN HEAD START CLASSROOMS

by Jamie Lynn Pasqua

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An increasing number of preschool children exhibit challenging behavior in the classroom. Head Start children are particularly at risk for emotional and behavioral disorders due to numerous risk factors. Unfortunately, some preschool teachers are ill equipped to manage the challenging behaviors that preschool children exhibit. The current study investigated the effects of the group contingency, “Mystery Student,” on improving preschool classroom behaviors. The Mystery Student intervention is a novel, independent group contingency, with an added randomized component. An ABAB reversal design was employed to determine how effective the Mystery Student intervention was at decreasing the disruptive behaviors and increasing the appropriate behaviors in three Head Start classrooms. Results indicated that class-wide aggregate disruptive behavior was reduced and class-wide aggregate appropriate behavior increased during the intervention phases for all three classrooms. Furthermore, teachers rated the Mystery Student intervention as acceptable. Results of this study increase the limited research base on group contingencies in preschool settings, suggest independent group contingencies are developmentally appropriate for young children and may provide practitioners and teachers with an additional intervention strategy for preschool populations.

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TABLE OF CONTENTS

ABSTRACT	ii
ACKNOWLEDGMENTS	iii
LIST OF TABLES	viii
LIST OF ILLUSTRATIONS	ix
CHAPTER I – INTRODUCTION	1
Preschool Attendance.....	1
Positive Behavior Interventions and Supports in Preschool Settings	2
Group Contingencies	5
Comparison Studies of Group Contingencies	6
Group Contingencies in Preschool Settings.....	8
Purpose.....	11
Research Questions	12
CHAPTER II – METHODS	13
Participants and Settings	13
Classroom A.....	14
Classroom B.....	15
Classroom C.....	15
Instruments.....	16
Class-wide Daily Behavior Reports (C-DBR).....	16

Behavior Intervention Rating Scale (BIRS)	18
Materials	18
MotivAider®.....	18
Prize Box.....	19
Name Bag.....	19
Teacher Data Sheet	19
Dependent Measures and Data Collection Procedures	20
Design and Data Analysis	22
Procedures	23
Screening.....	23
Behavior Identification and DBR Training Meeting	23
Baseline.....	24
Teacher Training.....	24
Mystery Student Intervention	25
Withdrawal Phase	26
Interobserver Agreement	27
Procedural Integrity and Treatment Integrity	28
CHAPTER III – RESULTS	30
Disruptive and Academically Engaged Behavior	30
Classroom A.....	33

Classroom B.....	34
Classroom C.....	34
Teacher-Rated AEB	35
Social Validity of Mystery Student.....	36
CHAPTER IV - DISCUSSION	37
Research Questions.....	37
Question 1	37
Question 2	38
Question 3	39
Limitations and Future Directions	39
Implications and Considerations.....	42
APPENDIX A - TEACHER CONSENT FORM.....	44
APPENDIX B – IRB APPROVAL LETTER.....	46
APPENDIX C – CLASS-WIDE DAILY BEHAVIOR RATING	47
APPENDIX D - BEHAVIOR INTERVENTION RATING SCALE.....	48
APPENDIX E - TEACHER DATA SHEET	50
APPENDIX F – DATA COLLECTION SHEET FOR DIRECT OBSERVATION.....	51
APPENDIX G – PROCEDURAL INTEGRITY CHECKLIST FOR TEACHER DBR TRAINING	52

APPENDIX H - SCRIPTED INSTRUCTION SHEET FOR MYSTERY STUDENT IMPLEMENTATION.....	53
APPENDIX I - PROCEDURAL INTEGRITY CHECKLIST FOR TEACHER INTERVENTION TRAINING.....	54
APPENDIX J - TREATMENT INTEGRITY CHECKLIST.....	55
APPENDIX K - PROCEDURAL INTEGRITY CHECKLIST FOR BASELINE AND WITHDRAWAL PHASES.....	56
REFERENCES	57

LIST OF TABLES

Table 1 AEB and DB from baseline to intervention (Tau-U Effect Sizes with 90% CI).	30
Table 2 Average Levels of AEB	30
Table 3 BIRS Factor and Total Scores	36

LIST OF ILLUSTRATIONS

<i>Figure 1.</i> Direct Observation Data.....	31
<i>Figure 2.</i> Teacher-Rated Class-wide Appropriately Engaged Behavior	32

CHAPTER I – INTRODUCTION

Preschool Attendance

Preschool attendance has shown to be beneficial for promoting school readiness, language acquisition, and social-emotional development in young children (Entwisle, 1995; Schweinhart, 1994). Although preschool is generally a positive and beneficial experience, an alarming rate of children experience severe emotional and behavioral difficulties. Specifically, research has demonstrated that upwards of 30% of all preschool children experience some form of an Emotional and Behavioral Disorder (EBD) and other related difficulties such as, anxiety, depression, aggression, noncompliance, and tantrums (Egger & Angold, 2006; Lavigne, LeBailly, Hopkins, Gouze, & Binns, 2009; Wichstrom et al., 2012). These rates are highest (30%) in preschool children who come from low socioeconomic status (SES) households, such as those enrolled in Head Start, compared to populations with wide ranging SES statuses (3-6%; Campbell, 1990; Feil, Small, Forness, & Serna, 2005; Powell, Fixsen, Dunlap, Smith, & Fox, 2007; Qi & Kaiser, 2003). These higher rates have been linked to risk factors across families and school systems. For example, economically disadvantaged families endure risk factors such as, high unemployment, poor living conditions, high stress levels, minimal education, medical health problems, and high rates of mobility. Furthermore, the preschool programs that predominately serve disadvantaged and minority children tend to receive less funding (Murnane & Steele, 2007), which results in poorly resourced and performing early education programs that are unable to adequately meet the needs of the children (Murnane & Steele, 2007; U.S. Department of Health & Human Services, 2015).

The consequences to children with early onset EMDs are both immediate and long-standing including, inadequate academic instruction (Snell, Berlin, Vorhees, Stanton-Chapman, & Hadden, 2012,), negative teacher-child relationships (Qi, Kaiser, & Milan, 2006), and expulsion rates that are up to three times to that of K-12 students (Gilliam, 2005). Furthermore, longitudinal research suggests that the early onset of EMDs puts children at an increased risk for future school failure, juvenile delinquency, peer rejection, and development of mental disorders during adulthood (Campbell, 1990; Dunlap, Strain, & Fox, 2006; Larmar & Gatfield, 2006; Webster-Stratton, Reil, & Stoolmiller, 2008; Whitted, 2011). The concerns amongst parents, childcare providers, teachers (Bruns & Mogharreban, 2007; Campbell, 1995), policy makers (U.S. Department of Health & Human Services, 2015), researchers, and practitioners, are well warranted. Although problematic, these concerns have resulted in an increased focus on the identification, investigation, and the implementation of effective intervention practices in early childhood education settings (Conroy, Dunlap, Clarke, & Alter, 2005; Pretti-Frontczak et al., 2013; U.S. Department of Health and Human Services, 2015).

Positive Behavior Interventions and Supports in Preschool Settings

In order to adjust the developmental trajectory of preschool children exhibiting early onset of emotional and behavioral difficulties, it is imperative to implement early identification and intervention practices. Fortunately, research and practice on early intervention frameworks that target preschool-aged children's social, emotional, and behavioral skill repertoires are the rise and showing promising effects on preschool children's behaviors (Cooper, Heron, & Heward, 2007; Raver et al., 2009; Webster-Stratton et al., 2004). Specifically, policy makers, researchers and school-based

professionals have disseminated the effectiveness of multi-tiered intervention frameworks to prevent, support and address the social-emotional, behavioral, and academic needs of young children (Conroy et al., 2005; Individuals with Disabilities Education Act, 2004; U.S. Department of Health and Human Services, 2015; Worcester, Nesman, Raffaele Mendez, & Keller, 2008). One potential example of such a framework is Program-wide Positive Behavior Interventions and Supports (PW-PBIS) which is an adaptation of School-wide Positive Behavior Interventions and Supports (SW-PBIS; Sugai & Horner, 2006). While the implementation of PBIS frameworks have largely been in elementary and secondary school settings, adaptations of such a framework within early childhood settings is a growing trend in both research and practice and is proving to result in positive outcomes (Benedict, Horner, & Squires, 2007; Dunlap & Fox, 2009; Fox & Little, 2001; Stormont, Lewis, & Beckner, 2005). While they differ in the populations in which they are implemented with, SW-PBIS and PW-PBIS share core elements including, the implementation of evidence-based practices along a continuum of supports, the use of a measurement system that facilitates data to assist in the identification student who require more intensive intervention efforts, and the primary goals to prevent challenging behaviors and increase children's social, emotional, and behavioral competencies (Benedict, et al, 2007; Dunlap & Fox, 2009; Fox & Little, 2001). The continuum of supports exists within three tiers, with each tier consisting of more intensive interventions efforts (Fox et al., 2010; Horner et al., 2010).

While the research is emerging on the implementation of PBIS frameworks in preschool settings, the majority of specific analyses on interventions within each tier is limited to those that are intensive, individualized, and comprehensive. There is evidence

to suggest teachers can successfully implement these interventions with preschool children (Dufrene, Doggett, Henington, & Watson, 2007; LaBrot, Dufrene, Radley, & Pasqua, 2016), as well as evidence to suggest such interventions can improve preschool-aged children's social, emotional, and behavioral skill repertoires (Raver et al., 2009). Unfortunately, there is also a substantial amount of research suggesting teachers are less likely to implement individualized interventions due to their complexity and involvedness (Blair, Fox, & Lentini, 2010; Dunlap & Fox, 2011; Hoover, Kubicek, Rosenberg, Zundel, & Rosenberg, 2012; Vinh, Strain, Davidon, & Smith, 2016; Von Brock & Elliott, 1987). Teachers may not view individual interventions as being feasible for several reasons, such as; a lack of effective behavior management skills and training, the intensive individualized attention required to implement, and the amount of time and resources teachers must exhaust, especially for those who have multiple children receiving intervention services (Albers & Greer, 1991; Bruns & Mogharreban, 2007; Litow & Pomroy, 1975; Quesenberry, Hemmeter, & Ostrosky, 2011). Thus, there is a need for interventions in preschool classrooms that are acceptable, feasible, effective and efficient. In an attempt to remediate these issues, researchers and practitioners suggest the use of interventions that prevent and treat the behaviors of multiple children and exist in the tiers that exist within a PBIS framework. A viable option to meet those recommendations is the implementation of group contingencies in preschool classrooms as they have shown to be effective and practical in managing multiple challenging behaviors in K-12 classrooms (Maggin, Johnson, Chafouleas, Ruberto, & Berggren, 2012; Skinner, Skinner, & Burton, 2009; Stage & Quiroz, 1997; Tingstrom, Sterling-Turner, & Wilczynski, 2006).

