Improving Individual and Group-Wide Behaviors in Head Start Classrooms with Mystery Student Intervention: Assessment of Effectiveness, Generalization, and Maintenance

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IMPROVING INDIVIDUAL AND GROUP-WIDE BEHAVIORS IN HEAD START CLASSROOMS WITH MYSTERY STUDENT INTERVENTION: ASSESSMENT OF EFFECTIVENESS, GENERALIZATION, AND MAINTENANCE

by

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A Dissertation
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for the Degree of Doctor of Philosophy

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ABSTRACT

The current study investigated the effects Mystery Student intervention on improving individual and group behaviors in Head Start classrooms. Mystery Student Intervention is a randomized independent group contingency and has only been investigated in one previous study (Pasqua, 2016). A multiple baseline design across three Head Start classrooms was employed to determine the effectiveness of Mystery Student Intervention on decreasing aggregate class and individual child disruptive behaviors. Of further interest was the extent to which the effects of Mystery Student Intervention generalized to other settings and results maintained following its removal. Results indicated that Mystery Student Intervention was effective at decreasing class-wide and target student disruptive behavior. Furthermore, the positive effects of MSI generalized to other setting in all three classrooms. Teachers rated the Mystery Study Intervention as acceptable. Results of this study expand the literature on group contingencies in preschool settings. Results also provide early childcare providers with a developmentally appropriate group contingency program from preschool-aged children.
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CHAPTER I - INTRODUCTION

Over the last decade, there has been substantial growth in public interest in early childhood education for economically disadvantaged children to improve school readiness. As a result, there has been a corresponding increase in attendance rates within publicly-funded preschool programs (Barnett, Carolan, Squires, Brown, & Horowitz, 2015; Snyder and Dillow, 2015). A substantial amount of evidence suggests economically disadvantaged children are at a higher risk for deficits in the domains of emotional and behavioral development, academic achievement, educational attainment, and language development (Aber, Morris, & Raver, 2012; Dearing, McCartney, & Taylor, 2009; Feil, Small, Forness, & Serna, 2005; Schmit, S., Mathews, H., Smith, S. & Robbins, 2015; Yoshikawa, Gassman-Pines, Morris, Gennetian, & Godfrey, 2010).

Opportune, economically disadvantaged children who attend preschool, may be at a decreased risk for untoward developmental outcomes. In fact, preschool attendance has been shown to be beneficial for promoting school readiness, language acquisition, and social-emotional development in young children (Entwisle, 1995; Gormley, Phillips, Newmark, Welti, & Adelstein, 2011; Lee, Zhai, Brooks-Gunn, Han & Waldfogel, 2014; Schweinhart, 1994; Weiland & Yoshikawa, 2014).

Although preschool attendance is largely a beneficial experience, it has been estimated that upwards of 30% of preschool children experience emotional and/or behavioral difficulties (EBD; Barnett, Carolan, Squires, Clarke Brown, & Horowitz, 2015; Poulou, 2013). The children that display the highest prevalence rates of EBDs are those who are economically disadvantaged (Campbell, 2002; Egger & Angold, 2006; Feil, et al., 2005; Lavigne, LeBailly, Hopkins, Gouze, & Binns, 2009; Wichstrom, Berg-
Nielsen. Egger, Angold, Solheim, & Sveen, 2012). Children with early onset EBDs experience consequences that are both immediate and long-standing. In the short term, preschool children who engage in challenging behaviors tend to, receive inadequate academic instruction (Snell, Berlin, Vorhees, Stanton-Chapman, & Hadden, 2012), experience negative teacher-child relationships (Qi, Kaiser, & Milan, 2006), and are expelled at rates that are almost three times more than that of K-12 students (Gilliam, 2005). High costs to society, high risks for future school failure or dropout, future juvenile delinquency, peer rejection, and an increased chance for the development of mental health disorders during adolescence and adulthood, are some of the long term consequences that have been associated with early onset EBDs (Campbell, 1991; Dunlap, Strain, & Fox, 2006; Egeland, Kalkoske, Gottesman, & Erickson, 1990; Farrington, 2005; Kazdin, 1985; Larmar & Gatfield, 2006; Rose, Rose, & Feldman, 1989; Webster-Stratton, Reil, & Stoolmiller, 2008; Whitted, 2011).

Intervention Frameworks in Preschool Settings

In light of the concerns previously discussed, there has been an increased focus on the identification, investigation, and implementation of effective practices in early childhood education settings to address the needs of at risk children (Conroy, Dunlap, Clarke, & Alter, 2005; Individuals with Disabilities Education Act, Part B; U.S. Department of Health and Human Services, Administration on Children and Families, Office of Research and Evaluation 2010–2015; Worcester, Nesman, Raffaele Mendez, & Keller, 2008). One practice that policy makers, researchers, and school-based professionals strongly encourage is the delivery of mental health services that are multi-focused and promote a continuum of services and supports.
Often termed as “multi-tiered intervention frameworks” this continuum of services have been embedded into models including: The “Pyramid Model for Promoting the Social Emotional Competence of Infants and Young Children” developed by Center on the Social and Emotional Foundations for Early Learning (CSEFEL) and Technical Assistance Center on Social Emotional Intervention (TACSEI); and 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). All of these multi-tiered frameworks aim to prevent, support and address the social-emotional, behavioral, and academic needs of young children. The remainder of this document will refer to these frameworks as PW-PBIS and PBIS. The implementation of PW-PBIS within early childhood settings is a growing trend in both research and practice and is proving to result in similar positive outcomes (Benedict, Horner, & Squires, 2007; Dunlap & Fox, 2009; Fox & Little, 2001; Stanton-Chapman, Walker, Voorhees, & Snell, 2016; Stormont, Lewis, & Beckner, 2005). Core elements of PW-PBIS frameworks include; 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 of students who require more intensive intervention efforts, and the primary goal of preventing challenging behaviors and increasing children’s social, emotional, and behavioral competencies (Benedict, Horner, & Squires, 2007; Dunlap & Fox, 2009; Fox & Little, 2001; Stormont, Lewis, & Beckner, 2005).

The continuum of supports exists within three tiers, each of which designate differing levels of intervention intensity efforts (Fox, Carta, Strain, Dunlap, & Hemmeter, 2010; Horner, Sugai, & Anderson, 2010). At the universal level, or Tier I, the focus is on
primary prevention efforts at the program-wide, and sometimes at the class-wide, level and is designed to eliminate factors that encourage or maintain inappropriate student behavior, while simultaneously including approaches (e.g., modeling and teaching prosocial behaviors) that encourage the engagement of appropriate behaviors. The secondary level, or Tier II, includes strategies that are provided to children who are at an elevated threat for poor school performance and require more intensive supports in addition to those provided in Tier I. Tier II interventions may include, but are not limited to, strategies such as token economies, social skills training, or check-in/check-out (CICO; LaBrot, Dufrene, Radley, & Pasqua, 2016). The tertiary level, Tier III, is designed for use with only those children who are at a considerable risk for later problems, as evidenced by a lack of response to Tier I and II efforts, and typically include intensive, individualized assessments, and interventions. For example, a child may receive a functional behavior assessment that is used to inform an individualized behavior intervention program (e.g., Dufrene, Doggett, Henington, & Watson, 2007). Although research is emerging on the use of PW-PBIS in preschool settings, specific analyses of interventions within each tier is limited. To decrease the gaps in the literature, researchers should begin investigating interventions that are typically used in elementary school with PBIS systems, with preschool-aged populations. Group contingencies have been particularly useful interventions with school-aged children at the Tier I and Tier II levels (Molloy, Moore, Trail, Van Epps, & Hopfer, 2013). The use of group contingencies in preschool settings may serve as a potential solution to preschool teachers who are experiencing high rates of disruptive behaviors in their classrooms. The following
section will review the three different types of group contingencies and the literature base surrounding the use of group contingencies for improving classroom behaviors.

Group Contingencies

There are three forms of group contingencies including; independent, interdependent, and dependent. In independent group contingencies there is a common performance criterion (e.g., score 80% or higher on an assignment), but only those individuals who meet the criterion (Cooper, Heron, & Heward, 2007; Litow & Pumroy, 1975) is can collect the reward. In interdependent group contingencies, the delivery of reinforcement is contingent on the behavior of the entire group (Litow & Pomroy, 1975). That is, all members of the group receive reinforcement if the group’s average performance meets a specific criterion (Gresham & Gresham, 1982; Litow & Pumroy, 1975). In dependent group contingencies, access to reinforcement for the whole group is dependent on the behaviors of a selected individual or a sub group of individuals (Gresham & Gresham, 1982; Litow & Pumroy, 1975). In other words, members of a group can only access reinforcement if the preselected student(s) meets the criterion. Research that has been conducted on the relative effectiveness of each form has unable to establish a supremacy between the three forms of group contingencies (Gresham & Gresham, 1982; Little, Akin-Little, & O’Neill, 2015; Maggin, Johnson, Chafouleas, Ruberto & Berggren, 2012; Theodore, Bray, & Kehle, 2004). Nonetheless, numerous benefits have been related to 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 socially accepted 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). Recently, there has been an emerging literature base surrounding variations of group contingencies, which will be discussed in the following section.

**Group Contingencies with Randomized Components**

All forms of group contingencies require individuals to meet a criterion in order to earn a reward; however, this can become problematic when individuals realize they have not met the criterion or when they know it is impossible to meet the criterion before the reinforcement period concludes. When students recognize they have not, or cannot, meet the criterion for earning the reinforcing consequence, they also realize that there is no longer a reinforcing contingency in place for engaging in appropriate behaviors. This becomes especially problematic when challenging behaviors have resulted in reinforcing consequences in the past because it increases the likelihood for the group to engage in problematic behavior (Brantley & Webster, 1993). Additionally, students being aware of the reward they could earn for meeting a criterion could pose further problems because the reward may not be valuable for every member participating in the group contingency. A solution that some researchers have proposed, is the randomization of group contingency components (Kowalewicz & Coffee, 2013; Popkin & Skinner, 2003).

