Evaluating the Effects of an Independent versus Interdependent Reinforcement Contingency on Teachers' Use of Behavior Specific Praise

Ashleigh Eaves

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Evaluating the Effects of an Independent versus Interdependent Reinforcement Contingency on Teachers’ Use of Behavior Specific Praise

by

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

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ABSTRACT

The present study sought to evaluate the effects of two reinforcement contingencies on the use of behavior specific praise in the classroom setting. An alternating treatments design was used to rapidly evaluate the effects of both an independent and interdependent paired contingency to increase frequency of behavior specific praise delivery. Four general education elementary school teachers and their students participated. Teachers’ use of behavior specific and general praise, as well as, behavior specific and general reprimands were evaluated during baseline and treatment phases. Data were also collected on students’ levels of academic and disruptive behaviors. Both the independent and interdependent conditions resulted in higher frequencies of behavior specific praise and reduced use of reprimands, both general and behavior specific. Student levels of academic behavior increased while disruption decreased across both contingencies. Results of the present study are discussed in terms of related literature and implications for applied practice.
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DEDICATION

To Jim and Vickie Eaves,

My best friend and my biggest fan—one down, one to go.
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CHAPTER I - INTRODUCTION

Researchers in the field of school psychology are continually searching for ways to improve the educational climate and increase positive student outcomes. While educators have historically relied on the use of reactive and punitive strategies to manage student behaviors (Aker & O’Leary, 1987; Sugai & Horner, 2008), studies have shown these techniques may not always result in desired improvements in behavior (Stage & Quiroz, 1997). In order to address and improve student behavior, schools often utilize Response to Intervention frameworks.

The Response to Intervention or RtI framework relies on the use of a tiered system of supports to respond to challenges that often arise within a school system such as low academic achievement and disruptive behaviors. Though originally designed to improve students’ academic performance, the tiered strategies used in a traditional RtI framework have also been used in programs designed to proactively manage student behaviors. Positive Behavior Interventions and Supports (PBIS) is one such program. In traditional PBIS, three levels of support are provided, and students receive increasingly specialized interventions as they move from one tier to the next. Beginning in Tier I, or at the universal level, students are told the school-wide expectations for behavior and are given access to an appropriate, evidence-based curriculum. Additionally, teachers are taught and expected to use effective classroom management strategies to reduce problem behaviors. When using PBIS to manage student behaviors, effective schoolwide strategies at Tier I are essential to improvements in student outcomes (Sugai & Horner, 2006). Unfortunately, many teachers are not familiar with or fail to implement effective behavior management strategies. Because Tier I level supports are often lacking, one of
the most common requests made by teachers in the school setting is for help managing disruptive student behaviors.

As mentioned, PBIS relies on a series of tiered-level supports, increasing in intensity from one level to the next. Tier I of the system includes interventions that are implemented schoolwide (Sugai & Horner, 2006). Furthermore, Tier I interventions focus on the school environment as a whole. This often involves the choosing of behaviors deemed appropriate and expected in specific educational settings (classroom, library, hallways, bathrooms), and the posting of these expectations throughout the school campus (Horner, Sugai & Anderson, 2010). Tier I, as previously mentioned, should also include teacher trainings on the use of effective classroom management strategies for behavior as well as use of and access to an appropriate, evidence-based academic curriculum (Horner, Sugai, & Anderson, 2010).

The secondary level of PBIS implementation, often referred to as Tier II, involves offering additional supports to those students whose behavior is not in compliance with school-wide expectations. Such supports may include small-group social skills, Check-In/Check-Out, or other evidence-based individualized interventions (Horner, Sugai, & Anderson, 2010). Even in a perfectly executed PBIS program, some students will engage in behaviors requiring substantial supports. These students would qualify for Tier III interventions. Tier III interventions often begin with school personnel requesting a formal functional behavior assessment. This assessment allows personnel to pinpoint consequences that may be maintaining student disruptive behaviors (Cooper, Heron, & Heward, 2007). Regardless of the exact procedures used to classify a student as needing
Tier III interventions, these interventions will be the most individualized and resource intensive in the PBIS framework (Horner, Sugai, & Anderson, 2010).

In present day education, teachers are asked to provide students with a free, appropriate education, as well as have students meet certain standards on state-level tests, but are often untrained in managing disruptive student behaviors that may interfere with this task. Although personnel in educational settings typically rely on reactive, punishment-based strategies to manage inappropriate behavior, the introduction of PBIS in the 1990s sought to train educators on the use of more proactive behavior management strategies (Sugai & Horner, 2006; Horner, Sugai, & Anderson, 2010). When implemented with fidelity, PBIS provides students with universal supports at Tier I, preventing the majority of students from requiring the more intensive interventions used in Tiers II and III (Sugai, 2008). Though punitive strategies may be effective in reducing negative behaviors, they do little to improve student prosocial behaviors (Cherne, 2008). When school-wide PBIS is implemented with integrity, students are not only engaging in fewer disruptive behaviors, but are also provided with feedback designed to teach appropriate replacement behaviors (Reinke et al., 2013; Sugai, 2008). One of the most cost effective and time efficient components of teaching replacement behaviors is the use of praise in the classroom (Bear, 2013).
CHAPTER II – REVIEW OF THE LITERATURE

Defining Praise

In 1981, Brophy operationally defined praise as a way “to commend the worth of or to express approval or admiration” (p.5). As Jenkins, Floress, and Reinke note in their 2015 review of the literature, the exact definition of praise changes from one researcher to the next. Over the years, researchers have defined praise as “verbal comments indicating approval of identified academic or social behavior” (Stormont, Smith, & Lewis, 2007, p. 283), “any verbal statement or gesture indicating teacher approval of a desired student behavior” (Reinke, Lewis-Palmer, & Merrell, 2008, p. 319), “the verbal acknowledgement of expected appropriate social or academic behavior exhibited by students” (Cavanaugh, 2013, p. 113), and “sincere and meaningful attention for behaving according to expectations” (Chalk & Bizo, 2004, p. 335). Although the exact definition of praise varies across studies, the hallmark of the definition remains consistent: conveying approval for engaging in or displaying a particular behavior or set of behaviors while in the educational setting.