Group Contingencies

Group contingencies apply consequences that are shared across members of a group; however, the delivery of reinforcement can be based on the performance of one, some, or all members of that group (Litow & Pomroy, 1975). A group contingency takes one of three forms including, independent, interdependent and dependent. In an independent group contingency there is a shared performance criterion (e.g., homework assignment completion) and access to reinforcement is only given to those individuals who meet the performance criterion (Cooper, Heron, & Heward, 2007; Litow & Pumroy, 1975). Interdependent group contingencies also involve shared performance criterion, however, the delivery of reinforcement is based on the group's behavior as a whole (Litow & Pomroy, 1975). That is, all members of the group receive the reinforce consequence if the group's average performance meets a specific criterion. Interdependent group contingencies can be implemented with one group (i.e., entire class) or by creating multiple subgroups such as teams (Gresham & Gresham, 1982; Litow & Pumroy, 1975). In dependent group contingencies, access to reinforcement for an entire group of individuals, is contingent on the performance of a selected student or of a selected sub group of individuals (Gresham & Gresham, 1982; Litow & Pumroy, 1975). In other words, individuals within a group can access reinforcement if the preselected student(s) meets the criteria. Overall, it has been shown that independent, dependent, and interdependent group contingencies are effective for managing classroom behavior (Kazdin & Geesey, 1977; Maggin et al., 2012; Shapiro, Albright, & Ager, 1986; Stage & Quiroz, 1997). Although some existing studies that have investigated the relative differences between the three group contingency forms, they are limited in number, and

the results are mixed, (Gresham & Gresham, 1982; Little, Akin-Little, & O'Neill, 2015; Theodore, Bray, & Kehle, 2004).

Comparison Studies of Group Contingencies

Gresham and Gresham (1982) compared the relative effectiveness of each type of group contingency on reducing disruptive behaviors of 12 students in a self-contained classroom utilizing an A/B/C/D/D/B/C/D reversal design. Results from this study indicated that all three group contingencies decreased disruptive behaviors; however, the interdependent and dependent forms resulted in a slightly greater decline in disruptive behavior than the independent form (Gresham & Gresham, 1982). However, it cannot be concluded that superiority truly existed due to the noted procedural violations during the independent group contingency and the potential carry-over effects from the sequential phase order (Gresham & Gresham, 1982). Theodore et al. (2004) sought to compare the differential treatment effects of independent, dependent and interdependent group contingencies on the disruptive behavior of a self-contained, high school classroom by employing an alternating treatment design (ATD) to make an initial comparison. The authors reported that there were no differential treatment effects between independent, dependent, and interdependent group contingencies.

Recently, there have been two quantitative syntheses of the group contingencies literature (Little et al., 2015; Maggin et al., 2012). Maggin and colleagues (2012) quantitatively synthesized a large body of research that utilized group contingencies within classrooms in order to determine if such interventions can be considered evidence-based. Specifically, Maggin and Colleagues (2012) applied the What Works Clearinghouse (WWC; Kratochwill et al., 2010) procedures for single-case research, on

the group contingency literature. Results from their analysis suggested that group contingency interventions demonstrate sufficient empirical support to be considered an evidence-based strategy. These results are consistent with those of earlier reviews that also indicate group contingencies can be considered an empirically grounded intervention option for improving behaviors in classroom settings (Litow & Pumroy, 1975; Stage & Quiroz, 1997).

The utilization of group contingencies gained additional support when Little and colleagues (2015) conducted a meta-analysis of group contingency literature published between 1980 and 2010. Specifically, baseline means, standard deviations, and treatment means were extracted from the selected studies and then converted individual study statistics into effect size estimates. In particular, Little and colleagues (2015) calculated a variation of Cohen's (1988) *d* statistic to quantify the magnitude of change in level of performance (Beeson & Robey, 2006; Busk & Serlin, 1992). They found a strong effect size of 3.41, which further demonstrates the efficacy of group contingencies (Little et al., 2015). Finally, Little et al. (2015) found strong effect sizes across all three types of group contingencies with only small differences [dependent group contingencies ($ES = 3.75, n = 11$), independent group contingencies ($ES = 3.27, n = 8$), and interdependent group contingencies ($ES = 2.88, n = 35$)]. Although research has not clearly demonstrated differential effects between independent, dependent and interdependent group contingencies, there is substantial evidence suggesting that all forms are effective and have associated advantages.

Numerous advantages have been associated with the implementation of group contingencies and, in sum, the literature suggests that these intervention procedures are

cost-effective, time efficient, can be implemented with ease, are rated acceptable by teachers, has procedural flexibility, and produces a variety of behavioral changes (Cooper et al., 2007; Hayes, 1976; Heering & Wilder, 2006; Little et al., 2015; Maggin et al., 2012; Moore, Waguespack, Wickstrom, Witt, & Gaydos, 1994; Skinner et al., 2009). While the use of group contingencies has enormous evidence to support their use, it is important to note that the published literature is incredibly limited with regard to studies conducted in early education settings (Filcheck, & McNeil, 2004; Hoag, 2007; Hunt, 2013; Kohler et al., 1995; Ling & Barnett, 2013; Maus, 2007; Murphy, Theodore, Aloiso, Alric-Edwards, & Hughes, 2007; Pasqua, Dart, Radley, 2016; Pokorski, Barton, & Ledford, 2016; Reitman Murphy, Hupp, & O'Callaghan, 2004; Swiezy, Matson, & Box, 1992).

Group Contingencies in Preschool Settings

Group contingencies may be a promising practice in early education settings, particularly in those settings that serve disadvantaged populations, which include high rates of children who exhibit early emotional and behavioral problems. Additionally, group contingencies are procedurally flexible therefore, it is possible to modify the components to match the developmental level of preschoolers. Additionally, the group contingencies literature indicates that group contingencies can be a relevant component embedded within positive behavioral interventions and supports (PBIS) systems (Molloy, Moore, Trail, Van Epps, & Hopfer, 2013).

A recent publication by Pokorski and colleagues (2016) conducted an extensive literature search for group-contingency programs with preschool populations and then synthesized the results for a total of 10 studies (7 peer-reviewed publications

and 3 dissertations) that were published between 1971 and 2013 (Pokorski et al., 2016). Pokorski and colleagues (2016) sought to identify and report descriptive characteristics of these studies so as to evaluate the value of using group behavior management systems with preschool children. A total of 28 variables were extracted and analyzed so as to assess the following areas: study descriptors (e.g., participants, settings, implementers), topography and measurement systems of dependent variables, intervention characteristics and components (e.g., group contingency type, pre-intervention participant training, use of visual components), reward type and category (e.g., social, tangible, activity), reward selection method, results, and study rigor. In order to evaluate the quality and the extent of internal and external validity for these studies, researchers examined measurements of Inter-observer Agreement (IOA), procedural fidelity, generalization, and social validity. Study quality was also assessed by the application of a systematic protocol based on Kratochwill et al.'s (2013) single case design standards and Horner and colleagues' (2005) single case quality indicators. Finally, outcomes were examined by visual analysis (trend, level and variability) and the application of a success estimate ratio for single case research.

Six of the ten studies investigated the use of an interdependent type of group contingency, three of the ten studies looked at the use of an independent group contingency form, and one study investigated a dependent contingency. Eight of the ten studies reported participants' age (in years) which ranged from 3 to 6 years; the remaining two studies did not report actual ages but defined participants as being "preschool aged" (Ling & Barnett, 2013; Reitman et al., 2004). For studies that reported info on the reward systems, five used unknown or "mystery" rewards (Filcheck &

McNeil, 2004; Ling & Barnett, 2013; Maus, 2001; Murphy et al., 2007; Reitman et al., 2004) and two used rewards that were known to the participants prior to sessions (Hunt, 2013; Sweizy et al., 1992).

In terms of study rigor, authors designated that the synthesized literature, “generally displayed low to moderate quality” (Pokorski et al., 2016) for several reasons. First, all ten studies obtained IOA data, nine of which were above 80% however, only two studies (Hunt, 2013, Ling & Barnett, 2013) specifically reported that IOA data were collected reliably across all conditions and participants. Another factor that was considered when judging study rigor was whether or not social actability was obtained; six of ten studies accomplished this. Authors concluded that, overall, the synthesized research did not meet contemporary recommendations for procedural fidelity (Horner et al., 2005) particularly because only three studies (Filcheck, 2004; Hunt, 2013; Ling & Barnett, 2013) collected fidelity data for at least 20% of sessions. Finally, only four studies measured and assessed generalization (Filcheck, 2004; Herman & Tramontana, 1971; Sweizy et al., 1992) and only one assessed maintenance (Filcheck, 2004) which decreases the quality of study rigor.

Outcome analysis recognized variations across the studies’ results in terms of the number of functional relation demonstrations. (range; 1- 8). Specifically, only nine of the 34 attempts to demonstrate a functional relation was successful (26%) were successful (Pokorski et al., 2016). Outcome analysis also identified limitations related to the adequacy of baseline condition descriptions

The overall results of the synthesis suggested that group-contingencies with preschool children were effective at producing positive behavioral changes and did not

produce negative effects, which is consistent with previous analyses on group contingencies (Little et al., 2015; Maggin et al., 2012). However, the authors also concluded that there is still a need for more rigorous research on the use of group contingencies with preschoolers to substantiate their findings.