Components that have been randomized in previous research include: criteria for earning reinforcement (Popkin & Skinner, 2003), the rewards (Kowalewicz & Coffee, 2013; Theodore et al., 2004), target behaviors being observed (Kelshaw-Levering, Sterling-Turner, Henry, & Skinner, 2000), and the form of group contingency (i.e. interdependent and dependent; Coogan, Kehle, Bray, & Chafouleas 2007; Hawken
Musti-Rao, Hughes, Berry, & McGuire, 2009). Others have simultaneously randomized multiple components such as criterion, desired behavior, and the group contingency form (Coogan et al., 2007; McKissick & Hawkins, 2010; Theodore et al., 2004). The majority of studies that investigated group contingencies with randomized components are those that implement an interdependent type (Hawkins et al., 2009; Kelshaw-Levering et al., 2000; McKissick & Hawkins, 2010; Murphy et al., 2007), and a smaller portion of such studies have investigated randomized dependent group contingencies (Lynch, Theodore, Bray, Kehle, 2009; Theodore et al., 2001; Williamson, Campbell-Whatley, & Lo, 2009). Furthermore, an even smaller number of studies have employed an independent group contingency with randomized components (Bushell et al., 1968; Maus, 2006). Moreover, studies that have investigated the implementation of randomized group contingencies with preschool-aged children are exclusive to those randomizing the reward component. For those preschool studies that randomized the rewards component, two included an independent group contingency type (Filcheck, 2004; Maus, 2006), three with an interdependent form (Ling & Barnett, 2013; Murphy et al., 2007), and one that involved a randomized dependent group contingency (Reitman Murphy, Hupp, & O’Callaghan, 2004).

Overall, the three types of group contingency programs have been used to reduce disruptive behavior and/or improve appropriate behaviors (Christ & Christ, 2006; Graubard, 1969; Popkin & Skinner, 2003; Wilson & Williams, 1973). Furthermore, an emerging literature-base suggests that randomizing components of group-contingencies may increase their utility (Brantley & Webster, 1993; Kelshaw-Levering, et al., 2000; Lynch et al., 2009; Theodore et al., 2001; Williamson et al., 2009). Although the use of
group contingencies (with and without randomized components) has substantial evidence to support their use, the published literature on studies conducted in early education settings or with or preschool-aged children is limited (Filcheck, 2004; Hoag, 2007; Hunt, 2013; Kohler, Hoyson, Davis, Donina, & Rapp 1995; Ling & Barnett, 2013; Maus, 2006; Pasqua, Dart, Radley, 2016; Pokorski, Barton, & Ledford, 2016; Swiezy, Matson, & Box, 1992; Reitman et al., 2004). The following sections will discuss the existing literature on group contingencies in preschool settings.

**Group Contingencies in Preschool Settings**

A recent publication by Pokorski and colleagues (2016) completed an extensive literature search for group contingency programs implemented with early childhood education populations. A total of 10 studies (7 peer-reviewed publications and 3 dissertations) that were published between 1971 and 2013 were then synthesized and analyzed by Pokorski and colleagues (2016). These researchers’ primary goal was to assess the value of using group contingencies with preschool-aged children (Pokorski et al., 2016).

The initial analysis found that six of the ten studies examined the implementation of interdependent type of group contingencies, three of the ten studies looked at the application of independent group contingencies, and one study investigated a dependent contingency rigor (Pokorski et al., 2016). A total of 28 variables were then extracted and analyzed to assess the following areas: study descriptors (e.g., participants, settings, implementers), intervention traits, topography and measurement systems of dependent variables, and components (e.g., group contingency type, pre-intervention participant training, use of visual components), reward form and classification (e.g., tangible, social,
or activity), reward choice scheme, results, and study rigor (Pokorski et al., 2016). To assess the quality and the degree of internal and external validity (i.e., study rigor) for these studies Pokorski and colleagues (2016) examined measurements of IOA, procedural fidelity, generalization, and social validity. Study quality was also assessed by using single case design standards developed by Kratochwill and colleagues (2013). Moreover, Horner and colleagues’ (2005) single case quality indicators were used to judge overall study quality (Pokorski et al., 2016). Finally, outcomes were examined by visual analysis (e.g., trend, level and variability) and the application of Reichow’s success estimate ratio for single case research (i.e., successful demonstrations divided by attempted demonstrations; Pokorski et al., 2016; Reichow, 2010).

After synthesizing and analyzing the information obtained, the authors decided that the literature, “generally displayed low to moderate quality (Pokorski et al., 2016).” This analysis of study quality was based on several factors including how all ten studies obtained IOA data, nine of which were above 80%; however, only two studies (Hunt, 2013, Ling & Barnett, 2013) reported that IOA was collected dependably across each condition and participant. Additionally, only six of the ten studies obtained measures of social validity, which decreased the overall quality ratings (Pokorski et al., 2016) of the existing studies looking at group contingencies with preschool-aged children. Furthermore, the authors concluded that, overall, the synthesized literature were not up to the contemporary standards for procedural fidelity (Horner et al., 2005) particularly because there were only three (Filcheck, 2004; Hunt, 2013; Ling & Barnett, 2013) of the ten studies that collected fidelity data for at least 20% of sessions. Finally, only three 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 (Pokorski et al., 2016).

Based on the results of their research synthesis, Pokorski and colleagues concluded that the use of group contingencies may act as a viable option to improve behaviors in preschool settings, which is representative of the findings in other reviews of group contingencies for alternative populations (Little et al., 2015; Maggin et al., 2012); however, the authors also concluded that there is still a need for more thorough research on the use of group contingencies with preschoolers to validate their conclusions.

Because the focus of the current study will be on the implementation of an independent group contingency, the remainder of this section will review the literature base surrounding the implementation of independent group contingencies in early education settings.

**Independent Group Contingencies in Preschool Settings.** Filcheck, et al., 2004, examined the efficacy of an independent group contingency called the “Level System” and compared it to a parent-training program (i.e., Parent–Child Interaction Therapy; PCIT) for managing problem behaviors in a preschool classroom that was predominately comprised of female (63%) and/or Caucasian (88.2%) children. These researchers utilized an ABAC treatment comparison design with a 4.5-month follow-up phase to compare the effects of a class-wide program (i.e., Level System, Phase B) to the effects of a 2-phased [e.g., Child-Directed Interaction (CDI) and Parent-Directed Interaction (PDI)] PCIT program. The level system is an intervention package that employs several behavior management procedures including, a token economy, a response cost, stimulating rewards, and strategic attention (Filcheck et al., 2004). PCIT typically
includes teaching parents to attend to children’s appropriate behavior (i.e., differential reinforcement), set limits, and deliver instructions in an effective manner (Hembree-Kigin & McNeil, 1995); however, the authors of the current study modified the program so as to better align with the behaviors and environments in which teachers work (Fillcheck et al., 2004).

Throughout the baseline phase, high and variable rates of class-wide levels of inappropriate behaviors were observed. After the implementation of the level system intervention, levels of inappropriate behaviors decreased, however; the variability only stabilized to a small degree compared to that of the level system intervention. When CDI and PDI programs were implemented in the 4th and 5th phases, levels of inappropriate behavior immediately decreased and stabilized. Finally, when the follow-up observation took place, levels of inappropriate behaviors were similar to levels seen in the previous two phases. In the 4.5-month follow-up phase, teachers decided to re-implement the Level System and levels of inappropriate behavior were lower than the levels in any other phase. In total, the degree of inappropriate behavior observed in the classroom declined with the use of the Level System; however, a greater reduction in inappropriate behavior was observed when CDI and PDI were implemented (Filcheck et al., 2004).

Although the results from this study provides preliminary evidence for the use of an independent group contingency with preschoolers, interpretation should be approached with caution due to methodological issues. In particular, the design did not include withdrawal and re-implementation of the Level System; as a result, a functional relationship between the Level System and reductions in children’s inappropriate behavior could not be established. Additionally, the CDI, and follow-up phases only
included 4 and 2 data points, respectively, and as a result, the stability of those findings is of concern. Finally, treatment integrity for PCIT implementation was not assessed and levels of treatment integrity for the Level System were low (i.e., treatment integrity fell below 80% seven times), which undermines internal validity (Filcheck et al., 2004).

In an early study on the effectiveness of group contingencies on preschooler’s behavior, Herman and Tramontana (1971) sought to improve the rest-time behaviors of a Head Start classroom with 19 children. Specifically, the authors tested the differential effects of a group-based token economy system versus an individual based token economy system on inappropriate rest-period behavior. Specifically, the children in the class were separated into one of two token economy systems, some children were exposed to a group-based token economy system and the others to an individual-based based token economy system. The authors also investigated whether the addition of an instruction delivery component influenced the effects of the individual and group-based token economies on inappropriate rest-time behaviors. Herman and Tramontana (1971) presented their study in three separate phases, with different conditions embedded within each. Three conditions were included within the first phase including; two baseline phases, one that measured base rates of inappropriate rest-period behavior in the natural classroom environment, and the other in an experimental room (vacant classroom within the same school). The third condition in phase I was the initiation of reinforcement conditions (group and individual-based), within the experimental classroom setting. Phase II included four separate experimental conditions, all of which were conducted in the experimental room. The first condition in the second phase was analogous to that of the treatment condition in phase I, with an additional antecedent component. This
antecedent manipulation involved the delivery of intervention parameters and the behavior expectations that should be exhibited in order to meet the reward criterion. That is, prior to the intervention period, children (from both intervention groups) were provided with descriptions of the intervention instructions and parameters, the definitions of the appropriate behaviors which children should engage in so as to meet the reward criteria. The second condition imitated the baseline condition in phase I. The third condition involved the removal of both token economy systems and the inclusion of a pre-correction component that identified and defined the behavior expectations. Finally, the fourth and final condition in the third phase was identical to the first condition in this phase (i.e., individual and group token economies combined with instruction component).

The goal of Phase III was to examine if the intervention produced behavior changes in generalized settings (i.e., regular classroom environment; Herman & Tramontana, 1971). Therefore, all three conditions in the final phase were all conducted within the natural classroom environment and included a baseline (identical to the first condition in phase I), a treatment phase that consisted of the token economy systems with the instructional component, and a final return to baseline condition.

Results of Herman and Tramontana’s (1971) study suggest that the use of individual and group-based contingencies produced similar improvements in behaviors across two separate groups of children; however, slightly lower levels of inappropriate behaviors were observed with the children who were exposed to the group-based contingency intervention compared to those exposed to the individual-based contingency. Across all phases of the study, providing the children with instructions regarding the token economy and descriptions of the associated behavior expectations resulted in a
larger reduction of inappropriate rest-time behaviors, regardless of the contingency form (e.g., group versus individual contingency). In regards to the extent of generalization, results suggested that when the group-based and individual-based token economies included the instructional component, and were implemented within the classroom, levels of inappropriate behaviors had an immediate and stable decrease compared to baseline, suggesting the effectiveness of intervention procedures may have generalized into the naturalistic setting.

Although behavior reductions were observed in the treatment condition of Phase III, the removal of intervention components eventually resulted in similar pretreatment levels of inappropriate behaviors, suggesting that behavior improvements do not maintain when the intervention is abruptly removed. In total, Herman and Tramontana’s (1971) study provided preliminary evidence to suggests that group-based contingency programs are, at least, as effective as individual-based programs in reducing the challenging behaviors exhibited by preschool children.