Early Praise Research

Through the course of previous research, scholars have traced the lineage of praise use to scientists as early as Alfred Binet in the late 1890s (Blaze, 2012). Like many modern researchers, Binet believed teachers could play an integral role in changing student behavior, specifically, through the use of praise. In his 1909 book entitled Les Idées Modernes sur les Enfants, Binet outlined three common ways in which teachers respond to student behaviors. First, teachers may rely on natural environmental contingencies to reinforce or punish behaviors without active teacher involvement. Next,
teachers may make a conscious effort to alter student behaviors through the introduction of positive strategies such as the delivery of verbal praise or tangible rewards. Finally, Binet mentioned teachers may rely on active consequences such as verbal reprimands, the removal of preferred items, or corporal punishment in an effort to reduce unwanted classroom (Binet, 1909).

Though Binet had an interest in praise usage in the educational setting, much of his work was observational, rather than experimental, in nature. In an effort to draw more definitive conclusions on the use of classroom praise, Kennedy and Wilcutt (1964) conducted a meta-analysis examining experimental studies conducted during Binet’s time and later. The analysis included articles spanning a publication range of nearly 70 years. Kennedy and Wilcutt identified 33 articles published between 1887 and 1964 that sought to elaborate on behavior change as a result of the use of praise and reprimands.

As part of the analysis, Kennedy and Wilcutt (1964) noted several distinct differences in research focus from one decade to the next. Prior to the 1930s, the experimental change in the frequency of praise delivery was uncommon. During the 1930s to 1940s, research focused more on the effects praise delivery had on a variety of subjects, specifically those from different cultural backgrounds and across those who had various personality types (Kennedy & Wilcutt, 1964). It was not until the 1950s that praise research began to resemble more modern-day studies in which classrooms are often examined as a whole and efforts are placed more so on modifying the use of praise rather than determining its effects on individual participants.

Other shifts in praise research were also noted by Kennedy and Wilcutt (1964). During the 1930s and 40s, this line of research consisted mainly of large group studies in
which students participated in either a treatment or control group (Blaze, 2012). Praise during this decade of research was often delivered on a pre-determined schedule to the treatment group (i.e., every five minutes). This differs from modern research in that praise in early studies was not delivered contingent on behavior, but rather based on the passage of time (Kennedy & Wilcutt, 1964). Although the majority of modern praise research utilizes single case designs, group designs were still used to examine the effects of praise during the 1960s and 70s. That being said, it is the shift in focus from the study of non-contingent to contingent praise that occurred in the 1950s, rather than the shift in experimental design, which is important. Modern praise research continues to evaluate the use of contingent praise in educational settings (e.g., Chalk & Bizo, 2004; Blaze, 2012; Pisacreta et al., 2011; Reinke et al., 2008).

Topography of Praise

Types of Praise: Contingent and Non-Contingent

As previously mentioned, researchers prior to the 1950s were more concerned with increasing praise frequency rather than evaluating its effects when delivered contingent on specific behaviors (Kennedy & Wilcutt, 1964). Praise, applied contingently on behavior as defined by Simonsen and colleagues (2008), is “a positive statement, typically provided by the teacher, when a desired behavior occurs (contingent on) to inform students specifically as to what they did well” (p. 362). In other words, praise is only provided following the occurrence of a desired behavior. Non-contingent praise, the type most commonly seen in the literature prior to the 1950s, is delivered randomly based on a schedule (i.e., every two minutes) (Kennedy & Wilcutt, 1964). Though this type of
praise delivery may follow a desired behavior strictly by chance, non-contingent praise is not specifically designed to do so.

While the literature has shown contingent praise is useful in improving student behaviors (Acker & O’Leary, 1987; Madsen et al., 1968), the use of contingent praise also makes intuitive sense. In order to be effective, teacher praise should function as positive reinforcement on student behavior (Chalk & Bizo, 2004). In other words, the addition of a praise statement following a desired behavior should result in increased levels of that behavior’s occurrence in the future. To accomplish this, praise delivery must be solely delivered contingent on the occurrence of appropriate behavior (O’Leary & O’Leary, 1977).

*Types of Praise: General and Behavior Specific*

In order for praise use to be most effective, praise statements should not only be contingent, but also behavior specific (Chalk & Bizo, 2004). Praise has historically been evaluated in two forms: general and behavior specific. Like the definition of praise itself, the terms associated with general versus behavior specific praise vary by researcher. Overall, however, behavior specific praise, as its name implies, is designed to inform the receiver, with some specificity, of the behavior to which a praise statement is tied. In other words, behavior specific praise statements show approval by directly stating the behavior involved; general praise statements do not.

In one example of research comparing behavior specific and general praise, Chalk and Bizo (2004) systematically evaluated the use of behavior specific versus general praise statements to increase positive classroom behaviors. Four elementary teachers participated in the study. Two were asked to deliver general praise statement following
academically engaged behaviors, while the second two participants were asked to deliver behavior specific statements. Across the four classrooms, those students who received behavior specific praise engaged in higher levels of on-task behaviors in the classroom than those who received general praise (Chalk & Bizo, 2004). Similarly, Richard (2012) manipulated the use of general versus behavior specific praise statements in an elementary setting. The results of the study indicated higher levels of academically engaged behavior when students received behavior specific, rather than general, praise from teachers (Richard, 2012).

Natural Rates of Praise

Although the use of praise in the educational setting, especially that which is contingent and behavior specific, has been shown to increase desired student behaviors, its use is often inconsistent and infrequent (Jenkins, Floress, & Reinke, 2015). In 1975, White used the Teacher Approval and Disapproval Observation Record (TAD) to evaluate natural rates of praise in the classroom in what is considered to be the first study of its kind. Until her evaluation, the majority of research on the subject of praise involved manipulating teachers’ praise rates but “little had been reported on rates of teacher verbal reinforcement as they actually occur in the classroom…what might be called naturalistic or existing rates” (White, 1975, p. 367). To determine these naturalistic rates, White and colleagues evaluated 104 teachers for a total of 8340 minutes in a series of 16 studies. The participants in these studies taught grades 1 through 12.

As mentioned, researchers used the TAD to record a frequency count of both praise statements and reprimands. Following observations, White converted each teacher’s frequency count into a rate per minute. These rates were then collapsed across
participants to determine an average rate of both praise and reprimands per grade level. Based on these rates, White concluded the use of praise exceeds the use of reprimands in grades 1 and 2 alone (1975). Rates of praise use were highest in 2nd grade at 1.3 statements per minute. White also noted that rates decreased as grade level increased.