Purpose

Overall, the preschool group contingency literature is incredibly limited (Filcheck & McNeil, 2004; Hoag, 2007; Hunt, 2013; Kohler et al., 1995; Ling & Barnett, 2013; Maus, 2007; Murphy et al., 2007; Pasqua et al., 2016; Pokorski et al., 2016; Reitman et al., 2004; Swiezy et al., 1992). Moreover, the preschool group contingency literature largely includes interdependent group contingencies. Specifically, more than 60% of the group contingencies investigated are interdependent group contingencies (Hoag, 2007; Hunt, 2013; Kohler et al., 1995; Ling & Barnett, 2013; Murphy et al., 2007; Pasqua et al., 2016; Swiezy et al., 1992); while the remaining studies included two independent group investigations (Filcheck, 2004; Maus, 2007) and only one dependent contingency investigation (Reitman et al., 2004). Because independent group contingencies require each individual to reach the pre-determined criterion (i.e., a direct cause-and-effect contingency) they should, theoretically, be developmentally appropriate interventions for preschool-aged children (Pokorski et al., 2016); however, more research is needed to demonstrate the efficacy of independent group contingencies in preschool.

Providing teachers with feasible, efficient, and effective interventions to address challenging behavior in preschool classrooms, is crucial to decrease challenging behaviors, increase appropriate behavior, and reduce preschool expulsions (Hemmeter, Fox, Jack, & Broyles, 2007; Hemmeter & Santos, 2008). The use of group

contingencies may fulfill this need. Therefore, the purpose of the current study is to extend the literature on group contingencies in preschool settings by providing an additional demonstration of the efficacy of an independent group contingency in three preschool classrooms. The independent group contingency investigated in the current study is called Mystery Student. Specifically, the Mystery Student intervention is a novel independent group contingency that included a randomized target student component. It was hypothesized that the Mystery Student intervention would decrease challenging behaviors, increase appropriate behavior and be deemed acceptable by teachers in preschool classrooms.

Research Questions

1. Does the Mystery Student intervention reduce disruptive behaviors in Head Start classrooms?
2. Does the Mystery Student intervention increase appropriately engaged behaviors in Head Start classrooms?
3. Is the Mystery Student intervention socially valid to Head Start teachers?

CHAPTER II – METHODS

Participants and Settings

Three lead and three assistant Head Start (HS) teachers and their respective classrooms, participated in the current study. Each HS classroom was part of an agency that operated multiple Early Head Start and Head Start centers in one rural county in a southeastern state. Classrooms A & B were located within the same HS center, which housed 16 HS classrooms and 5 Early HS classrooms, while Classroom C was a single classroom center located within a public elementary school (Classroom C). The child population for the entire agency was 73% African American, 13% Caucasian, 13% Hispanic or Asian, and 1% unspecified. All children were from families with income at or below the federally defined poverty line, as part of the federal Head Start entry criteria. SWPBIS procedures were in place in all classrooms throughout the agency. Specifically, results from the Preschool-Wide Evaluation Tool (PreSET; Steed, Pomerleau, & Horner, 2012) indicated this Head Start agency implemented an average of 60% of the core SWPBIS features at the time of administration.

Participating classes were recruited based on either; high levels of behavior incident reports submitted by the same teacher for several different children (Classroom A), administrator-reported concerns regarding the lack of effective classroom behavior management strategies exhibited by teachers and associated high levels of class-wide disruptive behavior (Classrooms B), or teachers' self-referral regarding high levels of challenging behaviors during small-group academic instruction (Classroom C). After teachers indicated a need for intervention services, teachers consented to participate in the study (Appendix A). Following consent, a screen-in observation of student behavior

was conducted in order to determine if each classroom met the predetermined inclusion criterion, a minimum of 30% of intervals in which AEB was observed. This study did not include data collection for any individual student. Rather, aggregate classroom behavior data were collected. The University's Institutional Review Board (IRB) approved all procedures prior to the recruitment of participants and data collection (see Appendix B).

Classroom A

The lead teacher in this class, Teacher A1, was a 32-year-old African American female, who held a Master's in Early Childhood Education degree, and had been teaching Head Start children for 4 years. Teacher A1's assistant teacher, Teacher A2, was a 34-year-old African American female, who held an Associate's degree in early education and had been teaching in Head Start for 3 years. Teachers qualified for services due to a high level of behavior incident reports submitted by the teachers for several different children. Both teachers indicated that several children in their classroom engaged in disruptive behaviors during large group instruction (i.e., carpet-time). Specifically, children engaged in, inappropriate vocalizations, out of area behavior, and playing with objects not related to the lesson during carpet-time. Furthermore, it was reported that these behaviors were disruptive and interrupted instruction. Teachers reported that, keeping their hands and feet to themselves, active participation in carpet time lessons, speaking only when permissible, and refraining from manipulating objects unrelated to the ongoing carpet time activity, were all appropriate carpet-time behaviors they desired the children to demonstrate. Classroom A was composed of 20 students; 16 students were African American, 1 student was Caucasian and 3 students were Hispanic. Two of

the students in the class had a special education ruling; disability categories included developmental delay, and speech and language.

Classroom B

The lead teacher in this class, Teacher B1, was a 28-year-old African American female, who held a Bachelor of Arts Degree in Child and Family Studies, and had been teaching Head Start children for 3 years. Teacher B1's assistant teacher, Teacher B2, was a 43 year old African American female, who held an Bachelor of Arts Degree in Early Childhood Education and had been teaching in Head Start for 14 years. Both teachers indicated that several children engaged in disruptive behaviors during center time, a free play period where children engage in various activities within a specified center (e.g., housekeeping area, art area, computer, etc.). Specifically, teachers reported children, running around the classroom, leaving designated area without permission, aggressing towards others and objects, and the inappropriate use of materials in each center (e.g., standing on furniture and throwing objects). Teachers wanted children to ask permission before leaving a center, walk in the classroom, use materials and furniture appropriately, and keep their hands and feet to themselves. Classroom B was composed of 20 students; 16 students were African American, and 4 students were Hispanic.

Classroom C

The lead teacher in this class, Teacher C1, was a 31-year-old African American female, who held a Bachelor of Arts Degree in Psychology, and was in her first year of teaching Head Start children. Teacher C1's assistant teacher, Teacher C2, was a 39-year old African American female, who had been a teacher in Head Start settings for three years, Teacher C2 withdrew from the study before the researcher was able to obtain

information related to her degree. Like Classroom A, both teachers indicated that several children engage in disruptive behaviors during large group instruction (i.e., carpet-time). Specifically, children engaged in, inappropriate vocalizations, out of area behavior, minor aggression, and playing with objects not related to the lesson. Teachers reported that, during carpet-time, they wanted children to keep their hands and feet to themselves, actively participant in carpet time lessons, speak only when given permission (or when they were called on), and refrain from manipulating objects unrelated to the activity. Classroom C was composed of 17 students; 15 students were African American, 1 student was Caucasian and 1 student was Hispanic. Two of the students in the class had a special education ruling.

Instruments

Class-wide Daily Behavior Reports (C-DBR)

C-DBR's were used to assess teachers' perceptions of aggregate, class-wide AEB during the target activity. The C-DBR's is a modified version of direct behavior rating (DBR) methods described by Chafouleas, Riley-Tillman, and Christ (2009). DBR's serve as flexible tools to measure multiple or single behaviors (Chafouleas, McDougal, Riley-Tillman, Panahon, & Hilt, 2005; Christ, Riley-Tillman, & Chafouleas, 2009) for purposes of assessment, intervention monitoring, and communication (Chafouleas et al., 2009). Research has shown that DBR's; are perceived as acceptable tools by teachers for assessment and monitoring purposes (Chafouleas, Riley-Tillman, & Sassu, 2006), can yield reliable behavior measurements that are comparable to systematic observations (Chafouleas, Kilgus, & Hernandez 2009; Chafouleas, Sanetti, Kilgus, & Maggin, 2012; Riley-Tillman, Chafouleas, Briesch, & Eckert, 2008; Volpe & Briesch, 2012), and may

lend to similar intervention decisions to decisions that would have been made based off of systematic observations (Riley-Tillman et al., 2008). The majority of the DBR's used in previous research are those focused on the assessment of individual students; however, Riley-Tillman, Methe, and Weegar (2009) designed a DBR that assessed aggregate classroom behavior in order to determine the class' response to a group contingency. The researchers found the class-wide DBR an adequate tool to measure behavior changes at a group-level and that the DBR data were consistent with data collected via systematic direct observations. Results obtained by Riley-Tillman and colleagues provide an important contribution to the DBR literature and suggest that DBR's can be utilized to assess intervention effects at the classroom level (2009).

DBR's are commonly defined by being direct, behavior specific, and include a rating component in which individual perceptions of behavior are quantified (Chafouleas, et al., 2009; Christ et al., 2009); therefore, the C-DBR's used in the present study were developed to be consistent with those defining characteristics. Specifically, the C-DBR's were direct in that teachers rated the classroom's behavior immediately after the behaviors occurred within the same location they occurred, they were behavior specific in that they explicitly listed behaviors that were operationally defined and finally, C-DBR's included a rating component that measured (and quantified) teachers' perceptions of class-wide behavior. An example DBR used in this study can be seen in Appendix C.

The behaviors listed on the C-DBR's were specific to each classroom's referral concern and included teacher-desired appropriate behaviors specific to the target activity. Specifically, Classroom A and C's DBR's had 4 appropriate carpet-time behaviors including, keep their hands and feet to themselves, actively participate in carpet time

lessons, speak only when given permission (or when called on), and only manipulating objects related to the activity. Classroom B's C-DBR included the following five appropriate center-time behaviors; ask permission before leaving a center, walk in the classroom, use materials appropriately, use furniture appropriately, and keep their hands and feet to themselves. Each behavior listed on the DBR has a rating scale underneath that ranged from 1 (Never occurred) to 10 (Always occurred).

Behavior Intervention Rating Scale (BIRS)

The BIRS (Appendix D) was used to measure the social validity of the Mystery Student intervention. This questionnaire includes 24 items ranging from 1 (strongly disagree) to 6 (strongly agree). The items address the teacher's view on the intervention in terms of acceptability, effectiveness, and time of implementation (Elliott & Treuting, 1991). Factor analysis by Elliot and Treuting (1991) identified three factors for the BIRS: Acceptability (63% of variance), effectiveness (6% of variance), and time of effectiveness (4.3% of variance). Furthermore, a coefficient alpha yielded an alpha level of .97 for the entire scale. Acceptability, effectiveness, and time subscales yielded alphas of .97, .92, .87, respectively (Von Brock & Elliott, 1987). Teachers completed the BIRS at the conclusion of the study. Total scores were calculated for each teacher and higher scores indicate greater perceptions of social validity.