In a more recent study, Maus (2007) utilized an ABAB reversal design to test the effectiveness of an independent group contingency with Mystery Motivators on reducing disruptive behaviors of seven target children diagnosed with PDD-NOS during a large group “Circle-Time” activity. Data on individual behaviors were collected via direct observations and separately graphed into individual panels. Phases included a two-week baseline phase, two-week intervention phase, a two-week return to baseline (i.e., removal of the intervention) and then a final intervention reinstatement phase (Maus, 2007). The intervention procedures included the following: a teacher-provided introduction of the group contingency intervention, the intervention parameters and rules, and a description
of the target behaviors that were to be measured and used to determine whether access to the reward should be granted for each child. Specifically, the occurrence of any of the three target disruptive behaviors was recorded for each child participating in the intervention. Children who exhibited the target behavior for less than 25% of the total intervals observed were identified and allowed access to rewards. The rewards were unknown to the participants for every day the intervention was implemented. Specifically, for those who met the reward criterion, the teacher randomly picked a reward card out of an envelope filled with cards that were labeled with the various tangible rewards.

Intervention effects were evaluated by visually analyzing the changes in mean percentage levels of disruptive behaviors across the separate phases for each participant as well as the calculation of Busk and Serlin’s (1992) “no assumption” effect size. All seven participants demonstrated a reduction in disruptive behaviors that resulted in a large effect size (> .80; Cohen, 1992) between baseline and intervention phases.

Results from this study provide evidence to support the effectiveness of an independent group contingency on reducing levels of disruptive behaviors of 7 children diagnosed with PDD-NOS; however, several limitations with this study diminish confidence in the findings (Maus, 2007). Although the author did obtain a measure of treatment integrity, the method used involved the use of a teacher-completed checklist (who was implementing the intervention); however, no interobserver agreement was obtained, thus limiting the reliability and validity of the resulting integrity data. Furthermore, the author failed to report the average percentage of steps completed by the teacher, so the exact integrity level is unknown. The author also indicated that four of the
seven participants were only able to access reinforcement for the first two intervention periods. This means that more than 50% of the participants did not meet the reward criterion for most intervention sessions; thus, it cannot be said that the intervention components caused behavior improvements. Finally, external validity may be limited because the study only included 7 children diagnosed with PDD-NOS in one Head Start classroom.

Pasqua (2016) implemented an independent group contingency, Mystery Student Intervention (MSI), with three Head Start classrooms. The MSI involved randomized targeted students whose behaviors were observed in order to determine whether or not those target students met a predetermined criterion to earn a reward. Pasqua (2016) conducted this study during two primary academic instruction times, circle-time and center-time. All three classrooms’ disruptive behavior levels immediately decreased when the intervention was implemented and maintained at low levels throughout the implementation phases. Furthermore, levels of class-wide appropriate behavior immediately increased to higher levels, and maintained at higher levels in both intervention phases. Pasqua (2016) provides promising results for a novel independent group contingency intervention in Head Start; however, this study had some limitations and left gaps for future research to address. First, the ABAB design did not include a maintenance phase in which behavioral gains following removal of some or all intervention components were evaluated. Third, no data were collected to determine the extent to which behavioral improvements generalized to other times and activities. Fourth, Pasqua (2016) included aggregate classroom behavior data but did not measure data for individual children. As a result, the extent to which any single child’s behavior
improved is unknown. Pasqua’s (2016) study was in a Head Start program that was implementing a PBIS framework; therefore, measuring behaviors of Tier II children (i.e., children needing more intensive services or those identified by teachers as most disruptive) would have been valuable for the literature. Finally, Pasqua (2016) was the first study to test the MSI; and as a result, additional demonstrations of intervention effectiveness are needed to strengthen the external validity of the findings.

Research Questions

1. Will the Mystery Student Intervention decrease class-wide levels of disruptive behavior in three Head Start classrooms?

2. Will the Mystery Student Intervention increase class-wide appropriately engaged behaviors in three Head Start classrooms?

3. Will the Mystery Student Intervention decrease disruptive behavior of three target students (i.e., the student selected by the teacher as demonstrating more disruptive behaviors compared to peers)?

4. Will the Mystery Student Intervention increase three target students’ engagement in appropriately engaged behavior?

5. Do teachers rate the Mystery Student Intervention as a socially valid intervention?

6. Do the effects of the Mystery Student Intervention generalize to times and/or activities in which the intervention is not implemented?

7. Do the effects of the Mystery Student Intervention maintain at two-week follow-up when the intervention is no longer implemented?
CHAPTER II – PURPOSE

Overall, research supports the effectiveness of group contingencies on improving appropriate behaviors and reducing challenging behavior (Christ & Christ, 2006; Little, Akin-Little, and Neill 2015; Popkin & Skinner, 2003); however, relatively fewer studies have investigated the use of group contingencies in preschool classrooms. Those studies that have examined group contingencies in preschool settings have been shown to be beneficial for improving disruptive behaviors; however, the research is limited and the existing studies contain methodological flaws. First, existing studies that have employed group contingencies in preschool classrooms have not been able to demonstrate a sufficient number of functional relations between implementation of the independent variable and improvements in dependent variables (e.g., Filcheck, 2004; Ling & Barnett, 2013; Maus, 2006; Murphy et al., 2007; Reitman et al., 2004). Additionally, studies in this area have considerable threats to internal validity (e.g., lack of treatment integrity data or poor intervention implementation; Herman & Tramontana, 1971; Kohler et al., 1995; Ling & Barnett, 2013; Maus, 2006; Murphy et al., 2007; Reitman et al., 2004). As a result, additional research is needed to validate the beneficial effects of group contingencies in preschool classrooms. Nonetheless, group contingencies may be a promising practice in early education and preschool settings, particularly in those settings that serve populations with high rates of at-risk children and employ teachers who are ill equipped to deal with multiple children engaging in challenging behaviors. Moreover, the PBIS literature recommends group contingencies as an intervention embedded within a PBIS system (Molloy, Moore, Trail, Van Epps, & Hopfer, 2013). Independent group contingencies may be the most developmentally appropriate for preschool aged children
because they only require the children to monitor their own behaviors. A recent study on the use of a group contingency in a preschool setting that implemented a PW-PBIS program was Pasqua, 2016. Although the results from Pasqua (2016) were promising, it is the only study to test the randomized, independent group contingency, MSI, in preschool classrooms; thus, additional research is needed to further demonstrate the beneficial effects of the MSI in Head Start classrooms, while accounting for limitations in Pasqua (2016).

Therefore, the purpose of the current study is to further investigate the use of the independent group contingency, MSI, in three Head Start classrooms while addressing limitations from Pasqua (2016). Specifically, this study evaluated maintenance of intervention gains, generalization of intervention gains, and assessed the impact of the intervention on individual children identified as being the most disruptive in their classroom.
CHAPTER III - METHOD

Participants and Settings.

Three lead and three assistant Head Start (HS) teachers and the children in their respective classrooms, participated in this study. Each HS classroom was part of an agency that operates multiple Early Head Start and Head Start centers in several rural counties in a southeastern state. Following verbal and signed consent for participation, teachers were asked to nominate one target student within each classroom (i.e., student displaying disruptive behavior at levels higher than peers). In total, three target students and their classroom peers served as participants in the study. Parent consent (for target student participation) and teacher consent (for classroom participation) were obtained prior to a screen-in observation (See Appendices B & C, Consent Forms).

To ensure that this research project protected the human subjects involved, followed federal regulations, and adhered to ethical standards the methods and all corresponding consent forms were reviewed and approved by a university-based Human Subjects Protection Review Committee (see Appendix A for IRB approval).

Classroom A.

Classroom A’s lead teacher (LT-A) was a 26-year-old African American female, who held a bachelor's degree in Child Development. LT-A reported that she had 3 years of experience teaching preschool aged children. Classroom A’s assistant teacher (AT-A) was a 32-year-old African American female who held a bachelor's degree in early childhood education. AT-A reported that she and had been teaching in Head Start for 3 years. Classroom A qualified for services due to a high level of behavior incident reports submitted by the teachers for several different children during direct instruction time (i.e.,
carpet time). 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.

Classroom B.

Classroom B’s lead teacher (LT-B) was a 44-year-old African American female, who held an associate degree in Child Development. LT-B reported she had 7 years of experience teaching preschool aged children. Classroom B’s assistant teacher (AT-B) was a 29-year-old African American female who held an associate degree in General Studies. AT-B reported she had 3 years of experience teaching young children. LT-B volunteered for participation due to concerns with the classroom’s engagement in elevated levels of disruptive behaviors during direct instruction time (i.e., carpet time).

Classroom C.

Classroom C’s lead teacher (LT-C), was a 30-year-old African American female who held a bachelor’s degree in Early Education. LT-C reported she had 2 years of experience teaching preschool aged children. Classroom C’s assistant teacher (AT-C) was a 26-year-old African American female who held a dual bachelor’s degree in Child Development and Child and Family Studies. AT-C reported that she had two years of experience teaching young children. LT-C volunteered for participation due to concerns with the classroom’s engagement in elevated levels of disruptive behaviors during direct instruction time (i.e., carpet time).
Instruments

*Target Student Direct Behavior Rating (T-DBR).*

Teachers rated the target students’ AEB during the target activity using the T-DBR. The T-DBR is a version of a Direct Behavior Rating (DBR). DBRs are commonly used to measure and quantify perceptions of behaviors (Chafouleas, McDougal, & Riley-Tillman, Panahon, & Hilt, 2005; Christ, Riley-Tillman, and Chafouleas, 2009) for purposes of assessment, intervention monitoring, and communication (Chafouleas, et al., 2009). Researchers in this area suggest that DBRs should be direct, behavior specific, and include a rating component (Chafouleas, et al., 2009; Christ et. al., 2009). The T-DBR used in this study was consistent with these recommendations in that they were direct (i.e., teachers rated the target students’ behavior immediately after they occurred and were completed within the same location the behaviors occurred), behavior specific (i.e., explicitly listed operationally defined behaviors) and included a rating component (i.e., Likert scale used for each behavior). The researcher collaborated with teachers to create an individualized DBR for each child. Desired appropriate behaviors were identified and operationally defined using appropriate replacements for the problem behaviors that resulted in target student nomination. The T-DBR was used for the target student in each class. Teachers in classrooms A and B identified the same four desired behaviors during carpet time for the target students including: keep hands and feet to themselves, participate in carpet time activity, remain in designated area, and refrain from playing with objects unrelated to the ongoing activity. Teachers in classroom C identified; keep hands and feet to themselves, participate in carpet time activity, wait to be called on or given permission before talking, and refrain from playing with objects
unrelated to the ongoing activity as the behaviors for the target student in her class. Each behavior listed on the T-DBR had a rating scale underneath that ranged from 1 (Never occurred) to 10 (Always occurred). An example T-DBR can be seen in Appendix D.