Rather than distinguishing between general and behavior specific praise, White categorized both praise and reprimands as either instructional (based on academic performance) or managerial (based on social behavior) (1975). Across all grade levels, rates of managerial praise, or praise specific to social behaviors such as playing nicely with a neighbor or helping a classmate, were significantly lower than those based on academic achievement. Conversely, participants’ use of behavior-based reprimands was significantly higher than reprimands referring to academic performance.

Like White, several other researchers have sought to evaluate naturalistic rates of praise in the classroom. In an Australian study conducted by Burnett and Mandel (2010), rates of praise for four teachers in a rural elementary school (grades 1 to 6) were evaluated. The authors distinguished between general and behavior specific praise, reporting rates of .48 and .03 respectively. In a similar study, Reinke and colleagues (2013) evaluated the average use of general and behavior specific praise for teachers of Kindergarten to 3rd grade. Reinke and colleagues found general praise rates similar to those found by Burnett and Mandell; however, they documented higher rates of behavior-specific praise (Reinke et al., 2013). Both Burnett and Mandel (2010) and Reinke and colleagues (2013) reported much higher frequencies of praise per minute than the rates suggested by White in 1975. It is important to note this increase may be due to the introduction of positive behavior management techniques such as PBIS in the field of
education since White (1975) conducted her study. Though more recent studies have indicated teachers’ natural rates of praise may be higher than originally proposed by White (1975), Jenkins and colleagues (2015) suggest these rates are still much lower than ideal.

Increasing Teachers’ Use of Praise

Because studies have shown that naturally occurring rates of praise are low, researchers have continually sought ways to improve teachers’ use of praise in the classroom. Why is incorporating praise into the daily academic environment so important? Snider and colleagues (2002) suggest that an estimated 25% of students engage in problem behaviors in the classroom. When problem behaviors occur, they not only disrupt the learning of the individual student, but also negatively impact the overall classroom environment. High levels of disruptive or problem behavior often leads to increased levels of teacher stress and decreased opportunities for learning (DeMartini-Scully, Bray, & Kehle, 2000; Friedman, 1995). Because increased levels of praise in the classroom have been shown to result in improvements in student behavior, researchers have utilized several strategies in an effort to increase teachers’ use of praise.

In their review of the praise literature, Stage and Quiroz (1997) evaluated 99 studies to determine the effects of various intervention types on levels of disruptive student behaviors. The analysis included studies that targeted students in both general and special education and evaluated a variety of intervention types to modify unwanted behaviors. The interventions evaluated included parent training, relaxation training, home and school based interventions, punishment procedures, and differential reinforcement, in addition to the use of increased levels of praise. Those interventions designed to modify
teacher behaviors in addition to student ones (i.e., differential reinforcement and school-based interventions) resulted in the highest effect sizes (-0.77) for decreasing levels of student disruptive behaviors (Stage & Quiroz, 1997).

**Didactic Training**

Didactic training is one of the most common techniques used in an attempt to modify teacher behavior. Didactic training involves the presentation of new or pertinent information to an audience. These trainings may involve the use of visual aids such as PowerPoint presentations or handouts and usually occur in large group settings. During didactic training, listeners are encouraged to ask questions, but are rarely given the opportunity to practice using the presented information in the training setting. Though they are common and require few resources, didactic trainings alone have been shown to result in little improvement in performance and infrequent use of new techniques (Cavanaugh, 2013; Myers, Simonsen, & Sugai, 2011).

**Performance Feedback**

Because didactic training alone has been shown to result in little, if any, change in behavior, researchers often combine these trainings with performance feedback (Cavanaugh, 2013). As defined by Kluger and DeNisi, performance feedback involves “actions taken by (an) external agent(s) to provide information regarding some aspect(s) of one’s task performance” (1996, p. 255). It can occur in both visual and verbal form—either as graphed, visual feedback, or voiced reactions to one’s behaviors. In 2013, Cavanaugh conducted a systematic review of the literature surrounding performance feedback. His review focused solely on studies in which performance feedback was manipulated as the independent variable and praise was measured as a dependent variable.
(Cavanaugh, 2013). Of the 2,497 articles involving the terms “praise” and/or “performance feedback”, Cavanaugh discovered only 24 met the above variable criteria. After review of the studies, he concluded teachers’ use of praise increased most following the implementation of performance feedback and goal setting. It is important to note many studies included in the analysis involved a didactic training component in conjunction with performance feedback. Because the two occurred simultaneously, further research is needed to determine if performance feedback alone, or in conjunction with didactic training had the greater impact on increased use of praise (Cavanaugh, 2013). The difference in feedback type—either visual or verbal—was not examined in Cavanaugh’s review.

In an effort to further evaluate the utility of performance feedback, several other studies have examined its effect on teacher rates of praise. Pisacreta and colleagues (2011) used a multiple baseline design across participants to evaluate the effects of modeling and performance feedback on teachers’ ability to use a 1:1 praise-to-behavior ratio when addressing student behaviors in the classroom. Three middle school teachers participated in the study. Following baseline, each teacher was given feedback on her use of reprimands and percentages of student disruptive behavior. Participants were taught to acknowledge appropriate student behavior using praise. Unlike traditional didactic training, Pisacreta and colleagues modeled the delivery of behavior specific praise by providing behavior-specific praise statements to students during observations. After modeling, the observer sat in a nonobtrusive location (i.e., the back of the classroom) and provided prompts to the teacher to deliver statements of behavior-specific praise. The prompting lasted 20 minutes and was followed by verbal feedback on performance. A
second intervention phase involved only performance feedback; modeling did not occur. Observations in a generalization setting also took place. Each participant increased his or her use of behavior-specific praise from baseline to intervention. The difference in praise use from the modeling with feedback condition to the feedback only condition proved to be minimal. This suggests that performance feedback alone was sufficient in altering teacher behavior (i.e., increased use of praise; Pisacreta et al., 2011).