Materials

MotivAider®

A MotivAider® is a discrete electronic device that resembles a beeper, can be clipped onto clothing (e.g. belt loop and waist band) and serves as a tactile prompt (3-s vibration). This device can be programmed to vibrate on an interval or fixed time

schedule. The MotivAider® was set to vibrate on a fixed- interval schedule of 90 seconds. The MotivAider® was given to the assistant teachers who were instructed to look up at each Mystery Student when prompted and record whether the students were engaged in appropriate behavior (+) or disruptive behaviors (-) on a data sheet that was provided to them (Appendix E).

Prize Box

A colorful box filled with teacher-approved toys, accessories and trinkets were placed in each classroom. The prize boxes were decorated with stickers, drawn on question marks, and the title, “Mystery Student.” When any Mystery Student met the performance criterion, they were allowed to access a tangible from the box following an intervention period.

Name Bag

A bag filled with the names of every child enrolled in the class was used during the implementation of the intervention. Two names were pulled each intervention day, however; in order to increase the likelihood that every child would have the opportunity to experience being a “Mystery Student” during the 5-day week, the teachers did not return the two names to the bag for the remainder of that week. However, this component was unknown to the students.

Teacher Data Sheet

In order for teachers to determine whether each Mystery Student could be revealed and allowed to receive a reward after the target activities, teacher assistants were given a data sheet (Appendix E) to record instances of AEB and DB for each of the two Mystery Students. Data sheets included the operational definitions for AEB and DB, a

row of ten blanks for each interval, and a space to calculate the percentage of intervals in which AEB occurred.

Dependent Measures and Data Collection Procedures

The primary dependent variable in the present study was aggregate class-wide levels of disruptive behavior. The definitions of disruptive behavior were established and operationally defined in collaboration with classroom teachers during a brief interview following initial referral. For Classroom A and Classroom C, disruptive behaviors included, inappropriate vocalizations, playing with objects, out of area, and aggression. Inappropriate vocalizations were defined as talking without permission to other students or teacher, shouting out, singing, or making noises not related to an ongoing task demand. Playing with objects was defined as manipulating objects without teacher permission or playing with objects not associated with ongoing task demands. Out of area behavior was defined as the child having one or more body parts outside the designated carpet or standing up without teacher permission. Aggression was defined as making contact with another person's body in a hitting, kicking, pinching, or biting manner with hands, feet or mouth. Disruptive behavior for Classroom B included, out of area, running, aggression towards others or objects, and the inappropriate use of furniture. Out of area behavior was defined as being more than one foot outside of the designated activity center they were assigned to without permission. Running was defined as moving about the classroom at a pace, which is anything above a slow walk (e.g., running, skipping or jogging). Aggression towards others included making contact with another person's body in a hitting, kicking, pinching, or biting manner with hands, feet or mouth while aggression towards objects was defined as throwing, intentionally breaking, hitting

together any toys or other task-related items together in a forceful and inappropriate manner. Finally, inappropriate use of furniture was defined as jumping over, on, or off of furniture, standing on top of furniture or sitting on top of furniture not for sitting.

In contrast, the secondary dependent variable, appropriately engaged behavior was defined as both active and passive engagement for all three classrooms. Active engagement was defined as being involved in or attending to (e.g. looking at or writing on) independent seatwork, teacher instruction, designated classroom activity center, and/or engaging in task related (and permissible) vocalizations with teachers and peers. Passive engagement was defined as, listening to the teacher, listening to peers, reading silently, or looking at any task-related (and permissible) materials related to instruction or an activity center.

Aggregate class-wide levels of DB and AEB were obtained by conducting systematic direct observations (SDO; Appendix F). Instances of AEB and DB were recorded using a momentary time sampling (MTS) method in order to obtain an accurate representation of aggregate classroom behavior (Radley, O’Handley, & LaBrot, 2015). At the beginning of a 10 s interval, the observer observed one of six students in a predetermined order and indicated whether they were engaged in AEB or DB; while noting that it was possible to record the absence of either. The observer then observed the next student in the same manner. Observing the alternating students continued until the observation period was complete (Briesch, Hemphill, Volpe, & Daniels, 2015). Percentage of intervals in which AEB and DB occurred was calculated and graphed separately following each observation. Observation durations were between 10 - 20 minutes depending on the length of the target activity (i.e., if carpet time lasted 15

minutes, then the observation lasted 15 minutes). In addition to SDO, aggregate class-wide AEB was measured with the C-DBR's following each observation period across phases. Teacher-rated AEB was reported as the percentage of points earned out of the total possible points the classroom could earn on the C-DBR (see Figure 2).

The primary researcher and graduate and/or undergraduate students, who had been previously trained to observe and code a variety of behaviors, conducted the behavior observations. The primary researcher trained all observers on the operational definitions and coding schemes included in this study, and all observers were required to demonstrate 90% agreement with the primary researcher prior to data collection. The minimum acceptable IOA level was 90%; if an IOA score fell below 90%, the observer was retrained via the methods described above before being used as an observer again. One observer was retrained twice. Observers sat in an unobtrusive location in the classroom while conducting observations and used a digital audio device to cue observation intervals. Data were collected during the same activity throughout all phases of the study (carpet-time for classroom A & C and center-time for C).

Design and Data Analysis

To evaluate the effectiveness of Mystery Student on improving disruptive behavior, an A/B/A/B withdrawal design (Cooper et al., 2007) across three classrooms was utilized. A is the baseline phase/withdrawal phase, while B represents the intervention phases. Phase changes occurred based on the trend, level, and stability of the primary dependent variable: collapsed classroom disruptive behaviors. In addition to visual analysis of the data, the effect size Tau-U was calculated. Tau-U is a non-parametric effect size calculation for evaluating non-overlap data between two phases

(Parker, Vannest, Davis, & Sauber, 2011). Tau-U can test for a baseline trend in an undesired direction so the trend can be corrected for in the effect size calculation and thus, is considered a conservative analysis method (Parker et al., 2011). Effects sizes between 0 and 0.20 are considered small effects, 0.20 and 0.60 are moderate effects, 0.60 and 0.80 are large effects, and above 0.80 are very large effects (Vannest & Ninci, 2015). In order to analyze the correspondence between the levels of AEB that were directly observed and levels that were measured by C-DBR's, a Pearson's correlation was calculated.

Procedures

Screening

During the screening observation, the researcher instructed teachers to continue to manage their classroom in their typical manner, utilizing any reinforcement and consequent procedures they normally used. In order for a classroom to screen into the study, disruptive behavior had to occur in at least 30% of intervals. Observation procedures were the same as those during all other phases of the study.

Behavior Identification and DBR Training Meeting

The primary researcher met with each teacher dyad in the afternoon (after children were dismissed) to identify and define the target behaviors (AEB & DB). First, teachers identified specific disruptive behaviors that were occurring during the target activity. Next, teachers identified appropriate behaviors they would like to see their children engage in. After the teachers identified the specific AEBs and DBs, the primary researcher inserted the desired appropriate behaviors in a pre-formatted C-DBR and printed two copies for the lead teacher to use during the DBR training.

Immediately following the behavior identification interview, the researcher trained the lead teacher on C-DBR procedures. First, the researcher explained what DBR's are and why they are useful (i.e., easy, quick, and measures teacher perception). Next, the researcher explained how the C-DBR's would measure the behaviors of the classroom as a whole. Then, teachers were instructed to rate their classroom's AEB during the target activity earlier that day for practice.

Baseline

During the baseline phase, teachers were instructed to implement their normal classroom management techniques during the target activity. Observers collected data during the time the target activity occurred. Data were used to determine the percentage of intervals in which problem behaviors and academic engagement occurred. Observers positioned themselves in an unobtrusive location in the classroom and did not interact with the children. The researcher and observers did not provide any feedback regarding behavior management and student performance.

Teacher Training

Prior to implementation of the "Mystery Student" independent group contingency, both teachers from each classroom met with the researcher for a training on the implementation procedures of the intervention. Teachers were given scripted instruction sheets that included 7 steps for implementation with examples of dialogues associated with each step (see Appendix G). The trainer then explained that each teacher would be responsible for one of two specific roles. Teachers were told that the responsibilities involved with the first role included; introduce and explain the Mystery Student intervention, provide frequent reminders regarding the ongoing intervention, and either;

announce the Mystery Students, provide rewards, and provide examples of the appropriate behaviors that were demonstrated, or; announce that no Mystery Students can be revealed due to high instances of disruptive behavior. In contrast the responsibilities for the second role were to; wear the MotivAider®, select the two Mystery Students from the bag, sequentially observe the selected Mystery Students' behaviors for three seconds each when prompted, record the behaviors of each student on the data sheet and inform the lead teacher whether the two students met the criteria to be revealed. All three lead teachers volunteered to undertake the first role, while the assistant teachers agreed to the responsibilities for the second role. The trainer then presented all of the materials relevant to the intervention to the teachers and explained and modeled their use. The procedural fidelity checklist in Appendix H lists out every training step.

Mystery Student Intervention

The teacher introduced the Mystery Student intervention to the class by telling them that they were going to play a game. Lead teachers stated the game parameters (i.e., intervention will be during carpet-time, names undisclosed) and described and demonstrated the behavior expectations. Teacher assistants' then selected two names from the bag, recorded them on the data sheet, and reminded the children that they could not know who the Mystery Students were and suggested that every child engage in appropriate behavior in case they are a Mystery Student for the day. The lead teacher then proceeded with scheduled classroom activity (e.g., carpet-time lesson or center-time). Lead teachers were trained to provide at least 2 verbal reminders regarding the ongoing Mystery Student intervention during the activity (e.g., "remember there are Mystery Students being watched").

During the intervention period, the assistant teachers were equipped with the MotivAider® that was set to prompt (e.g., vibrate) every 90 seconds, a clipboard and data sheet. Assistant teachers partook in the ongoing activity; however, when prompted, the teachers would look at one Mystery student and mark + for AEB, or – for DB on the data sheet then move on to the second Mystery Student and recorded their behavior.