*Class-wide Direct Behavior Rating (C-DBR)*.

The participating teachers were asked to rate aggregate, class-wide AEB during the target activity using the C-DBR. The C-DBR is another version of a Direct Behavior Rating (DBR) and holds the same characteristics; however this version assessed the behaviors of a group of individuals (i.e., aggregate class-wide AEB). Previous research suggests that DBRs can be used to assess the behaviors of a group of individuals (Pasqua, 2016; Riley-Tillman, Methe, & Weegar, 2009). The behaviors that were listed on the C-DBR were specific to each classroom’s referral concern and included teacher-desired appropriate behaviors specific to the target activity. All teachers identified; keep hands and feet to themselves, participate in carpet time activity, wait to be called on or given permission before talking, and refrain from playing with objects unrelated to the ongoing activity as the behaviors as the desired behaviors for the C-DBR. Each behavior listed on the DBR had a rating scale underneath that ranged from 1 (Never occurred) to 10 (Always occurred). An example of the C-DBR that was used in the study can be seen in Appendix E.

*The Behavior Intervention Rating Scale (BIRS; Elliott & Treuting, 1991).*

To measure aspects of social validity, teachers completed the BIRS (Appendix F). The BIRS gathers teacher ratings on three main factors; acceptability, effectiveness, and time of effectiveness (Elliott & Treuting, 1991). Factor analysis conducted by Elliot and Treuting (1991) specified the variance of each factor measured within the BIRS:
Acceptability (63% of variance), effectiveness (6% of variance), and time of effectiveness (4.3% of variance). Additional research suggests that the BIRS yields high internal consistency across factors (acceptability, effectiveness, and time of effectiveness yielded alphas of .97, .92, .87, respectively; Von Brock & Elliott, 1987). The BIRS measures these three factors by having teachers rate 24 items on a scale from 1 (strongly disagree) to 6 (strongly agree). Teachers completed the BIRS at the conclusion of the study to capture their perceptions of the intervention in terms of acceptability, effectiveness, and time of implementation (Elliott & Treuting, 1991).

Materials

MotivAider®.

A MotivAider® is a discrete electronic device (i.e., resembles a beeper) that can be clipped onto clothing (e.g. waist band) and produces a tactile prompt (3-s vibration). The MotivAider® was given to the teacher who was designated to monitor the Mystery Students. For this study, the MotivAider® was set to vibrate on a fixed - interval schedule of 60 seconds. Teachers were instructed to look up at each Mystery Student when prompted and recorded whether the student was engaged in appropriate behavior (+) or disruptive behaviors (-) on a data sheet that was provided to them (Appendix G).

Teacher Data Sheet.

In order to determine whether each Mystery Student could be revealed and rewarded, teachers completed a data sheet to record instances of AEB and DB for the two Mystery Students. The data sheet included the operational definitions for AEB and DB, a row of ten blanks for each interval, and an area to compute the percentage of intervals in
which AEB occurred. The teacher data sheet used in this study can be seen in Appendix G.

*Prize Box.*

A box filled with teacher-approved toys, accessories, and trinkets were provided to each classroom immediately prior to the first intervention day. The prize box held rewards the Mystery Students were allowed to access, if criterion was met, following an intervention period.

*Name Bag.*

A bag filled with the names of every child enrolled in each class was created and used during the implementation of the intervention. Two names were pulled from this bag 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 five-day week, the teachers did not return the two names to the bag for the remainder of that week. This component was unknown to the children (i.e., the children were not informed that the chosen names were removed).

Dependent Measures and Data Collection Procedures

*Dependent Measures.*

Aggregate class levels of disruptive behavior (DB) served as the primary dependent variable for this study. “Aggregate class” included the behaviors of six randomly selected children and the target student, totaled. The definitions of DB were established and operationally defined in collaboration with classroom teachers during a brief interview following the initial referral. For all three classrooms, DB 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 area 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.

This study also included aggregate levels of appropriately engaged behavior (AEB) as a secondary dependent variable. The definition for AEB included both active and passive engagement for all three classrooms. Active engagement was defined as being involved in or attending to teacher instruction and engaging in task related (and permissible) vocalizations with teachers and peers. Passive engagement was defined as, listening to the teacher, listening to peers, or looking at any task-related (and permissible) materials related to instruction.

In addition to class-wide (i.e., target student and randomly selected peers) levels of DB and AEB the levels of the target students’ behavior was collected and graphed separately. Operational definitions for the dependent variables were the same definitions used for class-wide DB and AEB. The purpose of measuring individual target student data is to answer two of the current project’s research questions.

Data Collection Procedures.

Aggregate class-wide and target student levels of DB and AEB were obtained by conducting systematic direct observations (SDO; Hintz, Volpe, & Shapiro, 2002). SDOs
occurred three to five times per week during the same class activity in which the teachers reported the most disruptive behavior. Length of SDO sessions was determined by the length of the target activity (i.e., if carpet time lasts 15 minutes, then the observation lasted 15 minutes). Occurrences of AEB and DB were recorded using a momentary time sampling (MTS) method because previous research suggests that this method produces estimates that are conservative and closely in line with those obtained by continuous recording method (Prykanowski, Martinez, Reichow, Conroy, & Huang, 2018). Data collection sheets segmented each observation period into 10-second intervals, the number of intervals was dependent on the length of the observation period. See Appendix H for an example of the data collection sheet. An audio recording cued interval changes that prompted observers to look at a student and record whether the student was engaged in DB, AEB, or neither. Prior to each observation session, across phases, the observer chose six comparison peers by drawing names out of a bag. Comparison peers were selected each day of observation without replacement until every student had been observed. Observations were conducted by observing the target student at every other interval. That is, the target student was observed in interval one then, a comparison peer was observed for the second interval, the target student was then observed for the third interval, and another comparison peer were observed in the fourth and so on. This process was repeated throughout the entire observation period for every phase. Percentage of intervals in which the observed children engaged in AEB and DB were calculated and graphed separately following each observation.

For every phase, a minimum of three generalization probes was conducted on school days across all phases during an activity where MSI was not being implemented.
Generalization settings and situations included any other activity in which the group of children were receiving direct academic instruction, or activities that required the children to remain in a confined area for extended periods of time (e.g., mealtimes or computer lab visits).

The graduate and/or undergraduate students, who had been previously trained to observe and code a variety of behaviors, conducted the SDOs. The 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 lead data collector prior to collecting data for the project. The minimum acceptable IOA level was 90%; that is, if an IOA score fell below 90%, the observer was retrained via the methods described above before being used as an observer again. During the course of this project, one observer needed to be retrained.

In addition to SDO, aggregate class-wide and target student AEB was measured with the C-DBRs and T-DBRS, respectively, 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 or student could earn for the target activity.

Experimental Design and Data Analysis

A concurrent multiple baseline design (Cooper, Heron, & Heward, 2007) across participants, with probing for generalization, was used to demonstrate a functional relation between the implementation of MSI and a decrease in DB. The phases included baseline, treatment implementation, and maintenance. In order to meet single case research design standards the following criteria were met for this study: the independent variable must be systematically manipulated, IOA must be between 80-90% and
calculated for at least 20% of data points within each condition, must include at least three attempts to demonstrate intervention effect at different time points, and have a minimum of three data points, with a preference for five data points (Kratochwill et al., 2012) in each phase.

Visual analysis of level, trend, variability, immediacy of effect, magnitude of effect, and consistency of effect within and between classrooms were used to analyze the data (Horner et al., 2005). The class-wide levels of DB was the primary dependent variable used for making phase change decisions. During baseline and withdrawal, a phase change was made when there were moderate to high levels of DB that were stable or increasing.

Tau-U was also calculated in addition to visual analysis. Tau-U is a non-parametric effect size for assessing non-overlap of 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, 0.20 and 0.60 are moderate, 0.60 and 0.80 are large, and above 0.80 are very large (Vannest & Ninci, 2015). Tau-U scores were calculated for baseline versus MSI.

Pearson’s R correlation was calculated to determine the association between the levels of AEB directly observed and the levels of teacher-rated AEB (i.e., via C and T-DBRs). Correlation coefficients ranging from -1.00 to 1.00, represent no relationship between the variables; coefficients of +/- 0.5 or greater are considered large effects; coefficients of +/- 0.3 or greater are considered medium effects and; coefficients of +/-
0.1 or greater are considered small effects (Field, 2009). To assess the social validity measures, descriptive analysis was used.

**Procedures**

**Screening**

During the screening observation, the researcher informed teachers to continue to managing their classroom in their typical manner. In order for a classroom to qualify for participation in the study, disruptive behavior had to occur in at least 30% of intervals during the screening observation. Observation procedures were the same as those that occurred across all other phases of the study. Screening observation data were not included in the presented data because the behavior identification meeting occurred after screen in. Operational definitions used were those commonly seen in the preschool agency in which this study took place.

**Behavior Identification and DBR Training Meeting**

The researcher met with each teacher dyad to identify and define the target behaviors (AEB and DB) for the class. The teachers were also asked to identify one student who engaged in elevated levels of disruptive behaviors (as compared to the class) to serve as the target student. Teachers identified specific disruptive behaviors that were occurring during the target activity. Next, teachers identified appropriate behaviors they would have liked to see their children demonstrate. The researchers assisted the teachers with the development of the operational definitions for each behavior. After the teachers identified and defined the specific behaviors, a researcher inserted the appropriate behaviors and the operational definitions on pre-formatted C-DBRs and T-DBRs (see
Appendices C & D) and provided copies to the teachers to use during the DBR portion of the training.

Immediately following the behavior identification interview, the researcher trained the teachers on DBR procedures. First, the researcher explained what DBR’s were and why they are useful (i.e., easy, quick, and measures teacher perception). Next, the researcher explained how the C-DBRs would measure the behaviors of the classroom as a whole, and how the T-DBRs would specifically measure an individual student’s behaviors. The teachers were then instructed to rate their classroom’s AEB for that day, during the target activity that day, in order to practice.

**Baseline**

During the baseline phase, teachers were instructed to implement their normal classroom management techniques during the target activity while the observers collected data from an unobtrusive location within the classroom. The observers did not provide any feedback regarding behavior management and student performance.