Like Pisacreta and colleagues (2011), Moffat (2011) utilized both in-person consultation and visual graphs of a teacher’s use of behavior specific praise in an effort to modify student behaviors. Moffat (2011) focused on a sole participant in an early-childhood care center in an attempt to improve the student’s social functioning while decreasing instances of aggressive behavior. Moffat (2011) found that as teacher use of behavior specific praise increased, so did the prosocial behavior of the child participant. Although results also indicated that as the child’s prosocial behavior increased, her aggressive behavior decreased, the design of the study did not allow for determination of whether a functional relationship between the two existed.

Reinke and colleagues (2008) evaluated the effects of a consultation package on teachers’ use of praise in the classroom. The package involved both the teaching of classroom-based behavior management strategies and performance feedback. The package, The Classroom Check-Up, was evaluated with four general education teachers from 1st to 5th grade. A multiple-baseline design across classrooms was used to examine the effects. The Classroom Check-Up involves five components that were tailored to fit the individual needs of the classroom being targeted; teacher self-monitoring and visual performance feedback were compared in this study (Reinke et al., 2008). Though the self-
monitoring component did lead to increased use of praise over baseline, performance feedback led to the greatest increases in teachers’ use of praise. During the performance feedback condition, not only did use of behavior specific praise increase, but so did the frequency of general praise. Additionally, as use of both types of praise increased, teachers’ use of reprimands decreased (Reinke et al., 2008).

Although performance feedback has been shown to increase teachers’ use of praise during intervention, there are very few studies that have examined whether these increases are maintained over time. The few researchers who have evaluated follow-up and maintenance in regards to rates of praise in performance feedback studies noted a decline in praise use once the intervention was removed (e.g., Cavanaugh, 2013).

Reinforcement Strategies

In an effort to increase maintenance of behavior change, some researchers have applied the principles of reinforcement to modify teacher behavior. Reinforcement is described as a consequence that results in an increase in a behavior’s future occurrence. Positive reinforcement occurs when a behavior is followed by a specific stimulus, and as a result, that behavior is likely to occur again under similar conditions (Cooper, Heron, & Heward, 2007). Although one may hypothesize that improvements in student behavior alone may be enough to maintain continuously high levels of praise over time, the literature has suggested otherwise. For example, Noell (2008) examined the connection between consultation, teachers’ integrity when providing intervention, and student performance. He found that consultation and training alone does little to ensure teachers’ use of interventions, let alone, provide the necessary momentum to change student behavior (Bear, 2013; Noell, 2008). Reinforcing teachers for use of recommended
interventions may be useful in increasing teacher integrity as well as maintaining improvements in behavior following withdrawal of an intervention.

*Group Contingencies*

Group contingencies are a type of reinforcement paradigm that have proven useful throughout the literature as a tool to modify student behaviors. Though effective, little research has focused on using group contingencies to modify teacher behaviors. As defined by Cooper, Heron, and Howard (2007) there are three types of group contingencies: dependent, independent, and interdependent. A dependent group contingency is one “in which reinforcement for all members of a group is dependent on the behavior of one member of the group or the behavior of a select group of members within the larger group” (Cooper, Heron, & Heward, 2007, p. 693).

While the behavior of one individual determines the outcome for the entire group in a dependent contingency, an independent group contingency, as its name implies, relies on an opposing criteria. An independent group contingency can be defined as one in which the delivery of reinforcement to all members of the group is dependent on the behavior of all individuals within that group, not just one (Cooper, Heron, & Heward, 2007). In other words, although all members of a group have equal access to a reinforcer, the behavior of each individual determines whether he or she ultimately earns reinforcement.

*Independent Contingencies and Single Case Design*

Certain single-case studies involving behavior modification for teachers may be viewed as independent group contingencies. Although the teacher participants are not grouped in the sense that they share a physical space (i.e., classroom), each has access to
the same reinforcement contingent on engagement in the same behavior. Two studies in particular have evaluated the effects of contingent reinforcement on teacher behavior. Both DiGennaro and colleagues (2007) and Noell and colleagues (2000) relied on negative reinforcement, the removal of an aversive, to determine the effects of contingencies on teacher behavior.

DiGennaro and colleagues (2007) evaluated the degree to which four special education teachers implemented a behavior plan. During baseline, all participants received integrity scores of 0%, indicating that none of the four responded to student problem behaviors according to the student’s intervention plan. Following baseline, two teachers were placed in the goal setting/student performance feedback condition while the additional two teachers experienced performance feedback plus meeting cancellation. The meeting cancellation was contingent on teacher response to problem behaviors with 100% integrity. Researchers found that when teachers were able to avoid meeting with the experimenter contingent on integrity, integrity neared 100%. When teachers received performance feedback alone, integrity marginally increased or remained at 0% (DiGennaro et al., 2007).

Similarly, Noell and colleagues (2000) evaluated treatment integrity of five teachers in regards to a peer-tutoring academic intervention. Teachers were trained to 100% integrity, yet performance quickly diminished upon introduction of the treatment condition. Following the decrease in treatment integrity, teachers met with a neutral consultant to discuss the intervention and answer any questions. This form of consultation did little to improve integrity. Teachers then moved to a more intensive phase, meeting with the experimenter to evaluate student outcome data for 3 to 5 minutes
daily. If a teacher was able to implement with integrity for four consecutive days, morning consultation meetings decreased in frequency. As with DiGennaro, researchers saw increased levels of treatment integrity when the opportunity to avoid meeting with the experimenter was in place. These two independent contingency studies suggest that reinforcement, in this case negative, was powerful in producing improved teacher performance. Little research, however, has evaluated the effects of positive reinforcement strategies on modifying teacher behavior, let alone increases in use of praise.

*Interdependent Contingencies and Single Case Design*

Unlike dependent and independent contingencies, interdependent group contingencies require that a group work together to access a reward. As defined by Cooper, Heron, and Heward, an interdependent contingency is a contingency “in which reinforcement for all members of a group is dependent on each member of the group meeting performance criterion that is in effect for all members of the group” (2007, p. 698). Interdependent contingencies are frequently used as class-wide interventions, such as the Good Behavior Game.