Once the scheduled activity ended, teachers determined whether either Mystery Student could be revealed and rewarded. Mystery Students were revealed and rewarded if they exhibited AEB at least 60% of intervals observed by the teacher assistant. If the students met the criteria, the teacher revealed their identity, presented them with the prize box, and explained why the reward was given (e.g., “Suzy gets to pick a prize because she was a Mystery Student and kept her hands and feet to herself during carpet time”) to the entire classroom. If the Mystery Students did not meet the criteria, teachers announced that the names of the Mystery Student could not be revealed because they were not behaving appropriately. There were incidents in which, one student met the criteria and the other did not. In these cases, teachers simply announced that only one name could be revealed because one was not behaving appropriately. The teachers then revealed and rewarded the student who met the criteria in the same manner as explained above.

Withdrawal Phase

Teachers were instructed to withhold the implementation of all Mystery Student intervention components during the withdrawal phase. Teachers were instructed to not mention the Mystery Student unless children asked. If children asked about the game,

they were told that they weren't playing the game today. Data were collected in the same manner as the baseline and intervention phases using C-DBR's and direct observations.

Interobserver Agreement

Interobserver Agreement (IOA) was conducted for at least 40% of all behavior observations, in each condition, across each of the three classrooms. IOA was calculated with the exact agreement method (Cooper, et. al., 2007) in which, the total number of agreements between the two observers was divided by the sum of agreements and disagreements, which was then multiplied by 100.

For classroom A, IOA was obtained for 77.27% of all observations with an average agreement of 92.94% (range = 87.78 - 100.00%). IOA was gathered for 57.14% of baseline observations and agreement averaged 92.95% (range = 87.78 - 100.00%). During the first treatment phase, IOA was calculated for 100% of the observations with an average agreement of 93.13% (range = 90.00 - 100.00%). IOA was calculated for 80% of the withdrawal observations, with an average agreement of 93.06% (range = 83.33 - 100.00%). In the final intervention phase, 80% of observations were coded for IOA and had an average agreement of 92.60% (range = 90.00 – 93.93%).

In Classroom B, IOA was obtained during 57.14% of all observations with an average agreement at 96.31% (91.67% - 100%). IOA was gathered for 40% of baseline observations and agreement averaged 95.31% (range = 91.67 - 98.95%). During the first treatment phase, IOA was calculated for 60% of the observations with an average agreement of 96.13% (range = 91.67 - 100.00%). IOA was calculated for 60% of the withdrawal observations, with an average agreement of 97.33% (range = 95.83 -

97.22%). In the final intervention phase, 80% of observations were coded for IOA and had an average agreement of 96.19% (range = 92.22 – 98.81%).

IOA was obtained during 57.14% of all observations in Classroom C and was found to have an agreement average of 94.15% (89.39% - 97.22%). IOA was gathered for 57.14% of baseline observations and agreement averaged 93.29% (range = 91.67 – 94.44%). During the first treatment phase, IOA was calculated for 40% of the observations with an average agreement of 94.17% (range = 91.67 - 96.67%). IOA was calculated for 60% of the withdrawal observations, with an average agreement of 93.68% (range = 89.39 - 96.67%). In the final intervention phase, 50% of observations were coded for IOA and had an average agreement of 96.52% (range = 95.83 – 97.22%).

Procedural Integrity and Treatment Integrity

100% of the observations and trainings were coded for integrity by completing checklists (Appendices G-I). Procedural integrity was obtained for 100% of training sessions with 100% of the steps completed, across all teachers and training session. In other words, the trainer implemented 100% of the steps included in the DBR and intervention training sessions. IOA was collected during 100% of all training sessions with 100% agreement for all sessions.

During the intervention phases, the observers used a checklist to judge which aspects of the intervention the teacher implemented correctly (Appendix I). During the baseline and withdrawal phases, checklist items (Appendix J) were related to whether or not the observers sat in an unobtrusive location, teachers were instructed to not implement any component of the Mystery Student intervention, and that the teachers were not utilizing the intervention components.

For Classroom A, observer ratings of procedural integrity indicated that 100% of the steps in baseline and withdrawal were met. Observer ratings indicated teachers utilized 96% of steps during the first intervention phase (range = 90 - 100%), and 97.50% (range = 90 - 100%) of the steps during the second intervention phase. IOA was calculated during 47.61% of integrity observations and 100% agreement was obtained.

For Classroom B, observer ratings of integrity during baseline indicated 100% of steps during baseline and withdrawal were met. Also, observer ratings of teacher integrity indicated teachers utilized 100% of the steps during the first and second intervention phases. IOA was calculated during 57.14% of integrity observations and 100% agreement was obtained.

For Classroom C, observer ratings of integrity during baseline indicated 100% of steps during the baseline and withdrawal phases were met. During the first intervention phase, teachers implemented an average of 98% of the intervention components during the first intervention phase (range = 90 - 100%), and 94.72% of the intervention steps during the final intervention phase. IOA was calculated during 47.61% of integrity observations and 100% agreement was obtained.

CHAPTER III – RESULTS

Disruptive and Academically Engaged Behavior

The percentages of intervals in which disruptive behavior (DB) and appropriately engaged behavior (AEB) were directly observed for each classroom are displayed in Figure 1. Tau-u effect sizes for each class are presented in Table 1. Teacher-reported levels of AEB were obtained via class-wide DBR's; the percentage of points earned daily were graphed and are displayed in Figure 2.

Table 1

AEB and DB from baseline to intervention (Tau-U Effect Sizes with 90% CI)

Classroom	Disruptive Behavior	Appropriately Engaged Behavior
A	1.00	0.97
B	0.98	0.76
C	0.97	0.92

Tau-U effect size scores ranging from 0-.20 are considered small effects, scores ranging from .20-.60 are considered moderate effects, scores ranging from .60-.80 are considered large effects, and scores above .80 are considered a very large effect (Vannest & Ninci, 2015).

Table 2

Average Levels of AEB

	Baseline		Treatment 1		Withdrawal		Treatment 2	
	DBR	Observed	DBR	Observed	DBR	Observed	DBR	Observed
Classroom A	46.8	47.44	62.5	73.63	48	46.71	59	72.86
Classroom B	39.6	55.22	60	82.61	50.8	66.12	62.8	66.12
Classroom C	54.28	62.83	66.73	84.98	61	58.20	65	88.38

Mean Percentages of Points Earned on DBR's and Mean Levels of AEB Obtained Via Direct Observations

Figure 1. Direct Observation Data

Percentage of intervals observed for students' appropriately engaged behavior (AEB) and student disruptive behavior (DB).

Figure 2. Teacher-Rated Class-wide Appropriately Engaged Behavior

Daily percentage of points earned on DBR's for each participating classroom.

Classroom A

During baseline, students in Classroom A (top panel) displayed DB during an average of 42.94% (range = 22.00% - 55.90%) intervals observed. DB data during this phase was variable. The students engaged in AEB during an average of 46.38% (range = 39.00% - 61.84%) of observed intervals in baseline. Throughout this phase, AEB data was low and continued on a downward trend. Immediately following the implementation of the first intervention phase, a clear divergence between DB and AEB were observed. Specifically, levels of DB dropped low and continued on a stable decreasing trend, averaging 14.78% (range = 10.00% - 17.85%) across the phase. Furthermore, an immediate increase in AEB was observed following the second implementation of Mystery Student. Throughout the intervention implementation, levels of AEB remained high and stable with an average of 73.63% (range = 60.52% - 78.20%). The intervention was removed from the classroom for a short time during the withdrawal phase. An instant convergence between BD and AEB was observed during the withdrawal phase. Specifically, an immediate increase in DB levels was observed and levels remained high, averaging 41.07% (range = 34.60% - 48.33%), while intervals containing appropriately engaged behavior remained lower, averaging 46.71% (range = 55.12% - 38.46%). Similar to the previous treatment phase, levels of DB and AEB diverged immediately after reimplementation of Mystery Student. Percentage of intervals containing disruptive behaviors immediately decreased to an average of 19.06% (range = 21% - 35%) and remained at stable low levels while levels of AEB were high and stable, averaging 72.56% (range = 66.67% - 81.67%). The Tau-U score suggests a very large effect size

for both DB (Tau-U = 1.00; 90% CI = 0.57 – 1.00) and AEB (Tau-U = 0.97; 90% CI = 0.55 - 1.39) in Classroom A.

Classroom B

Prior to implementation of the Mystery Student intervention, levels of DB were stable and high, averaging 41.51% (range = 38.33% - 46.67%). Baseline levels of AEB were variable and averaged 46.38% (range = 39.00% - 61.84%). An immediate diversion of between AEB and DB levels were observed following implementation of the Mystery Student intervention. Specifically, levels of DB immediately decreased and remained low with an average of 13.46% (range = 8.33% - 21.43%) while AEB levels increased to, and remained at, high levels. The withdrawal of the intervention resulted in a stable, increasing trend of DB levels, averaging 29.20% (range = 20.00% - 39.40%) and a stable decrease of AEB levels, averaging 66.12% (range = 56.25% - 73.80%). When the intervention was reinstated for the second time, levels of DB and AEB were similar to those observed in the first intervention phase with DB averaging 14.30% (range = 11.45% - 14.30%) and AEB averaging 79.62% (range = 65.56% - 84.71%). The Tau-U score suggests a very large effect size for DB (Tau-U = 0.98; 90% CI = 0.54 – 1.41) and a large effect size for AEB (Tau-U = 0.76; 90% CI = 0.32 - 1.15) in Classroom B.