**Teacher Role Assignment and Intervention Training**

Prior to implementation of the MSI independent group contingency, both teachers from each classroom met with a researcher to discuss and assign the two separate roles involved in the MSI intervention and to receive explicit training on the implementation procedures. Teachers were given scripted instruction sheets that included seven implementation steps with example dialogues associated with each (see Appendix I). The trainer then explained how each teacher would be responsible for one of two specific roles. The responsibilities explained to the teachers included: Role one, which involved introducing and explaining the MSI intervention to the children, providing frequent
reminders regarding the ongoing intervention, and concluding the intervention by revealing and rewarding the Mystery Students (if applicable). Role two: teacher would wear a MotivAider®, select the two Mystery Student names from the bag, sequentially observe the selected Mystery Students’ when prompted, record the behaviors of each student on a data sheet, and inform the lead teacher of whether or not the two students met the criteria to be revealed. Once the teachers agreed on role assignments, the researcher presented all the materials used in the intervention, explained and modeled their use, and then allowed teachers to ask questions or express any concerns. The procedural fidelity checklist that was used for training sessions can be seen in Appendices J and K.

**Mystery Student Intervention**

Immediately prior to the beginning of the target activity, the teachers gathered all relevant materials for the MSI intervention. One teacher introduced the MSI intervention as a game that the whole class would play. This teacher then stated the game parameters including; the time-frame in which the game would be played and the secret selection of two names for MSI assignment. The teacher then described and demonstrated the behavior expectations. The teacher assigned to the second role then selected two names from the bag, recorded them on the data sheet, reminded the children that they cannot know who the two mystery students are, and suggested that every child engage in appropriate behavior because, “anyone could be picked for the day.” The scheduled classroom activity (e.g., carpet-time lesson or center-time) then proceeded. The teacher assigned to the second role was equipped with the MotivAider® that was set to vibrate every 90 seconds, a clipboard, and data sheet. When prompted by the MotivAider®, the
teacher looked at one mystery student for 3 seconds and marked “+” for AEB, or “−“ for DB on the data sheet and then immediately moved on to the second mystery student and observed and recorded the behavior of this child.

Once the scheduled activity ended, the teachers determined whether the mystery students could be revealed and rewarded. Mystery students were only be revealed and rewarded if they exhibited AEB for at least 60% of intervals observed. If both students met the criteria, the teacher assigned to this role; announced the names, provided them with rewards, and provided examples of the appropriate behaviors that were demonstrated. If the students did not meet the criteria, the teacher assigned to this role announced that no Mystery Students could be revealed due to disruptive behavior and then provided examples of the inappropriate behaviors observed and the associated replacement behaviors that were desired. In instances in which one student met the criteria and the other did not, teachers announced only the name of the child that met the criterion. The teachers then revealed and rewarded the child(ren) who met the criteria in the same manner as explained above.

Maintenance Phase

Immediately following the final treatment phase session, a researcher met with the classroom teachers to provide them with visual displays of the behavior data collected for the entire class and for the target student. The researcher explained the visual analysis results with the teachers. The researcher then stated that observers would return in two weeks for follow-up observations. The researcher explained how the MSI would not be implemented at the two-week follow up session. The maintenance phase began two weeks following the final day of the second intervention phase. During the maintenance
phase, teachers were not provided with training, instructions, or feedback regarding classroom management. Trained observers sat in an unobtrusive location in the classroom and conducted observations of target student and class-wide behavior in the same manner as previous phases. Teachers completed a C-DBR and T-DBR following maintenance observations.

Interobserver Agreement, Procedural Integrity, and Treatment Integrity

*Interobserver Agreement.*

Interobserver Agreement (IOA) was calculated for at least 30% of all SDOs, 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 were divided by the sum of agreements and disagreements, then multiplied by 100. IOA was also calculated for procedural (e.g., training sessions) and treatment (i.e., MSI & BL phases) integrity in the same manner as described above.

For classroom A, IOA was obtained for 47.61% of all observations with an average agreement of 92.94% (range = 85.00 - 100.00%). IOA was gathered for 75.00% of baseline observations and agreement averaged 99.52% (range = 97.61 - 100.00%). During the treatment phase, 46.15% of observations were coded for IOA and had an average agreement of 95.60% (range = 90.00 – 100%).

For classroom B, IOA was obtained for 75% of all observations with an average agreement of 96.45% (range = 75 - 100 %). IOA was gathered for 83.33% of baseline observations and agreement averaged 95% (range= 75 - 100%). During the treatment phase, 80% of observations were coded for IOA and had an average agreement of 97.7% (range= 97.61 – 100%).
For classroom C, IOA was obtained for 34.48% of all observations with an average agreement of 97.41% (range = 90 - 100%). IOA was gathered for 35.70% of baseline observations and agreement averaged 96.10% (range= 90 - 100%). During the treatment phase, 33.33% of observations were coded for IOA and had an average agreement of 98.71% (range= 95.83 – 100%).

Procedural and Treatment Integrity

Procedural integrity data were collected for all phases using checklists for each phase. Procedural integrity was evaluated for 100% of observations, across all conditions. Procedural integrity was calculated by dividing the number of steps completed accurately by the total number of steps on the checklist and multiplying the quotient by 100.

The checklist for the baseline phase (See Appendix L) included items indicating that the observers sat in an unobtrusive location in the classroom and teachers were not given any instructions or feedback regarding classroom management. The observers has 100% procedural integrity for the baseline phases across all three classrooms. For classroom A, IOA was obtained for 75% of baseline procedural integrity sessions with 100% agreement for all sessions. For classroom B, IOA was obtained for 83.33% of baseline procedural integrity sessions with 100% agreement for all sessions. For classroom C, IOA was obtained for 35.7% of baseline procedural integrity sessions with 100% agreement for all sessions.

The intervention training checklist (Appendix J) included items indicating (1) trainer explained the two different roles of teacher involvement (2) trainer reviewed the teacher script with the teachers (3) trainer presented and explained the materials needed for intervention implementation (4) trainer explained the operational definitions of AEB
(5) the trainer explained and demonstrated how to use the MotivAider® (6) trainer explained and demonstrated how to complete the data sheet (7) the trainer modeled the intervention script for the teachers (8) teacher role-played the intervention with the trainer, allowing the teacher to practice implementing the steps of the game (9) the trainer provided appropriate feedback contingent upon teachers’ mistakes during the role-play implementation session and (10) trainer insured the teachers had a full understanding of the intervention components. The researcher had 100% procedural integrity when training all three classroom teachers on DBR completion and treatment implementation. IOA was collected for classroom A and B training sessions with 100% agreement. IOA was not collected for classroom C’s training session.

Treatment integrity data were collected for 100% of the sessions during the intervention phase (i.e., MSI implementation) for all classrooms. The treatment integrity checklist (See Appendix M) for the implementation of MSI included items indicating the teachers (1) turned on and programmed the MotivAider® device to vibrate on a fixed interval (2) introduced the game and randomly selected names out of bag (3) explained game rules and described and modeled behavioral expectations (4) frequently (2-5 times) reminded class of the ongoing game (5) completed the data collection sheet provided by the researcher (6) announced when the game was over and made reward decision (7) if criterion was met, revealed Mystery Student(s) and explained why the Mystery Student(s) earned reward (8) if criterion was not met, did not reveal Mystery Student(s), and explained why reward cannot be given (9) reminded class of tomorrow’s game (10) completed C and T-DBR’s.
For Classroom A, observer ratings indicated teachers utilized an average of 98.09% (range = 90.90 - 100%) of steps during the intervention phase. IOA was calculated during 46.15% of integrity observations and 100% agreement was obtained.

For Classroom B, observer ratings of teacher integrity indicated teachers utilized an average of 97.98% (range = 90.0 - 100%) of the steps during the intervention phase. IOA was calculated during 80% of integrity observations and 100% agreement was obtained.

For Classroom C, observer ratings of teacher integrity indicated teachers utilized an average of 99.46% (range = 92 – 100%) of the steps during the intervention phase. IOA was calculated during 33.33% of integrity observations and 100% agreement was obtained.
CHAPTER IV – RESULTS

 Aggregate Class-wide DB and AEB

The percentages of intervals in which disruptive behavior (DB) and appropriately engaged behavior (AEB) were directly observed for the aggregate class (i.e., target student and peers combined) 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 C-DBR’s; the percentage of points earned daily were graphed and are displayed in Figure 2. The Pearson’s correlation coefficients for C-DBR and direct observations are displayed in Table 2.

Table 1  *Class-wide AEB and DB from baseline to intervention Tau-U Effect Sizes*

<table>
<thead>
<tr>
<th>Classroom</th>
<th>DB</th>
<th>DB-GEN</th>
<th>AEB</th>
<th>AEB-GEN</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>0.76</td>
<td>0.70</td>
<td>0.88*</td>
<td>0.71</td>
</tr>
<tr>
<td>B</td>
<td>0.61</td>
<td>0.50</td>
<td>0.64</td>
<td>0.37</td>
</tr>
<tr>
<td>C</td>
<td>0.26</td>
<td>0.46</td>
<td>0.38*</td>
<td>0.33</td>
</tr>
</tbody>
</table>

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). Tau-U scores with an asterisk (*) indicate that the trend in baseline was corrected during analysis (Parker et al., 2011).

Table 2  *Pearson’s correlation coefficients for levels of AEB directly observed and the levels of teacher-rated AEB (i.e., via C and T-DBRs)*.

<table>
<thead>
<tr>
<th>Classroom</th>
<th>C-DBR</th>
<th>T-DBR</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>0.14</td>
<td>0.76</td>
</tr>
<tr>
<td>B</td>
<td>0.22</td>
<td>0.38</td>
</tr>
<tr>
<td>C</td>
<td>0.13</td>
<td>0.57</td>
</tr>
</tbody>
</table>

Coefficients of +/-0.5 or greater are considered large relation with coefficients of +/-0.3 or greater being considered medium relation and +/-0.1 or greater being considered small relation (Field, 2009).
Figure 1. Class-wide Direct Observation Data
Figure 2. C-DBR Data
Classroom A.

During baseline, children in Classroom A (top panel) displayed DB at an average of 54.46% (range = 40% - 61.5%) intervals observed. DB data were high and stable throughout the phase. The children engaged in AEB during an average of 45.33% (range = 38 - 60%) of observed intervals in baseline. Throughout this phase, AEB remained stable at lower levels. Mean percentage of children’s display of AEB and DB in the generalization setting during baseline was 82.13% (range = 72 - 93%) and 17.53% (range = 6.67 - 27%), respectively.

DB remained at similar levels as baseline during the first two intervention sessions; however, the average level ($M = 34.86\%$; 5.00 - 58.33%) of intervals observed throughout the treatment phase was lower than levels observed in baseline. Although a slight overlap between DB data points in baseline and intervention existed, Tau-U scores indicated large effects. Levels of AEB remained comparable to baseline during the first two intervention sessions; however, average levels of AEB ($M = 64.78\%; 41.66 - 95\%$) were lower than levels observed in baseline. Overlap between AEB data points in baseline and intervention were observed; however, Tau-U scores indicated a very large effect. Mean percentage of children’s display of AEB and DB in the generalization setting during MSI was 66.32% (range = 51.66 – 83.33) and 32.32% (range = 16.67 – 48.33%) respectively.