As part of the Good Behavior Game, classes are divided into teams in which student participants work together to maintain a pre-determined level of behavior (i.e., low levels of disruption). The team(s) who maintain this criterion are then rewarded, having all worked together to access reinforcement. Variations of the Good Behavior Game have shown increased levels of academic engagement and decreased disruptive behavior across both participants and settings; levels of which were maintained following removal of the intervention (e.g., Barrish, Saunders, & Wolf, 1969; Christ & Christ, 2006; Hunt, 2012).
Although interdependent contingencies have been shown to lead to favorable and lasting outcomes in terms of student behavior, very few studies have examined the use of an interdependent contingency to modify the behavior of teachers. In 2013, Smith and colleagues evaluated the use of an interdependent group contingency in the context of a summer camp for children with disabilities. Six group leaders between the ages of 18 and 30 participated in the study. All six had limited experiences interacting with children with disabilities such as autism spectrum disorder, Down syndrome, and cerebral palsy. The study used an A-B-C-B-C withdrawal design consisting of baseline, group contingency alone, group contingency plus performance feedback, the repeat of group contingency alone, followed by the repeat of group contingency plus feedback. Role play was used to teach the group leaders appropriate use of praise, with the experimenter giving both accurate and inaccurate examples. During the group contingency phase, the six leaders were divided into two teams of three. They were told each morning before campers arrived to “provide lots of positive feedback” (Smith et al., 2013, p.15) and the team with the greatest number of praise statements at the end of the week received an ice cream trip paid for by the experimenters.

The contingency plus feedback phase was more resource intensive and involved visual feedback in the form of a graph, goal setting for number of praise statements, and public posting of goals in the staff office. The winning team was calculated in the same manner as the previous phase. Meeting of daily goals did not affect whether a team was rewarded. This study demonstrated that both the group contingency and contingency plus feedback phase resulted in increased use of behavior specific praise by the group leaders from baseline to intervention. Additionally, the group contingency plus performance
feedback phase lead to higher rates of praise than the group contingency alone. Rates of praise were 1.2 praise statements per camper in baseline, 1.9 in group contingency alone, and 2.5 when feedback was added. These findings were replicated when the second B-C portion of the study was implemented—resulting in 1.6 praise statement per camper during the second group contingency only phase, increasing to 2.7 praise statements per camper when performance feedback was added.

Purpose of the Present Study

A review of the literature has shown that praise has been an important topic of study for more than a century. Though the focus of praise research has shifted throughout the years, it remains an important piece of the educational puzzle. Because positive, proactive programs such as PBIS have become popular, yet teachers’ natural rates of praise remain low, researchers have sought ways to increase teachers’ use of praise in the classroom setting. The use of didactic training is common, and when combined with performance feedback, has proven effective in increasing rates of praise during intervention. While performance feedback is effective in the short-term, additional strategies may be needed to result in lasting improvements in use of praise. The current study sought to increase teacher use of praise through the delivery of reinforcement for emitting target levels of praise. Using the principles associated with independent and interdependent group contingencies, teacher participants were systematically reinforced for high levels of behavior specific praise. By alternating between two treatment conditions, the primary investigator sought to determine if an independent or interdependent reinforcement contingency was more effective in increasing teachers’ use of behavior specific praise.
The current study sought to answer the following research questions:

1. Did the introduction of an interdependent reinforcement contingency increase teachers’ use of behavior specific praise statements?
2. Did the introduction of an independent reinforcement contingency increase teachers’ use of behavior specific praise statements?
3. When comparing the two contingencies, did one result in higher levels of behavior specific praise?
4. Did the application of either contingency result in higher levels of academically engaged student behavior and lower levels of disruptive student behavior?
5. Were increases in teacher use of praise associated with decreases in use of reprimands?
6. Did teachers rate either the independent or interdependent treatment condition as socially valid?
CHAPTER III - METHODOLOGY

Participants and Setting

Four general education teachers participated in the present study. The four participants taught at an elementary school located in the southern United States. Teacher participants were referred to the primary researcher by the Multi-tiered Systems of Supports (MTSS) coordinator at the school. Each teacher was referred due to high rates of reprimands in the classroom or for help managing disruptive student behaviors. Increased rates of praise have previously been found to decrease the occurrence of disruptive behavior (e.g., Villeda et. al, 2014); therefore, teachers struggling with these concerns were identified as being likely to benefit from inclusion in the present study. Prior to inclusion, a screening observation was conducted in each potential participant’s classroom. Any teacher found to exhibit ten or more behavior specific praise statements per 20-minute observation would be excluded from the study. Each of the four teachers recommended for participation, met criteria for inclusion based on screen-in observations.

As previously mentioned, all four teacher participants were employed at the same elementary school. The school included 432 students in Preschool to 5th grade; approximately 93% of these students qualified for either free or reduced lunch. 79.9% of the student body identified as African American, 5.8% as Caucasian, and 11.8% as Hispanic. The remaining 2.5% of students identified as either Asian, Native American, Multi-Racial, or Pacific Islander. The elementary school had a system of Positive Behavior Interventions and Supports monitored by a school-based committee in place prior to introduction of the present study.
Permission to conduct research in the elementary setting was obtained from the district office where the school was located as well as from the school’s principal. In addition to district permission, the primary researcher also obtained approval from the University’s Institutional Review Board (See Appendix A). Informed consent and demographic data were gathered from participating teachers prior to the start of observations (See Appendices B and C). Student demographic information was obtained from the school’s MTSS coordinator under approval of the principal (See Appendix C). In an effort to protect confidentiality of the collected demographic information, each teacher participant in the study was given a pseudonym under which her data was analyzed.

Participant 1, Ms. Jackson, an African American female, was a 2nd year general education Kindergarten teacher. She had previous experience as a teaching assistant, and held a Bachelor’s degree in Elementary Education. She had 26 students in her classroom, 14 males and 12 females. 22 of her students identified as African American and four as Hispanic. She had two students in her class with Individualized Education Programs (IEPs) through the school’s Special Education Department. Additionally each Hispanic student in her class received English as a Second Language (ESL) services several days per week.

Participant 2, Mrs. Jones, was also a general education kindergarten teacher and an African American female. She was in her 3rd year of teaching and held a Master’s Degree in Special Education. Her class was made up of 28 students, 13 males and 15 females. 22 of her students identified as African American, one as Caucasian, and five as Hispanic. None of her students held IEPs, though one was evaluated for placement in
special education during the course of the present study. It is important to note this student’s testing was unrelated to the research being conducted. Each Hispanic student in Mrs. Jones’s class received ESL services several times per week.