Classroom C

Before Mystery Student was implemented, children in classroom C engaged in high and variable levels of DB, averaging 32.77% (range = 18.33% - 43.75%), while levels of AEB were low and variable, averaging 62.83% (range = 48.33% - 80.00%). Low, stable levels of DB and high, stable levels of AEB were observed during the implementation of Mystery with DB averaging 11.14% (range = 5.00% - 19.04%) and

AEB averaging 84.99% (range = 80.00% - 93.33%). Withdrawal of the intervention led to an immediate increase in DB ($M= 36.87\%$; range = 33.33% - 43.33%) with levels steadily increasing. Intervention removal also results in an immediate decrease in AEB ($M= 58.20\%$; range = 50.00% - 64.58%) with levels decreasing throughout the phase. Reimplementation resulted in an immediate decrease in DB ($M= 8.27\%$; range = 5.00% - 13.89%) and an increase in AEB ($M= 88.38\%$; range = 84.72% - 93.05%). The Tau-U score suggests a very large effect size for both DB (Tau-U = 0.96; 90% CI = 0.52 – 1.41) and AEB (Tau-U = 0.92; 90% CI = 0.48 - 1.36) in Classroom C.

Teacher-Rated AEB

Following the designated observation period, the primary teacher completed a C-DBR to rate class-aggregate appropriate behavior for the target activity. The percentage of points earned daily, in each phase, are presented in Table 2 in conjunction with mean levels of AEB that were obtained via direct observations. Furthermore, a correlation between levels of AEB from C-DBR's and levels of AEB via direct observations was conducted so as to determine the extent to which teachers' perceptions of behavior change matched to that of direct observations. In total, results of the correlation suggest; there was a large, positive association between Teacher A1 and B1's ratings and levels of AEB that were directly observed ($r = .60$ & $r = .75$, respectively) and a medium, positive association between Teacher C's ratings and the directly observed levels of AEB ($r = .39$). In total, teachers' ratings were correlated with direct observations. These correlations strengthen the validity of the direct observation data and demonstrate that the teachers' perceived similar behavior changes across conditions

Social Validity of Mystery Student

All three lead teachers, and two assistant teachers, completed the BIRS so as to assess the acceptability of the Mystery Student intervention. Mean scores were 4.67, 5.46, and 5.33 for Teachers A1, B1, and C1, respectively. In total, primary teachers favored the use of the Mystery Student intervention on the factors of acceptability, effectiveness, and time. Table 3 includes mean scores across each factor, across teachers.

Table 3

BIRS Factor and Total Scores

	Acceptability	Effectiveness	Time of Effectiveness
Teacher A1	4.67	4.28	5.00
Teacher A2	4.67	4.28	5.00
Teacher B1	5.45	4.85	5.50
Teacher B2	4.87	4.87	4.14
Teacher C1	5.33	5.43	5.00
Total	5	4.6	4.9

CHAPTER IV - DISCUSSION

Research Questions

The increased focus on the early identification and intervention of preschool children has resulted in early intervention practices that have shown to be advantageous for improving social, emotional, and behavioral skill repertoires in young children (Raver et al., 2009; Webster-Stratton & Herman, 2009; Webster-Stratton, et. al., 2004). However, the research on early intervention practices is generally limited to individualized treatment practices, which can be resource intensive and result in low teacher integrity (Litow & Pumroy, 1975). An alternative approach at reducing disruptive behaviors in preschool settings may be the utilization of group contingencies. Although group contingencies may be effective, feasible classroom management strategies for preschool teachers to implement, only few studies exist on the use of group contingencies in preschool or Head Start classrooms (Brown, Reschly & Sabers, 1974; Bushell, Wrobel, & Michaelis. 1968; Hoag, 2007; Ling & Barnett, 2013; Little et al., 2015; Maggin et al., 2012; Maus, 2006; Murphy, Theodore, Aloiso, Alric-Edwards, & Hughes, 2007). Preliminary results of the current study provides additional support for the use of an independent group contingency to improve the behaviors in preschool classrooms

Question 1

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However, the research on early intervention practices is generally limited to individualized treatment practices, which can be resource intensive and result in low teacher integrity (Litow & Pumroy, 1975). An alternative approach at reducing disruptive behaviors in preschool settings may be the utilization of group contingencies. Although group contingencies may be effective, feasible classroom management strategies for preschool teachers to implement, only few studies exist on the use of group contingencies in preschool or Head Start classrooms (Brown, Reschly & Sabers, 1974; Bushell, Wrobel, & Michaelis, 1968; Hoag, 2007; Ling & Barnett, 2013; Little et al., 2015; Maggin et al., 2012; Maus, 2006; Murphy, Theodore, Aloiso, Alric-Edwards, & Hughes, 2007). Preliminary results of the current study provides additional support for the use of an independent group contingency to improve the behaviors in preschool classrooms.

Question 2

An immediate increase in levels of appropriately engaged behaviors were observed when the Mystery Student intervention was implemented in all three classrooms. Furthermore, levels of appropriately engaged behavior remained stable and high during both intervention phases. In addition, large (Classroom B) and very large (classrooms A & C) Tau-u effect sizes were calculated for differences in AEB from baseline to intervention further suggesting that the Mystery Student intervention was effective at increasing more appropriate behavior. Teachers gave their classrooms more points on the C-DBR's during both intervention phases then they did during the baseline and withdrawal phases, suggesting that they recognized an increase in appropriately

engaged behaviors. These results are consistent with the findings of one study that applied an independent group contingency with preschool children (Filcheck, 2004).

Question 3

The final question in this current study addressed the Head Start teachers' acceptability of the Mystery Student intervention. In order to assess the teachers' acceptability of the current intervention, each lead teacher and two teacher assistants, completed the BIRS (Elliot and Treuting, 1991) following the final intervention phase. Combined mean ratings for all teachers suggest the Mystery Student intervention was deemed acceptable (5), effective (4.6), and time efficient (4.9). This contributes to, and is consistent with, previous research investigating group contingencies in preschool settings (Hoag, 2007; Hunt, 2013; Filcheck, 2004; Kohlet et. al., 1995; Ling & Barnett, 2013; Maus, 2007; Murphy, et. al., 2007; Pasqua, Dart, Radley, 2016; Pokorski, et al., 2016; Swiezy, Matson, & Box, 1992; Reitman Murphy, Hupp, & O'Callaghan, 2004).

Limitations and Future Directions

Although both intervention conditions were found to generally result in positive changes in classwide behavior, results should be interpreted with caution due to the following limitations. First, internal validity may be diminished due to the multicomponent nature of the intervention. In other words, because the Mystery Student intervention was comprised of several components (antecedant manipulations, frequent reminders, positive reinforcement consequences, etc.) it is unknown what components, or combination of components, were directly responsible for the observed behavior changes. Future research should investigate the effectiveness of each component included in the Mystery Student intervention.

Second, because this study was single-case in nature, the results cannot be generalized to other populations and settings until further research has investigated the effectiveness of the Mystery Student intervention in those settings and with those populations. This study should be conceptualized as a pilot of a novel intervention strategy to reduce the disruptive behavior in three Head Start classrooms. Although the intervention protocol can be adjusted to fit other ages and environments, equivalent results can not be assumed until the literature base is expanded.

Another limitation worth noting is the lack of interobserver agreement on the assistant teachers' observations of the two Mystery Students during the intervention phases. Having two observers simultaneously completing the teacher data sheet would have required additional personnel which was not readily available. It is important to consider the possibility that the teachers' recording could have been inaccurate which could have resulted in disruptive behavior being advantageously reinforced or appropriate behaviors not being reinforced. Future research on the Mystery Student intervention should attempt to measure the accuracy of teachers' observations of the target students.

A fourth limitation worth noting is in relation Classroom C's withdrawal of participation during the second intervention phase. Teacher C1 was actively serving the military and due to a required training, she was not present during the fifth day of the second intervention phase. While researchers intended to implement the Mystery Student intervention with the additional support of the substitute teachers, Teacher C2 stated she did not want to implement the Mystery Student intervention for the remainder of the academic year without her former lead teacher and did not want to partake in any part of

the research project because of the new and large amount of responsibilities she now held. Because teacher C1 dropped, several things remain unknown including, her demographics, her teaching experience, and her acceptability of the Mystery Student intervention.

An additional limitation that deserves recognition is the lack of follow-up data to determine whether the intervention produces sustained behavior improvements across long periods of time and if the intervention procedures were still being implemented. While conducting typical work-related activities, the primary research followed-up with Teachers A1 and B1. Teacher A1 indicated that she occasionally (one to three times a week) implements Mystery Student when she introduces a new lesson during carpet time. Furthermore, Teacher B1 reported using the Mystery Student intervention during carpet time, and ceased the implementation of it during center-time. Future research should examine the implementation of Mystery Student during multiple classroom activities and obtain maintenance and follow-up data to increase generalizability. It is also important to recognize that the researcher failed to implement a procedure to fade out the Mystery Student intervention. Future researchers should develop and investigate procedures to fade out the intervention.

Finally, although teachers found Mystery Student to be a socially valid intervention, the extent to which the children perceived the acceptability of the intervention is unknown. While anecdotal, the primary researcher observed the children enjoying ongoing intervention components and teachers reported their children asking to play the game during the withdrawal phase; however, no objective data were collected,

thus, it cannot be concluded the children considered Mystery Student as a socially valid intervention.

Implications and Considerations

Currently, the research on group contingencies is limited in preschool settings. Despite the aforementioned limitations, this study indicates that implementing a novel independent group contingency with a randomized component is an effective method for reducing disruptive behavior in preschool classrooms. Therefore, school psychologists working in preschool settings may consider this intervention for classrooms in which there are several children engaging in problem behaviors. However, given the preliminary nature of these findings, if the intervention is implemented, treatment integrity and outcomes should be closely monitored to quickly assess the impact of the intervention.

These results increase the limited research base on the effectiveness of group contingencies in reducing disruptive behavior and increasing appropriate behaviors in preschool students (Pokorski et al., 2016). Even more, this research is the first known to investigate the effectiveness of a randomized target student component in an independent group contingency. Furthermore, the Mystery Student may be a viable option to incorporate within an early childhood education setting that utilizes a PW-PBIS system at either a Tier I or Tier II level. Moreover, results of the current study suggest preschool teachers find a unique independent group contingency method as an acceptable intervention in two different activity periods (e.g., carpet time & center time). Finally, this is only the second study in which DBR's are used concurrently with SDO's for

group-level behavior assessment (Riley-Tillman et al., 2009). Future research should seek to replicate these findings, as well as account for the limitations in this study.