Teacher-rated AEB was calculated by totaling the number of points earned and dividing that by the total number of points possible on the C-DBR. Teacher-rated levels of AEB averaged 52.14% (range = 10 - 85%) in the target setting and 82.50% (range = 67.5 - 90%) in the generalization setting during baseline. During MSI implementation,
teacher ratings increased to an average of 66.81% (range = 45 - 95%) in the target setting and 84.58% (range= 60 – 100%) in the generalization setting. It is important to note that there was a weak negative relationship between directly observed levels of classroom AEB and teacher-rated AEB therefore, these results should be interpreted with caution.

In the maintenance phase, levels of class-wide DB and AEB were similar to those observed during MSI with an DB average of 32.08% (range= 23.33 – 41.66%) and AEB average of 67.91% (range= 58.33 – 76.66%). Teacher-rated levels of AEB in the maintenance phase were 81.87% in the target setting and 77.5% in the generalization setting.

_Classroom B_

During baseline, children in Classroom B (middle panel) displayed DB during an average of 40.07% (range= 17.67 – 56.96%) of intervals observed in the target setting. Baseline DB data were characterized by variable levels with a slight increasing trend in the final three baseline sessions. The children engaged in AEB during an average of 59.33 (range= 43.06 – 85.00%) of observed intervals in baseline in the target setting. Baseline AEB data were characterized with variable levels with a slight decreasing trend during the last three sessions. Mean percentage of children’s display of AEB and DB in the generalization setting during baseline was 66.13% (range= 15.6 - 96.9%) and 34.62% (range= 34.62 – 85.4%), respectively.

Following intervention implementation, an immediate increase in levels of AEB and an immediate decrease in DB were observed. Throughout the intervention phase, there was a constant separation between levels of AEB and DB and more stability in their levels (i.e., as compared to baseline). Mean percentage of children’s display of AEB and
DB during MSI was 74.19% (range= 58.33 – 93.33%) and 25.74% (range= 6.66 – 41.67%), respectively. Tau-U scores for both AEB and DB suggests that there was a large effect. Mean percentage of children’s display of AEB and DB in the generalization setting during MSI was 91.66% (range= 81.66 – 93.33%) and 8.33% (range= 1.66 – 18.33%), respectively.

Teacher-rated levels of AEB averaged 76.22% (range =45 - 90%) in the target setting and 88.75% (range = 75 - 100%) in the generalization setting during baseline. During MSI implementation, teacher ratings increased to an average of 80.19% (range= 50 – 92.5%) in the target setting and 90.62% (range= 77.5 - 100%) in the generalization setting. Based on the Pearson’s correlation coefficients, there was a weak positive relationship between directly observed levels of classroom AEB and teacher-rated AEB therefore these results should be interpreted with caution.

In the maintenance phase, levels of class-wide DB and AEB were similar to those observed during MSI with an DB average of 17.87% (range= 12.5 – 28.84%) and AEB average of 82.12% (range= 71.15 - 87.5%) Teacher-rated levels of AEB in the maintenance phase was 88% in the target setting and 95% in the generalization setting.

Classroom C

During baseline, the mean percentage of children’s display of AEB and DB in the target setting was 74.37% (range= 41.66 – 95%) and 26.83% (range= 11.45 – 58.33%), respectively. During baseline, levels of DB Trended upward, followed by one session of lower levels and ending at a high stable level. Levels of AEB in baseline began high and variable then were visibly decreasing steadily until the 9th session (i.e., high level). Following the 9th session, levels of AEB were stable. Mean percentage of children’s
display of AEB and DB in the generalization setting during baseline was 80.12% (range=52 – 91.6%) and 19.52% (range= 6.66 – 48%), respectively.

MSI implementation resulted in a slight increase in AEB and a slight decrease of DB with mean percentages of 77.76% (range = 68.33 – 90%) and 22.24% (range = 10 – 31.67%), respectively. Although levels of both AEB and DB were more stable throughout than observed in baseline, both AEB and DB displayed large amounts of overlapping data between baseline and intervention phases. Tau-U scores indicated moderate effects for both AEB and DB. Mean percentage of children’s display of AEB and DB in the generalization setting during MSI was 77.44% (range = 58.33 – 100%) and 14.85% (range = 0 – 41.66%), respectively.

Teacher-rated levels of AEB averaged 84.07% (range= 72.5 – 97.5%) in the target setting 84.07% (range= 72.5 – 97.5%) and 82.5% (range= 57.5 – 97.5%) in the generalization setting during baseline. During MSI implementation, teacher ratings increased to an average of 85.12% (range= 65–100%) in the target setting and 95% (range= 90 – 100%) in the generalization setting. Based on the Pearson’s correlation coefficients, there was a weak positive relationship between directly observed levels of classroom AEB and teacher-rated AEB therefore these results should be interpreted with caution.

In the maintenance phase, levels of class-wide DB and AEB were similar to those observed during MSI with an DB average of 21.04% (range= 12.5 – 30%) and AEB average of 78.95% (range= 70 - 87.5%) Teacher-rated levels of AEB in the maintenance phase was 92.5% in the target setting and 91.25% in the generalization setting.
Target Student AEB and DB

The percentages of intervals in which DB and AEB were directly observed for the target student in each classroom are displayed in Figure 3. Tau-u effect sizes for each target student are presented in Table 3. Teacher-reported levels of the Target Student’s AEB were obtained via T-DBR’s; the percentage of points earned daily were graphed and are displayed in Figure 4. The Pearson’s correlation coefficients for T-DBR and direct observations of AEB are displayed in Table 2.

Table 3 Target Student AEB and DB from baseline to intervention Tau-U Effect Sizes

<table>
<thead>
<tr>
<th>Target Student</th>
<th>DB</th>
<th>DB-GEN</th>
<th>AEB</th>
<th>AEB-GEN</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>0.86*</td>
<td>0.73</td>
<td>0.85*</td>
<td>0.66</td>
</tr>
<tr>
<td>B</td>
<td>0.50</td>
<td>0.25</td>
<td>0.21*</td>
<td>0.50</td>
</tr>
<tr>
<td>C</td>
<td>0.08</td>
<td>0.06</td>
<td>0.06</td>
<td>0.06</td>
</tr>
</tbody>
</table>

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). Tau-U scores with an asterisk (*) indicate that the trend in baseline was corrected during analysis (Parker et al., 2011).

Target Student A.

During baseline, the target student in Classroom A (TS-A) demonstrated DB and AEB at averages of 74.74% (range=53.33 - 90%) and 25.55% (range=12.5 – 46.6%), respectively in the target setting. Mean percentage of TS-A’s display of DB and AEB in the generalization setting during baseline was 21.05% (range=3.4 - 4.1%) and 78.40% (58 – 96), respectively.

Mean percentage of TS-A’s display of DB and AEB during MSI in the target setting was 46.86% (range=0 – 86.66%) and 52.92% (range=13 -100%), respectively. TS-A’s levels of DB and AEB were similar to those observed in baseline during the first two intervention sessions. After two MSI sessions, TS-A’s levels of DB decreased and remained at lower levels than baseline with the exception of one session. Similarly, TS-
A’s levels of AEB did not increase until the third MSI session but remained higher than compared to baseline levels. Although some overlap between MSI and baseline occurred, Tau-U scores for both DB and AEB suggest large effects. Mean percentage of TS-A’s display of DB and AEB in the generalization setting during MSI was 43.33% (range= 10 - 63.33%) and 56.56% (36.66 – 90%), respectively.

Teacher-rated AEB was calculated by totaling the number of points earned and dividing that by the total number of points possible on the T-DBR. Teacher-rated levels of AEB averaged 22.5% (range = 10 – 47.5%) in the target setting and 83.33% (range = 80 - 85%) in the generalization setting during baseline. During MSI implementation, teacher ratings increased to an average of 51.36% (range = 10 – 87.5%) in the target setting and 85% (range= 75 – 100%) in the generalization setting. Based on the Pearson’s correlation coefficients, there was a strong positive correlation between directly observed levels of AEB and teacher-rated. This suggests that teacher’s and observer’s perceptions of AEB were alike.

In the maintenance phase, levels of DB were slightly higher and levels of AEB were slightly lower than those observed during MSI. Levels of DB averaged 34.95% (range= 13.33 – 46.66%) and AEB averaged of 66.95% (range= 53.33 - 86.66%) in the target setting. Teacher-rated levels of AEB in the maintenance phase was 83.75% in the target setting.
Figure 3. Target Students’ Direct Observation Data
Figure 4. T-DBR Data
**Target Student B**

During baseline, the target student in Classroom B (TS-B) demonstrated DB and AEB at averages of 57.57% (range= 16.67 – 88.89%) and 42.21% (range= 11.11 – 83.00%), respectively in the target setting. Mean percentage of TS-B’s display of DB and AEB in the generalization setting during baseline was 14.60% (range= 4.33 – 33.33%) and 85.23% (range= 66.66 – 95.06%), respectively.

Mean percentage of TS-B’s display of DB and AEB during MSI in the target setting 34.37% (range= 0-80%) and 65.62% (range= 20 -100%), respectively. TS-B’s levels of DB immediately decreased and levels of AEB immediately increased upon MSI. Although average levels of DB were lower as compared to baseline, they were highly variable until the seventh session. DB levels were slightly more stable on a downward trend. Similarly, average levels of AEB were higher as compared to baseline. Levels of AEB were variable until the 8th session where levels stabled out and were on an increasing trend. Tau-U scores are commensurate with visual analyses in that they suggest moderate effects for both AEB and DB. Mean percentage of TS-B’s display of DB and AEB in the generalization setting during MSI was 43.33% (range= 10 - 63.33%) and 56.56% (36.66 – 90%), respectively.

Teacher-rated levels of AEB averaged 60.72% (range = 40 - 82%) in the target setting and 81.37% (range = 52.5 - 90%) in the generalization setting during baseline. During MSI implementation, teacher ratings increased to an average of 71.73% (range= 37.5 – 87.5%) in the target setting and 90.62% (range= 77.5 - 100%) in the generalization setting. Based on the Pearson’s correlation coefficients, there was a moderate correlation.
between directly observed levels of classroom AEB and teacher-rated AEB suggesting that the observers and teachers saw similar levels of AEB across sessions.

In the maintenance phase, levels of DB were lower ($M = 15.68\%; 12.5 – 20.83\%$) and AEB were higher ($M = 85.03\%; 79.16 – 86.67\%$) to those observed during MSI in the target setting. Teacher-rated levels of AEB in the maintenance phase was 86.5%.