Participant 3, Mrs. Crowley, an African American female, was a 4th year general education 1st grade teacher. Her areas of focus were mathematics and science. She held a Bachelor’s degree in Elementary Education and her class was made up of 22 students, 13 males and 9 females. 16 of these students identified as African American, one as Caucasian, and five as Hispanic. None of her students held IEPs, though the five Hispanic students received ESL services several times per week.

Participant 4, Mrs. Robinson, a Caucasian female, was also a general education 1st grade teacher. Her focus was English and language arts. She was in her 3rd year of teaching and held a Bachelor’s degree in Elementary Education. Her class was made up of 21 students, 8 males, and 13 females. 17 of her students identified as African American, two as Caucasian, one as Hispanic, and one as Arabic. As in the previous classes, the Hispanic student in Mrs. Robinson’s homeroom received ESL services several times per week.

Due to the nature of the study, teacher participants were yoked into teams of two. Ms. Jackson and Mrs. Jones, the two kindergarten teachers, acted as the first pair while the 1st grade teachers, Mrs. Crowley and Mrs. Robinson, created the second pair. The elementary school where the study took place held weekly grade-level team meetings in which teachers of the same grade-level discussed lesson plans, voiced concerns of student behaviors, and received grade-specific academic coaching. Due to the “team” dynamic already in place per grade level, participants were yoked with fellow teachers based on
this criterion during the study. Each pair of participants received the same sequence of
intervention conditions and had access to reinforcement as a team during the
interdependent treatment condition.

Materials

*Training on Praise*

Following baseline and prior to intervention, a training on behavior specific praise
(BSP) was conducted with each pair of teachers. During the training, teachers were given
a handout on behavior specific praise, explained its uses in the classroom, and provided
with examples and non-examples of BSP statements (See Appendix E). During the
training, participants were also provided with a rationale for pairing two teachers together
during the interdependent condition and given the opportunity to ask questions.

*Observation Form and Cueing Device*

During observations, a data collection form and MotivAider were used by both
the primary investigator and secondary observers. Each observation form consisted of 10-
second interval blocks that together comprised a 20-minute period (See Appendix D).
The MotivAider, a small, pager-like device that can be easily held or placed in one’s
ocket, was set to vibrate every 10 seconds. As a result, it acted as a cue, alerting the
observer of the end of each interval.

*Behavior Intervention Rating Scale (BIRS)*

At the conclusion of the study, teacher participants were asked to evaluate the
acceptability and usability of the intervention conditions using the Behavior Intervention
Rating Scale (BIRS; Elliott & Von Brock Treuting, 1991; See Appendix G). Using a six-
point Likert scale with ratings ranging from Strongly Disagree (1) to Strongly Agree (6),
the BIRS allows the researcher to determine if the present intervention was perceived as socially valid. High ratings on the BIRS indicate high levels of satisfaction with the intervention on the part of participants. The BIRS consists of three factors: Acceptability, Effectiveness, and Time. The Acceptability factor is based on prior research using the IRP-15 and has an alpha of .97 (Elliott & Von Brock Treuting, 1991). The Time and Effectiveness factors are not based on previous measurement evaluations, but rather logic. “Logic would dictate that the time requirement of an effect would have a salient place in the evaluation of any treatment” (Elliott & Von Brock Treuting, 1991, p. 49). The Time and Effectiveness factors have alphas of .87 and .92, respectively. The BIRS has been found to have high internal consistency with an overall alpha of .97 (Elliott & Von Brock Treuting, 1991).

Dependent Variables

The primary dependent variable in the current study was the number of behavior specific praise statements issued by a teacher participant within a 20-minute period. A behavior specific praise statement was defined as a verbal statement issued by the teacher to convey approval and provide the student with a description of the specific behavior being praised. For example, “Johnny, I love how quietly you are sitting in your desk” or “Thank you for completing your math worksheet on time.” While it is common for teachers to use a student’s name when delivering a praise statement, it was not required that a BSP statement include the child’s name to be coded as occurring.

In addition to the number of behavior specific praise statements used during observation, the current study also collected data regarding the number of general praise statements used by teacher participants. A general praise statement was defined as any
verbal statement conveying approval that does not specifically label a behavior. An example of a general praise statement would be a simple, “good job.” A frequency count within 10-second intervals was used to separately tally the number of behavior specific praise statements and general praise statements issued by each participant during observations.

Data on two variations of reprimands were also collected. As with praise, there are two forms of reprimands—behavior specific and general. A behavior specific reprimand was defined as a statement or remark specifically referencing the behavior to which a reprimand was tied (i.e., “Stop tapping your pencil”). A general reprimand, however, was defined as a negative statement that did not specifically label a behavior, such as “Sam, stop”. Similarly to the coding of praise statements, reprimands were recorded using a frequency count. Behavior specific and general reprimands were tallied separately per 10-second interval.

In addition to teacher behavior, data on student behaviors were collected as a secondary dependent variable. The behaviors recorded during observations were disruptive behavior, passive off-task, and academically engaged behavior. Disruptive behavior included the following: inappropriate vocalizations, defined as vocalizations unrelated to the academic activity; playing with objects, defined as manipulation of objects unrelated to the academic task or manipulation of objects in a manner inconsistent with their intended use; noncompliance, defined as breaking a classroom rule or failing to follow a teacher directive delivered during the same interval; and out of seat, defined as a student’s buttocks breaking contact with their assigned seat for three or more seconds without teacher permission. Passive off-task was defined as a student being oriented
away from the academic activity or student inactivity during a task demand (i.e., a student is observed gazing at the ceiling or staring into space). Academically engaged behavior was defined as actively working on the assigned academic task, participating in class discussion by raising hand, answering teacher questions aloud as part of a group, asking the teacher or a peer a question pertaining to current academic task, or being oriented towards teacher during lecture.

Data Collection

As previously mentioned, data for the present study were collected during 20-minute observations. The 20-minute time block was divided into 10-second intervals. During each 10-second interval, the primary researcher and all trained observers recorded a frequency count of both praise statements and reprimands delivered by the teacher participant. The frequency count included four items: behavior specific praise, general praise, behavior specific reprimands, and general reprimands. In addition, student behavior during each 10-second interval was recorded using momentary time sampling in an individual-fixed method of group observation. Studies completed by Meany-Daboul et al. (2007) and Radley et al. (2015) have shown momentary time sampling to be more accurate than both whole interval and partial interval recording during observation.