APPENDIX A - TEACHER CONSENT FORM

Teacher Consent Form

Title of Study: *The Effects of an Independent Group Contingency: "Mystery Student" on Disruptive Behavior in a Preschool Classroom*

Study Site: P.R.V.O. In Forrest County, MS

Name of Researcher & University affiliation: Jamie Pasqua, B.A.; The University of Southern Mississippi

Dear Teacher,

Hello, my name is Jamie Pasqua, and I am graduate student at University of Southern Mississippi in the School Psychology Doctoral Program. I am currently conducting my thesis, which will assess the effectiveness of a classroom based behavioral intervention. This study is being conducted under the supervision of Dr. Brad Dufrene.

Your classroom has been referred for inclusion in this study for elevated levels of class-wide disruptive behaviors. This intervention aims to reduce class-wide disruptive behavior and aid in classroom management procedures. Please consider the following when deciding if you will participate in this study:

Purpose:

As previously stated, the purpose of the study is to assess the effectiveness of a class-wide intervention aimed at reducing classroom disruptive behavior. The intervention, Mystery Student, utilizes classroom management and reinforcement procedures to effect change in the classroom setting. Student's levels of academic engagement will also be measured as part of the study. At the end of the study, you will be asked to rate various components and answer qualitative questions about the effectiveness of the intervention.

Procedure:

If you agree to participate in the study, you will be asked to perform several tasks aimed to improve classroom management. Prior to implementation of the interventions, you will be required to complete separate consultation and training sessions with me. The consultation session will be conducted to better identify the problem behaviors occurring in your classroom and when they are occurring.

Following the consultation session, a series of screening observations will occur to verify that your classroom is qualified for inclusion in the study. During this period, you will be asked to continue to implement your normal classroom management procedures for dealing with problem behaviors. If your classroom does not qualify for participation in the study, more appropriate services will be provided to you and your classroom.

If your classroom does qualify for participation, you will be required to attend a training session with me to explain and practice the steps of each intervention. Upon displaying 100% of the steps successfully and being able to accurately describe each step, the intervention phase will begin.

The "Mystery Student" intervention is a teacher led classroom intervention. During the intervention, you will be required to take data on a target (i.e., Mystery) student's behavior. Specifically, you will be equipped with a small, discrete electronic device that resembles a beeper, called a MotivAider®, which serves as a tactile prompt. When prompted by the MotivAider®, you will look at the target student for that day and write a + (for appropriate behavior) or a - (for disruptive behavior) on a data sheet. At the end of the intervention period you will use the data sheet to make a decision whether the student earned a reward or not. The goal of the intervention is for all of the students to engage in lower levels of disruptive behaviors and higher levels of appropriate behaviors.

Myself and/or another trained graduate student from the USM School Psychology program will conduct classroom observations multiple times a week. The observers will not interfere with you or your class during this time. The observers will be measuring levels of disruptive behavior, academically engaged behavior, and your integrity with the treatment protocol (you will be provided with a checklist to aid you in implementation). You will be provided with feedback on the implementation as needed throughout the study.

Benefits:

Agreeing to participate in this study may offer several benefits for you and your students. By participating in this study you will be trained on the implementation of a new intervention technique that can be used with other students. An additional benefit is the expected decrease in inappropriate behaviors and the increased appropriate behaviors by your students.

Risks:

There appear to be very few risks for either you or your students participating in this study. The greatest discomfort for you may be related to implementing a new procedure in the classroom. To reduce discomfort, I and/or other trained graduate students will provide training, materials, and will be available to answer any questions you may have. Your students should not experience any discomfort from the implementation of the recommended intervention.

Will this information be kept confidential?

Your name and behavior information will be kept confidential. To protect ~~your~~ and the student's privacy, you will be assigned a number. This number will be placed on all paper work. At no time will any paperwork contain your name. Please note that these records will be held by a state entity and therefore are subject to disclosure if required by law.

Who do I contact with research questions? If you should have any questions about this research project, please feel free to contact Jamie Pasqua, B.A. at 985-373-0643 or Dr. Brad A. ~~Dufrene~~ at 601-266-5256. If you have any questions regarding your rights as a research participant, please feel free to contact the USM Institutional Review Board at 601-255-5509.

What if I do not want to participate?

Please understand that your participation is voluntary, your refusal to participate will involve no penalty or loss of benefits to which you are otherwise entitled, and you may discontinue your participation at any time without penalty or loss of benefits.

What if I DO want to participate? If you would like to participate, please sign the bottom of this sheet. You may keep the second copy for your records.

Participant Signature

Date

Investigator Signature

Date

APPENDIX B – IRB APPROVAL LETTER

INSTITUTIONAL REVIEW BOARD

118 College Drive #5147 | Hattiesburg, MS 39406-0001

Phone: 601.266.5997 | Fax: 601.266.4377 | www.usm.edu/research/institutional.review.board

NOTICE OF COMMITTEE ACTION

The project has been reviewed by The University of Southern Mississippi Institutional Review Board in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services (45 CFR Part 46), and university guidelines to ensure adherence to the following criteria:

- The risks to subjects are minimized.
- The risks to subjects are reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered regarding risks to subjects must be reported immediately, but not later than 10 days following the event. This should be reported to the IRB Office via the "Adverse Effect Report Form".
- If approved, the maximum period of approval is limited to twelve months.
Projects that exceed this period must submit an application for renewal or continuation.

PROTOCOL NUMBER: 15090404

PROJECT TITLE: The Effects of an Independent Group Contingency: "Myster Student" on Disruptive Behavior in Preschool Classrooms

PROJECT TYPE: New Project

RESEARCHER(S): Jamie Pasqua

COLLEGE/DIVISION: College of Education and Psychology

DEPARTMENT: Psychology

FUNDING AGENCY/SPONSOR: N/A

IRB COMMITTEE ACTION: Expedited Review Approval

PERIOD OF APPROVAL: 10/13/2015 to 10/12/2016

Lawrence A. Hosman, Ph.D.

Institutional Review Board

APPENDIX C – CLASS-WIDE DAILY BEHAVIOR RATING

Class-Wide Direct Behavior Rating Form

Completed by: _____ Date: _____ Target Activity: _____

Instructions: Rate the following behaviors of your class on a scale of 1-10 as a whole for the target activity.

1. The children kept their hands and feet to themselves.

Circle the degree to which the children engaged in the behavior.

1	2	3	4	5	6	7	8	9	10
Never					Occasionally				Always

2. The children were actively involved in the carpet time activity.

Circle the degree to which the children engaged in the behavior.

1	2	3	4	5	6	7	8	9	10
Never					Occasionally				Always

3. The children waited to be called on or given permission by the teacher before talking.

Circle the degree to which the children engaged in the behavior.

1	2	3	4	5	6	7	8	9	10
Never					Occasionally				Always

4. The children refrained from playing with objects unrelated to the ongoing activity during carpet time.

Circle the degree to which the children engaged in the behavior.

1	2	3	4	5	6	7	8	9	10
Never					Occasionally				Always

APPENDIX D - BEHAVIOR INTERVENTION RATING SCALE

BEHAVIOR INTERVENTION RATING SCALE

Please respond to each of the following statements thinking about the intervention you implemented (i.e., Mystery Student). Please then circle the number associated with your response. Be sure to answer all statements.

	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
This was an acceptable intervention for the students' problem behavior(s).	1	2	3	4	5	6
Most teachers would find this intervention appropriate for behavior problems in addition to the <u>one(s)</u> described.	1	2	3	4	5	6
The intervention proved effective in changing the students' problem behavior(s).	1	2	3	4	5	6
I would suggest the use of this intervention to other teachers.	1	2	3	4	5	6
The students' behavior problem(s) were severe enough to warrant use of this intervention.	1	2	3	4	5	6
Most teachers would find this intervention suitable for the behavior problem(s) described.	1	2	3	4	5	6
I would be willing to use this in the classroom setting again.	1	2	3	4	5	6
The intervention would <i>not</i> result in negative side effects for students.	1	2	3	4	5	6
The intervention would be appropriate intervention for a variety of students.	1	2	3	4	5	6
The intervention is consistent with those I have used I have used in classroom settings.	1	2	3	4	5	6
The intervention was a fair way to handle the students' problem behavior(s).	1	2	3	4	5	6
The intervention is reasonable for the behavior problem(s) described.	1	2	3	4	5	6
I like the procedures used in the intervention.	1	2	3	4	5	6

The intervention was a good way to handle these students' behavior problem(s).	1	2	3	4	5	6
Overall, the intervention was beneficial for the students.	1	2	3	4	5	6
The intervention quickly improved the students' behavior.	1	2	3	4	5	6
The intervention will produce a lasting improvement in the students' behavior.	1	2	3	4	5	6
The intervention improved the students' behavior to the point that it is not noticeably deviate from other students' behavior.	1	2	3	4	5	6
Soon after using the intervention, the teacher noticed a positive change in the problem behavior.	1	2	3	4	5	6
The students' behavior will remain at an improved level even after the intervention is discontinued.	1	2	3	4	5	6
Using the intervention should not only improve the students' behavior in the classroom, but also in other settings (e.g., other classrooms, home).	1	2	3	4	5	6
When comparing these students with well-behaved peers before and after the use of the intervention, the students' and the peer's behaviors are more alike after using the intervention.	1	2	3	4	5	6
The intervention produced enough improvement in the students' behavior so the behavior no longer is a problem in the classroom.	1	2	3	4	5	6
Other behaviors related to the problem behavior(s) were also improved by the intervention.	1	2	3	4	5	6

Adapted from Elliott, S., & Von Brock ~~Treuting~~, M. (1991). The behavior intervention rating scale: Development and validation of a pretreatment

APPENDIX E - TEACHER DATA SHEET

Completed by: _____

Date: _____

Target Activity: _____

Instructions: When prompted by the ~~MotivAider~~ every 1.5 minutes, look up at the Mystery Students and mark a + (for appropriate behavior) or a - (for disruptive behavior).

Mystery Student 1: _____

1	2	3	4	5	6	7	8	9	10

Mystery Student 2: _____

1	2	3	4	5	6	7	8	9	10

Disruptive Behaviors

- **Off-task behavior:** student's attention is directed away the assignment or instructing teacher
- **Out-of-area:** the student has one or more body parts off of the designated rug or is standing up without teacher permission
- **Inappropriate vocalizations:** verbalization made without teacher permission such as speaking, yelling, humming, singing, and/or whispering
- **Aggression:** making contact with another person's body in a hitting, kicking, pinching, or biting manner with hands, feet or mouth.
- **Playing with Objects:** Manipulating any object without teacher permission or that is not related to the task.