**Target Student C**

During baseline, the target student in Classroom C (TS-C) demonstrated DB and AEB at averages of $37.87\%$ (range= 16.66 – 93.75%) and $61.83\%$ (range= 6.25 – 83.33%), respectively in the target setting. Levels of DB during the first 6 sessions in baseline were low and variable; however, there was a drastic increasing trend until the ninth session. DB levels during the remaining baseline sessions were high and on a slight increase. Levels of AEB followed similar trends than DB levels in the opposite direction. Mean percentage of TS-C’s display of DB and AEB in the generalization setting during baseline was $14.60\%$ (range= 4.33 – 33.33%) and $85.23\%$ (range= 66.66 – 95.06%), respectively.

Immediately following the implementation of MSI, levels of DB increased while levels of AEB increased; however, levels were observed to return to similar levels than those observed in baseline after the 2nd MSI session. Mean percentage of TS-C’s display of DB and AEB in the target setting during MSI was $36.22\%$ (range= 6.67 – 50%) and $63.74\%$ (range= 40 – 93.33%), respectively. Although average levels of DB were slightly lower and average levels of AEB were slightly higher in MSI than those observed in baseline, both AEB and DB displayed large amounts of overlapping data between baseline and intervention phases. TS-C’s Tau-U scores are commensurate with visual
analyses in that they suggest small effects for both AEB and DB. Mean percentage of TS-C’s display of DB and AEB in the generalization setting during MSI was 36.22% (range= 6.67 – 50%) and 63.74% (range= 40 – 93.33%), respectively.

Teacher-rated levels of AEB averaged 74.82% (range= 20 – 100%) in the target setting and in the generalization setting during baseline. During MSI implementation, teacher ratings increased to an average of 71.73% (range= 37.5 – 87.5%) in the target setting and 90.62% (range= 77.5 - 100%) in the generalization setting. Based on the Pearson’s correlation coefficients, there was a medium relationship between directly observed levels of classroom AEB and teacher-rated AEB suggesting that the observers and teachers saw similar levels of AEB across sessions.

In the maintenance phase, levels of DB were slightly lower, with an average of 29.44% (range= 23.33 – 40%) and levels of AEB were slightly higher, with an average of 70.56% (range= 60 - 76.67%) in the target setting. Teacher-rated levels of AEB in the maintenance phase was 94.83%.

Social Validity of MSI

All three lead teachers and assistant teachers, completed the BIRS to assess the acceptability of MSI. Table 4 includes mean scores across each factor, across participating teachers. LT-A’s scores on the BIRS were the lowest suggesting that she felt that the MSI was somewhat acceptable. All other teachers’ ratings on the BIRS suggest that they favored the use of MSI on the factors of acceptability, effectiveness, and time to effectiveness.
CHAPTER V DISCUSSION

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). Fortunately, there has been an increase in adaptations of multi-tiered frameworks which aim to prevent challenging behaviors and increase social, emotional, and behavioral competencies (Benedict, Horner, & Squires, 2007; Dunlap & Fox, 2009; Fox & Little, 2001) decreasing the need for individualized treatments. Results of the current study provides evidence on a specific intervention (i.e., randomized independent group contingency) that can be used in multi-tiered frameworks in preschool settings to improve group and individual child behaviors. Discussion of the results of this study is organized by research question, a description of limitations, and future research directions.

Research Questions 1 and 2

The first two research questions pertained to whether the MSI would decrease class-wide DB and increase class-wide AEB. Visual analysis and evaluation of effect sizes indicate that MSI was largely effective at decreasing class-wide levels of DB for classrooms A and B. The MSI proved to slightly decrease Classroom C’s levels of DB as evidenced by visual analysis and the small effect size calculation. Increases in average levels of AEB from baseline to intervention and moderate to very large effect sizes in all
three classrooms suggest that MSI was effective at increasing class-wide levels of AEB. Teacher-rated levels of class-wide AEB (via C-DRBs) also increased from baseline to MSI suggesting teachers observed elevated levels of class-wide AEB when MSI was being implemented. Smaller effects were likely seen in Classroom C because of the lower levels of DB and higher levels of AEB towards the end of baseline. It is unknown which variables contributed these behavior levels. Overall, the results of this study are consistent with those seen in Pasqua (2016) in that MSI was at least, moderately effective at decreasing class-wide levels of DB and effective at increasing class-wide levels of AEB.

Research Questions 3 and 4

The third and fourth research questions pertained to whether or not MSI decreased the target students’ levels of DB and increased levels of their engagement in AEB. In comparison to baseline, average levels of DB were lower and average levels of AEB were higher across all three target students; however it is important to note that TS-C’s levels were minimally different. Effect sizes indicated that there were moderate to large effects for TS-A and TS-B’s display of DB and AEB in the MSI phase. Commensurate with visual analysis, effect sizes for both DB and AEB for TS-C indicated only a small effect of MSI on DB and AEB. Average teacher-rated levels of AEB were higher in MSI phase than baseline for all three target students. Similar to directly observed levels of AEB, the average level of teacher-rated AEB only slightly increased during the MSI phase. Results from this study are consistent with that of Maus (2007) in that an independent group contingency decreased levels of individual children.
Research Question 5

The fifth research question evaluated the extent to which teachers rate the MSI as an acceptable and effective intervention. Combined mean ratings for all teachers suggest the Mystery Student intervention was deemed acceptable (4.48), effective (3.99), and quickly produced beneficial results (4). This contributes to, and is consistent with, previous research investigating group contingencies in preschool settings in that teachers find group contingencies an acceptable intervention to implement in their classrooms (Filcheck, 2004; Hoag, 2007; Hunt, 2013; Kohlet et. al., 1995; Ling & Barnett, 2013; Maus, 2007; Murphy, et. al., 2007; Pasqua, Dart, Radley, 2016; Pasqua, 2016; Pokorski, et al., 2016; Swiezy, Matson, & Box, 1992; Reitman Murphy, Hupp, & O’Callaghan, 2004).

Research Question 6

The sixth research question sought to determine whether or not the effects of MSI would generalize to activities/setting in which the intervention was not being implemented. In the generalization settings for Classroom A, average levels of DB in baseline were slightly lower than those during MSI and levels of AEB were higher than those during MSI. For Classrooms B and C, average levels of DB decreased and AEB increased in the generalization settings during MSI. Moreover, effect size calculations indicate moderate effects of MSI on AEB and DB in the generalization settings. TS-B’s levels of AEB increased and DB decreased in the generalization settings as compared to baseline; however, TS-A and TS-B demonstrated an increase in the average levels of DB and a decrease in AEB in the generalization settings during MSI implementation. These results are consistent with, and add to the literature that has investigated the effects of
group contingencies on generalized behavior change of preschool-aged children. Specifically, previous research (Filcheck, 2004; Swiezy et al., 1992) indicated that group contingencies with preschool populations produced modest to moderate effects in settings in which the intervention was not implemented. The differing levels of behaviors across activities (i.e., direct instruction versus centers) is also consistent with previous research that has demonstrated that young children’s engagement in AEB and DB differ depending on the type of classroom activity (Prykanowski et al., 2018). Future research should continue to investigate generalized effects so that preschool personnel will be well informed of the need for implementing intervention across settings. Moreover, future research may incorporate specific generalization techniques to increase the likelihood of generalization across settings.

Research Question 7

The final research question pertained to whether the behavior changes would maintain following termination of MSI. For classrooms A and B, levels of DB were slightly lower and levels of AEB were slightly higher during the maintenance phase compared to levels displayed in the MSI phase. For Classroom C, levels of DB and AEB in the maintenance phase were similar to those displayed in the MSI phase. In total, the data for all three classrooms suggests that the improved behavior effects of the MSI maintained even after the removal of intervention procedures.

For TS-A, levels of DB were higher and levels of AEB were lower in the maintenance phase than levels observed during the MSI phase. TS-B and TS-C’s levels of DB and AEB were comparable to levels observed during the MSI phase. These results suggest that children who display more challenging behaviors (i.e., children needing tier
II or tier III services) may need additional support after a tier I intervention (e.g., group contingency) is removed.

Limitations and Future Directions

Although the MSI resulted in positive changes in class-wide and target student behavior, results should be interpreted with caution due to several limitations. First, the class-wide and target student’s behavior changes were moderate when comparing baseline levels to MSI levels in Classroom C; however, the behavior changes were not comparable to those seen in classrooms A and B. This slightly limits the confidence in the effectiveness of the MSI on behavior improvements. However, behavior levels in Classrooms A and B were significantly changed upon the implementation of MSI which is consistent with the former investigation of MSI (Pasqua, 2016).

Secondly, the multicomponent (antecedent manipulations, frequent reminders, positive reinforcement consequences, stated behavioral expectations) nature of the intervention may weaken internal validity. It is unknown which component(s), 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.

Third, aggregate child data were utilized to represent class-wide behavior and make phase change decisions. Thus, it is unknown whether the intervention had the same impact on every child’s behavior, and whether these data are a true representation of the classroom behavior. To address this limitation, future research may look at each individual child’s behavior during data collections procedures. Additionally, disruptive behavior data were also aggregated: data on specific behaviors were not collected,
making assessments of the intervention on specific disruptive behaviors impossible. It may be beneficial for future research to look at MSI’s effects on specific behaviors.

A fourth limitation worth noting is related to the population in which MSI was implemented with. External validity is limited due to the fact that the MSI has only been investigated with preschool-aged children; thus, the results cannot be generalized to other populations and settings until further research has investigated the effectiveness of the MSI with those populations. Additionally, the MSI has only been investigated twice by the same researcher which may also decrease confidence in the external validity. Finally, the MSI has only been investigated in Head Start centers in the rural south eastern United States; so, future research should include more geographically diverse samples. Additional researchers should investigate the effectiveness of MSI to address these concerns.

Another limitation that merits acknowledgement is the lack of interobserver agreement on the assistant teachers’ observations of the two Mystery Students during the intervention phases. Having two observers simultaneously complete the teacher data sheet would have required additional personnel which were 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 investigations of MSI should attempt to measure the accuracy of teachers’ observations of the target students.

A sixth limitation that is worth recognition is the lack of consistency in generalization settings. Observers noted that classrooms frequently changed the times in which activities (other than direct instruction) occurred. Participating teachers agreed to
maintain direct instruction times; however, changing requirements and ongoing activities of the Head Start agency limited the teachers’ ability to maintain a consistent generalization setting and activity. Future research should collect data in consistent generalization settings for a more valid measure of generalization effects.