An individual-fixed method of observation was utilized to quantify the behavior of all students in the class. During the individual-fixed method of observation, the researcher observes student behavior by systematically working his or her way from student to student in the classroom. Beginning in one corner of the observation setting, the researcher records the behavior of a different student per interval until all students have been observed. The observer then directs his attention to the beginning corner and
repeats the sequence (one student’s behavior observed per 10-second interval) until the full observation time has passed. Briesch and colleagues (2015) and Dart and colleagues (2016) compared individual and group fixed and individual and group random methods, finding individual fixed to result in highly accurate and feasible collection of data.

Design

An alternating treatments design (ATD) with initial baseline phase was used for the present study. Though a final “better” treatment verification phase was initially proposed, neither treatment emerged as superior and time constraints (i.e., end of the school year) resulted in this phase being dropped from the study design. As previously described, the four teacher participants were yoked into pairs, each pair experiencing the same alternation of independent and interdependent contingencies. By using an ATD, the primary researcher was able to quickly compare the effects of the two reinforcement contingencies on the primary dependent variable, the number of behavior specific praise statements issued per observation.

Using an ATD, participants experience a baseline phase, followed by the alternating of two or more intervention conditions. Both baseline and intervention phases consisted of at least five data points per condition. Visual analysis of behavior specific praise data was conducted to determine phase changes (Kratochwill et al., 2010). Though originally proposed, a follow-up phase to assess maintenance of the intervention conditions was not completed due to time constraints.

Procedures

Screening
As previously described, participants were referred to the primary researcher due to high levels of disruptive behaviors in the classroom or frequent teacher use of reprimands. Prior to baseline, a screen-in observation was conducted to determine if a teacher would likely benefit from participation in the present study. The primary researcher conducted one 20-minute observation in each potential participant’s classroom. During observations, the researcher coded for both the primary and secondary dependent variables. If a teacher issued less than ten behavior specific praise statements per observation, she qualified to participate in the study. No potential participants were excluded based on screen-in criteria. The screen-in observation acted as each participant’s initial baseline point.

**Baseline**

During the baseline phase of the present study, participants were instructed to continue use of their everyday classroom management procedures. Feedback on frequency of praise and reprimand use, as well as levels of student behaviors, were not provided to participants during baseline.

**Training**

Following baseline, teacher participants were trained on the use of behavior specific praise in the classroom. The training was didactic in nature and conducted separately with each pair of participants. Information presented during training included examples and non-examples of each type of praise and reprimand, as well as researched student outcomes following the use of higher rates of behavior specific praise. During the training, the researcher also explained to participants that two phases of treatment would occur and how to access reinforcement during each treatment condition.
Reinforcement Options and Contingency Criteria

Following baseline, each participant was asked to name several types of reinforcers she would enjoy earning access to. With the approval of the school’s principal and the primary researcher’s advisor, school supplies were chosen as a viable reinforcement option. Participants named preferred items such as sticky notes, notepads, dry-erase markers, permanent markers, and felt-tipped pens. These items were purchased by the primary researcher and placed in a clear basket from which teachers could choose if criteria for reinforcement was met.

To access daily reinforcement, teachers were required to meet or exceed certain frequencies of behavior specific praise. During the independent condition, teachers were required to emit at least ten behavior specific praise statements per observation. During the interdependent condition, this criteria was doubled to 20 behavior specific praise statements issued between a yoked pair of participants.

Independent and Interdependent Treatment Conditions

In an effort to reduce reactivity, the primary researcher did not act as consultant nor did she provide participants with performance feedback during treatment conditions. A school employee, in this case, the MTSS coordinator, was recruited by the primary researcher to act as consultant during intervention. The school employee provided all performance feedback and delivered or withheld reinforcers throughout the study’s treatment phase. It is important to note that all participants were accustomed to receiving performance feedback from this individual during weekly grade-level meetings prior to conduction of the present study. The teacher-coach dynamic already in place between the MTSS coordinator and participants allowed for more naturalistic feedback sessions.
following observations and prevented the primary researcher from serving a dual role as consultant and observer during intervention.

The intervention phase of the current study included the random alternation between an independent and an interdependent reinforcement contingency. As previously mentioned, participants in each pair received the same sequence of alternation, though this sequence varied between pairs. The contingency in place during each observation was determined randomly by the primary investigator prior to the start of the treatment phase. Though the conditions were randomly chosen, if the same treatment was drawn two days in a row, on the third day in the sequence, the alternative treatment was presented by default. Because the ability to discriminate between treatment conditions is paramount to an alternating treatments design, teachers were informed at the beginning of each observation whether they were working towards the independent or interdependent reinforcement criteria. A script was used by the MTSS coordinator to ensure presentation of criteria was standardized.

During the independent, or individual, reinforcement contingency, each teacher participant had the ability to earn reinforcement based on her own frequency of behavior specific praise statements per observation. Like in an independent group contingency, the independent reinforcement condition focused solely on the performance of the individual, rather than the pair. The entire group, or in this case, pair, has access to the same reinforcer; however, to gain access, participants must meet a certain criteria individually. As previously described, the criterion for the independent condition was ten behavior specific praise statements emitted per 20-minute observation.
Following observation, the researcher tallied the number of behavior specific praise statements emitted and determined if the participant met criteria for reinforcement based on the condition in place. The number of behavior specific praise statements emitted was shared with the MTSS coordinator in order for her to provide performance feedback to participants prior to delivering or withholding reinforcement. A script was used by the coordinator to ensure consistency in performance feedback procedures. Each treatment contingency had a script tailored to fit its unique criteria (See Appendices H and I).

During the interdependent condition, teacher participants were required to work in pairs to access reinforcement. Between the two participants, a criteria of 20 praise statements across two observations (one per classroom) had to be met. Although this criteria had the potential for each teacher to emit the same number of praise statements set as criteria in the independent condition, it also allowed for one participant to out-perform the other. In other words, participants could access reinforcement if each emitted 10 behavior specific praise statements OR if one teacher emitted five and the other, fifteen. No matter how the statement frequencies were distributed across participants in the pair, if 20 total BSP statements were emitted, both partners received access to reinforcement. During interdependent condition observations, feedback on frequency of behavior specific praise statements was given as a total number of behavior specific praise statements for the pair, followed by the individual performance of each teacher. Both teachers were given feedback on each other’s performance (See Appendix I).
Best Treatment Phase

As previously mentioned, a variation of an alternating treatments design was proposed for this study. This variation included “a final phase in which only the most effective treatment is administered” (Cooper, Heron, & Heward, 2007, p. 193). This phase was not completed due to time constraints.