Appropriately Engaged

- **Active Engagement:** student is involved in or attending to (e.g. looking at or writing on) independent seatwork/carpet time, teacher instruction, designated classroom activities, and/or engaging in task related (permissible) vocalizations with teachers and/or peers.
- **Passive Engagement** (e.g., listening to the teacher, reading silently, looking at instructional materials).

APPENDIX F – DATA COLLECTION SHEET FOR DIRECT OBSERVATION

OBSERVATION SHEET

Teacher name: _____ Date: _____ Observer name: _____ Phase: _____

Interval	1.1	1.2	1.3	1.4	1.5	1.6	2.1	2.2	2.3	2.4	2.5	2.6
	AEB	AEB	AEB	AEB	AEB	AEB	AEB	AEB	AEB	AEB	AEB	AEB
	DB	DB	DB	DB	DB	DB	DB	DB	DB	DB	DB	DB
Interval	3.1	3.2	3.3	3.4	3.5	3.6	4.1	4.2	4.3	4.4	4.5	4.6
	AEB	AEB	AEB	AEB	AEB	AEB	AEB	AEB	AEB	AEB	AEB	AEB
	DB	DB	DB	DB	DB	DB	DB	DB	DB	DB	DB	DB
Interval	5.1	5.2	5.3	5.4	5.5	5.6	6.1	6.2	6.3	6.4	6.5	6.6
	AEB	AEB	AEB	AEB	AEB	AEB	AEB	AEB	AEB	AEB	AEB	AEB
	DB	DB	DB	DB	DB	DB	DB	DB	DB	DB	DB	DB
Interval	7.1	7.2	7.3	7.4	7.5	7.6	8.1	8.2	8.3	8.4	8.5	8.6
	AEB	AEB	AEB	AEB	AEB	AEB	AEB	AEB	AEB	AEB	AEB	AEB
	DB	DB	DB	DB	DB	DB	DB	DB	DB	DB	DB	DB
Interval	9.1	9.2	9.3	9.4	9.5	9.6	10.1	10.2	10.3	10.4	10.5	10.6
	AEB	AEB	AEB	AEB	AEB	AEB	AEB	AEB	AEB	AEB	AEB	AEB
	DB	DB	DB	DB	DB	DB	DB	DB	DB	DB	DB	DB
Interval	11.1	11.2	11.3	11.4	11.5	11.6	12.1	12.2	12.3	12.4	12.5	12.6
	AEB	AEB	AEB	AEB	AEB	AEB	AEB	AEB	AEB	AEB	AEB	AEB
	DB	DB	DB	DB	DB	DB	DB	DB	DB	DB	DB	DB
Interval	13.1	13.2	13.3	13.4	13.5	13.6	14.1	14.2	14.3	14.4	14.5	14.6
	AEB	AEB	AEB	AEB	AEB	AEB	AEB	AEB	AEB	AEB	AEB	AEB
	DB	DB	DB	DB	DB	DB	DB	DB	DB	DB	DB	DB
Interval	15.1	15.2	15.3	15.4	15.5	15.6	16.1	16.2	16.3	16.4	16.5	16.6
	AEB	AEB	AEB	AEB	AEB	AEB	AEB	AEB	AEB	AEB	AEB	AEB
	DB	DB	DB	DB	DB	DB	DB	DB	DB	DB	DB	DB
Interval	17.1	17.2	17.3	17.4	17.5	17.6	18.1	18.2	18.3	18.4	18.5	18.6
	AEB	AEB	AEB	AEB	AEB	AEB	AEB	AEB	AEB	AEB	AEB	AEB
	DB	DB	DB	DB	DB	DB	DB	DB	DB	DB	DB	DB
Interval	19.1	19.2	19.3	19.4	19.5	19.6	20.1	20.2	20.3	20.4	20.5	20.6
	AEB	AEB	AEB	AEB	AEB	AEB	AEB	AEB	AEB	AEB	AEB	AEB
	DB	DB	DB	DB	DB	DB	DB	DB	DB	DB	DB	DB

% DB	
% AEB	

Disruptive Behaviors

- **Out-of-area:** the student has one or more body parts off of the designated rug or is standing up without teacher permission
- **Inappropriate vocalizations:** verbalization made without teacher permission such as speaking, yelling, humming, singing, and/or whispering
- **Aggression:** making contact with another person's body in a hitting, kicking, pinching, or biting manner with hands, feet or mouth.
- **Playing with Objects:** Manipulating any object without teacher permission or that is not related to the task.

Appropriately Engaged

- **Active Engagement:** student is involved in or attending to (e.g. looking at or writing on) independent seatwork/carpet time, teacher instruction, designated classroom activities, and/or engaging in task related (permissible) vocalizations with teachers and/or peers.
- **Passive Engagement** (e.g., listening to the teacher, reading silently, looking at instructional materials).

IOA: _____

APPENDIX G – PROCEDURAL INTEGRITY CHECKLIST FOR TEACHER DBR TRAINING

Teacher Name: _____ Date: _____ Observer: _____

Procedural Integrity Steps	
The trainer explains what DBR is and why it is useful.	✓ X N/A
The trainer reviews the steps for completing the DBR form with the teacher.	✓ X N/A
The trainer explains the operational definitions of the target behaviors.	✓ X N/A
Steps completed	/
Percentage of Steps completed	

APPENDIX H - SCRIPTED INSTRUCTION SHEET FOR MYSTERY STUDENT IMPLEMENTATION

1) Introduction of the "Mystery Student" Game

"Alright class, today we are going to play a game! The game is called, Mystery Student. This is how it works; everyone's name is in my special bag and I am going to pick two names out of this bag. The two names I pick will be my Mystery Students! Anyone of you can be a Mystery Student, however, I can't tell you who the Mystery Students are. "

2) State game parameter and describe and demonstrate behavioral expectations.

- "Both Mystery Students' behaviors will be closely watched closely during _____(activity) to make sure they (EXPLAIN & DEMONSTRATE BEHAVIORS).

3) Explain reward procedures.

- "Both of my Mystery Students will have a chance to pick a reward from the prize box but only if they follow those rules/expectations."

4) Throughout the intervention phase, frequently (2-4 times) remind the class of the ongoing game.

- "Remember class, I still have two Mystery Students who are being watched for good behavior."

5) End the game and inform the children that it is time to reveal the Mystery Students.

- "Okay class it is time to reveal the Mystery Student."

6) If criterion is met, reveal Mystery Student(s), give them reward(s), and announce the tomorrow's game.

- "Great job _____ and _____, you (both) get to pick a prize because you were the Mystery Students and you both exhibited good behavior like, (give behavior examples)"
- "Tomorrow, everyone will have another chance at being a Mystery Student but remember, everyone should try their best to follow the expectations."

7) If criterion not met, do not reveal Mystery Student(s), explain why reward cannot be given and remind class they will have a chance tomorrow.

- "Sorry class, I can't tell you: (1) who the Mystery Students are because they were not observed to (explain target behaviors). (2) Who the other Mystery Student because they were not observed to (explain target behaviors)."
- "Tomorrow, everyone will have another chance at being a Mystery Student but remember, everyone should try their best to follow the expectations"

APPENDIX I - PROCEDURAL INTEGRITY CHECKLIST FOR TEACHER INTERVENTION TRAINING

Teacher Name: _____ Date: _____ Phase: _____ Observer: _____

Procedural Integrity Steps		
The trainer explains the two different roles of teacher involvement	Y	N
The trainer reviews the teacher script with the teachers	Y	N
The trainer presents and explains the materials needed for intervention implementation including <ul style="list-style-type: none"> • Prize Box • MotivAider® • Data Sheet • Bag of student names 	Y	N
The trainer explains the operational definitions of AEB.	Y	N
The trainer explains and demonstrates how to use the MotivAider®	Y	N
The trainer explains and demonstrates how to complete the data sheet.	Y	N
The trainer models the intervention script for the teachers	Y	N
The teacher role-plays the intervention with the trainer, allowing the teacher to practice implementing the steps of the game.	Y	N
The trainer provides appropriate feedback contingent upon teachers' mistakes during the role-play implementation session.	Y	N
The trainer insures the teachers have a full understanding of the intervention components.	Y	N
Steps completed	/	
Percentage of Steps completed		

APPENDIX J - TREATMENT INTEGRITY CHECKLIST

Teacher Name: _____ Date: _____ Observer: _____

Intervention Steps	
1. MotivAider® device is turned on and programmed to vibrate on a fixed interval.	✓ X N/A
2. Teacher introduces the game and randomly selects names out of bag.	✓ X N/A
3. Game rules are explained and behavioral expectations are described and modeled.	✓ X N/A
4. Teacher frequently (2-5 times) reminds class of the ongoing game.	✓ X N/A
5. Teacher completes the data collection sheet provided by the researcher.	✓ X N/A
6. Teacher announces when the game is over and makes reward decision with assistant teacher.	✓ X N/A
7. If criterion is met, reveals Mystery Student(s), and explains reasons why the Mystery Student(s) earned reward.	✓ X N/A
8. If criterion is met, provides reward(s).	✓ X N/A
9. If criterion not met, does not reveal Mystery Student(s), and explains why reward cannot be given.	✓ X N/A
10. Reminds class of tomorrow's game.	✓ X N/A
11. Teacher completes DBR.	✓ X N/A
Steps completed	/
Percentage of Steps completed	
Teacher Require Retraining?	Y N

APPENDIX K - PROCEDURAL INTEGRITY CHECKLIST FOR BASELINE AND WITHDRAWAL PHASES

Teacher Name: _____ Date: _____ Observer: _____

Procedural Integrity Steps	
The observer sits in an unobtrusive location in the classroom.	✓ X N/A
The observer reminds teacher to use typical behavior management strategies and to not implement any components of the intervention.	✓ X N/A
The observer does not provide any feedback to teachers.	✓ X N/A
Steps completed	/
Percentage of Steps completed

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