Finally, although teachers found MSI to be a socially valid intervention, the extent to which the children perceived the acceptability of the intervention is unknown. Although anecdotal, the researchers 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. Therefore, it cannot be concluded the children considered MSI as a socially valid intervention. Future research should obtain objective social validity data for the children.
CHAPTER VI CONCLUSION

The present study was the second time the effectiveness of MSI on preschool children’s behavior was evaluated (e.g., Pasqua, 2016). This study also accounted for limitations identified by Pasqua, 2016 including: the assessment of generalization effects, the assessment of target child behaviors, and the maintained effects after the removal of MSI. Results suggest that MSI was effective at creating significant behavior changes (i.e., decreasing DB and increasing AEB) for class-wide and target student behaviors in two classrooms and minimal behavior changes in the third classroom. Additionally, all six teachers rated the MSI as acceptable and effective. This study adds to limited research group contingencies in preschool settings and provides a viable option to incorporate within early childhood education settings that operates a multi-tiered support system at a primary or secondary level.
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: R17082502
PROJECT TITLE: Improving Individual and Group-wide Behaviors
PROJECT TYPE: Renewal of a Previously Approved Project
RESEARCHER(S): Jamie Pasqua
COLLEGE/DIVISION: College of Education and Human Sciences
SCHOOL: Psychology
FUNDING AGENCY/SPONSOR: N/A
IRB COMMITTEE ACTION: Expedited Review Approval
PERIOD OF APPROVAL: 09/20/2018 to 09/19/2019

Edward L. Goshorn, Ph.D.
Institutional Review Board
Title of Study: *Improving Individual and Group-wide Behaviors in Head Start Classrooms with Mystery Student Intervention: Assessment of Generalization and Maintenance.*

Study Site: **Head Start Serving Forrest County, MS**

Name of Researcher & University affiliation: **Jamie Pasqua, M.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 two target 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 paperwork. 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 C – Parent Consent Form

Title of Study: *Improving Individual and Group-wide Behaviors in Head Start Classrooms with Mystery Student Intervention: Assessment of Generalization and Maintenance.*

Study Site: **P.R.V.O. Head Start Serving Forrest County, MS**

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

Dear Parent,

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 dissertation, which will assess the effectiveness of a classroom based behavioral intervention. This study is being conducted under the supervision of Dr. Brad Dufrene.

Your child’s classroom has been referred for inclusion in this study for elevated levels of class-wide disruptive behaviors. Your child’s disruptive behaviors have been identified by teachers as being higher than the other children in the classroom. This intervention aims to reduce class-wide and individual levels of disruptive behaviors. Although your child’s behavior will be observed and assessed individually, your child will receive the same level of services as the other children in the classroom. In other words, your child and his/her peers will not be aware that your child’s behavior is being observed and measured. Your child will participate in the same intervention procedures as their classroom peers. If you provide consent for your child to participate in the study, your child’s level of appropriate and disruptive behaviors will be measured by trained School Psychology graduate students via direct observations.

**Purpose:**
As previously stated, the purpose of the study is to assess the effectiveness of the class-wide intervention “Mystery Student” on reducing class-wide and individual levels of disruptive behaviors.

To date, Pasqua (2016) is the only study to test a randomized, independent group contingency in preschool classrooms that operated in an agency that implemented a Program Wide - Positive Behavior Supports (PW-PBS) model. Additional research is needed to further demonstrate the beneficial effects of the Mystery Student intervention in Head Start classrooms, to account for the limitations in Pasqua (2016). Specifically, this study will evaluate any maintenance of intervention gains, generalization of intervention gains, and will assess the impact of the intervention on individual children identified as being the most disruptive in their classroom.
Procedure: The following is a brief description of the procedures involved in the class-wide intervention being investigated. The class-wide intervention being investigated is called “Mystery Student.” The Mystery Student intervention involves teachers randomly selecting two individual students (mystery students) whose behaviors are observed and assessed by the other teacher, in order to determine if those students, alone, could have access to a predetermined award. “Mystery student” is a distinctive independent group contingency because a reward was only given to two specific students, whereas normally, independent group contingencies provides rewards to all children who meet a specified criterion.

This class-wide intervention was formally investigated in 2016 by myself in the same Head Start agency your child is enrolled at (Pasqua, 2016). Furthermore, results from the former study demonstrated large improvements in class-wide behavior and was rated highly acceptable by teachers.

Benefits: Your child may benefit from participation in the study in that they will receive effective behavioral intervention services that do not single-out your child. Specifically, your child will receive the same services every child in the class is receiving. Giving consent for your child to participate in this study may offer broad benefits for preschool teachers and children. Specifically, any improvements in your child’s behaviors provide evidence and support for the implementation if class-wide interventions for individual child behaviors. An additional benefit is the expected decrease in inappropriate behaviors and the increased appropriate behaviors by your child’s classroom peers.

Risks: There appear to be very few risks to all students participating in this study. The greatest discomfort may be related to the teachers’ implementation of a new procedure in their classroom. To reduce discomfort, I and/or other trained graduate students will provide training, materials, and will be available to answer any questions or resolve any issues teachers may have. Your child should not experience any discomfort from the implementation of the recommended intervention.

Confidentiality of Records: All data will be recorded on direct-observation forms and integrity checklists created by the primary investigator. There will be no information regarding your child’s identity on these forms. Your child’s name and behavior information will be kept confidential. To protect your child’s privacy, your child will be assigned a number. This number will be placed on all paper work. At no time will any paperwork contain your child’s name. Permanent products from data collection will be stored in a locked filing cabinet in the School Psychology Service Center at the University of Southern Mississippi.

Alternative Procedures: Participation is voluntary. If you choose to not allow your child to participate, your child can still receive additional supports in the classroom from the teacher.
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 601-266-5997.

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 Assurance:
This project has been reviewed by the Institutional Review Board, which ensures that research projects involving human subjects follow federal regulations. Any questions or concerns about rights as a research participant should be directed to the Manager of the IRB at 601-266-5997. Participation in this project is completely voluntary, and participants may withdraw from this study at any time without penalty, prejudice, or loss of benefits. Any questions about the research should be directed to the Principal Investigator, Jamie Pasqua, at jamie.pasqua@usm.edu.

Parental Consent Information

Participant’s Name: ______________________________  Participant’s Age: ________

Parent or Guardian’s Name: ______________________________

Person Soliciting Parental Consent: Jamie Pasqua, M.A.
APPENDIX D Target Student Direct Behavior Rating Form

Completed by: _________ Date: _______ Target Activity: ______________

Instructions: Rate the following behaviors of the target student on a scale of 1-10 during the target activity.

1. The child kept his/her hands and feet to themselves.

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

   

2. The child was actively involved in the carpet time activity.

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

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

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

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

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

   

67
APPENDIX E 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.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>Occasionally</td>
<td>Always</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

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

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>Occasionally</td>
<td>Always</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>Occasionally</td>
<td>Always</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>Occasionally</td>
<td>Always</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX F Behavior Intervention Rating Scale (BIRS)

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

*Adapted from Elliott, S., & Von Brock Treuting, M. (1991).*
APPENDIX G 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:

<p>| | | | | | | | | | | |</p>
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<thead>
<tr>
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</table>

Mystery Student 2:

<p>| | | | | | | | | | | |</p>
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</thead>
</table>

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.
# APPENDIX H Observation Form

## Observation Sheet

<table>
<thead>
<tr>
<th>Interval</th>
<th>1</th>
<th>1.5</th>
<th>2</th>
<th>2.5</th>
<th>3</th>
<th>3.5</th>
<th>4</th>
<th>4.5</th>
<th>5</th>
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</tbody>
</table>

### Disruptive Behaviors
- Out-of-Seat: 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, hammering, 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 I Scripted Instructions

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 J Procedural Integrity Checklist for Intervention Training

<table>
<thead>
<tr>
<th>Procedural Integrity Steps</th>
<th>Y</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>The trainer explains the two different roles of teacher involvement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The trainer reviews the teacher script with the teachers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The trainer presents and explains the materials needed for intervention implementation including</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Prize Box</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>• MotivAider®</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Data Sheet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Bag of student names</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The trainer explains the operational definitions of AEB.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The trainer explains and demonstrates how to use the MotivAider®</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>The trainer explains and demonstrates how to complete the data sheet.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The trainer models the intervention script for the teachers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The teacher role-plays the intervention with the trainer, allowing the teacher to practice implementing the steps of the game.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The trainer provides appropriate feedback contingent upon teachers’ mistakes during the role-play implementation session.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The trainer insures the teachers have a full understanding of the intervention components.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Steps completed</td>
<td>/</td>
<td></td>
</tr>
<tr>
<td>Percentage of Steps completed</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX K Procedural Training Checklist for DBR Training

<table>
<thead>
<tr>
<th>Procedural Integrity Steps</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>The trainer explains what DBR is and why it is useful.</td>
<td>✓</td>
</tr>
<tr>
<td>The trainer reviews the steps for completing the DBR form with the teacher.</td>
<td>✓</td>
</tr>
<tr>
<td>The trainer explains the operational definitions of the target behaviors.</td>
<td>✓</td>
</tr>
<tr>
<td>Steps completed</td>
<td>/</td>
</tr>
<tr>
<td>Percentage of Steps completed</td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX L Baseline, Maintenance, and Generalization Procedural Integrity Checklist

<table>
<thead>
<tr>
<th>Teacher Name: ___________</th>
<th>Date: ___________</th>
<th>Observer: ___________</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th><strong>Procedural Integrity Steps</strong></th>
<th>✓</th>
<th>X</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>The observer sits in an unobtrusive location in the classroom.</td>
<td>✓</td>
<td>X</td>
<td>N/A</td>
</tr>
<tr>
<td>The observer reminds teacher to use typical behavior management</td>
<td>✓</td>
<td>X</td>
<td>N/A</td>
</tr>
<tr>
<td>strategies and to not implement any components of the intervention.</td>
<td>✓</td>
<td>X</td>
<td>N/A</td>
</tr>
<tr>
<td>The observer does not provide any feedback to teachers.</td>
<td>✓</td>
<td>X</td>
<td>N/A</td>
</tr>
<tr>
<td>Steps completed</td>
<td>/</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percentage of Steps completed</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### APPENDIX M Treatment Integrity Checklist

Teacher Name: __________ Date: __________ Observer: __________

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

<table>
<thead>
<tr>
<th>Steps completed</th>
<th>/</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of Steps completed</td>
<td></td>
</tr>
<tr>
<td>Teacher Require Retraining?</td>
<td>Y N</td>
</tr>
</tbody>
</table>
REFERENCES


Hunt, B. M. (2013). *Using the good behavior game to decrease disruptive behavior while increasing academic engagement with a head start population* (Doctoral dissertation). Retrieved from PsycINFO.


Retrieved from ERIC database. (ED365478)


Vinh, M., Strain, P., Davidson, S., & Smith, B. J. (2016). One state’s systems change efforts to reduce child care expulsion: Taking the Pyramid Model to Scale. *Topics in Early Childhood Special Education.*