Interobserver Agreement

Interobserver agreement (IOA) was collected for at least 20% of observations per phase. Potential observers for this study were trained by the primary researcher prior to conducting observations on their own. An observer was required to reach 85% agreement with the primary researcher to be considered trained. In order to collect IOA, secondary observers recorded teacher and student behavior simultaneously with the primary researcher. Following each IOA observation, coding worksheets were compared to determine percentages of agreement. IOA percentages were calculated using the following equation: \[ \frac{\text{# of agreements}}{\text{# of agreements} + \text{# of disagreements}} \times 100 \]. If IOA for a trained observer fell below 85% at any time, that observer was retrained by the primary researcher.

Interobserver agreement was collected for 35.9% of total observations—36.4% in baseline, 30.8% during the independent condition, and 40% during the interdependent condition. IOA for pair 1 (Ms. Jackson and Mrs. Jones) was collected during 33.3% of baseline observations and 28.6% and 42.9% of intervention observations during the independent and interdependent conditions respectively. 40% of baseline observations were included in IOA for Mrs. Crowley and Mrs. Robinson (pair 2) with 33.3% and
37.5% during the independent and interdependent conditions. Mean and range IOA data for both the primary and secondary variables are presented in the Table 1.

In addition to simple IOA, kappa was calculated. Kappa is a more stringent measure of calculating IOA in that it accounts for agreement due to chance. Viera and Garrett (2005) described six levels of agreement produced by kappa. If a kappa value falls between 0.81 and .99, *almost perfect* agreement has occurred. Levels of .61 to .80 indicate *substantial* agreement. Values of .41 to .60 represent *moderate* agreement while levels of .21 to .40 indicate *fair* agreement. A kappa value below 0 represents *less than chance* agreement. Kappa calculations for the current study were 0.994 for Ms. Jackson, 0.991 for Mrs. Jones, 0.998 for Mrs. Crowley, and 0.985 for Mrs. Robinson. All four values indicate almost perfect agreement.

**Table 1 Mean and Range Percentages of IOA per Dependent Variable**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Baseline</th>
<th></th>
<th>Independent</th>
<th></th>
<th>Interdependent</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Range</td>
<td>Mean</td>
<td>Range</td>
<td>Mean</td>
<td>Range</td>
</tr>
<tr>
<td>General Praise</td>
<td>98.6</td>
<td>92.9 –</td>
<td>99.8</td>
<td>98 –</td>
<td>96.5</td>
<td>80 –</td>
</tr>
<tr>
<td>Behavior Specific Praise</td>
<td>98.2</td>
<td>85.7 –</td>
<td>97.3</td>
<td>88.9 –</td>
<td>92.5</td>
<td>50 –</td>
</tr>
<tr>
<td>General Reprimands</td>
<td>100</td>
<td>–</td>
<td>100</td>
<td>–</td>
<td>100</td>
<td>–</td>
</tr>
<tr>
<td>Behavior Specific Reprimands</td>
<td>93.5</td>
<td>77.8 –</td>
<td>92.9</td>
<td>75 –</td>
<td>94.3</td>
<td>66.7 –</td>
</tr>
<tr>
<td>Academically Engaged Behavior</td>
<td>99.7</td>
<td>99.2 –</td>
<td>99.6</td>
<td>98.3 –</td>
<td>99.8</td>
<td>98.3 –</td>
</tr>
<tr>
<td>Disruptive Behavior</td>
<td>99.3</td>
<td>98.3 –</td>
<td>99.6</td>
<td>98.3 –</td>
<td>99.8</td>
<td>98.3 –</td>
</tr>
<tr>
<td>Passive Off-Task</td>
<td>99.6</td>
<td>98.3 –</td>
<td>99.8</td>
<td>98.3 –</td>
<td>100</td>
<td>–</td>
</tr>
</tbody>
</table>

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Data Analysis

The data for this study were primarily analyzed through visual analysis. Level, trend, variability, overlap, immediacy, and consistency of effect across similar phases were assessed (Kratochwill et al., 2010). Along with these, the primary researcher also evaluated the divergence seen between treatment conditions. Divergence was defined as a visual distinction between levels of a dependent variable when compared for the independent and interdependent treatment conditions.

In addition to visual analysis, Tau-U was calculated to determine effect sizes for each dependent variable (Parker, Vannest, Davis, & Sauber, 2011). Tau-U is a method for data analysis that combines the non-overlap between phases with trend that occurs within a baseline phase. Because Tau-U takes baseline trends into account, it is often considered a more conservative measure of non-overlap than NAP (Parker, Vannest, Davis, & Sauber, 2011). For the present study, Tau-U will be interpreted according to the guidelines proposed by Vannest and Ninci (2015). In these guidelines, Vannest and Ninci indicate an effect size of 0.2 represents a small change, while a change of 0.2 – 0.6 may be considered moderate. In addition to these, an effect size of 0.6 – 0.8 indicates a large change and values above 0.8 can be considered very large change (Vannest & Ninci, 2015). Although typically used to compare adjacent phases in multiple-baseline or reversal design studies, Ganz, Boles, Goodwyn, and Flores (2014) demonstrated the utility of using Tau-U to assess effect sizes for alternating treatments design studies as well.

Along with visual analysis and Tau-U calculations for intervention data, social validity data from the present study were analyzed using descriptive statistics. Means and
ranges of treatment acceptability as rated on the BIRS were calculated and are presented in the next section.
CHAPTER IV – RESULTS

Visual Analysis

The study’s intervention phase resulted in higher levels of behavior specific praise for each participant during both the independent and interdependent treatment conditions when compared to baseline. Similarly, both treatment conditions resulted in increased levels of academically engaged behavior and decreases in disruptive student behavior. Levels of passive off-task increased from baseline to treatment phases for two of the four classes and decreased during treatment conditions for the other two.

Data from all participants are presented in Figures 1 through 3. Figure 1 presents levels of both behavior specific and general praise. Figure 2 shows participants’ use of behavior specific and general reprimands. Figure 3 presents percentages of student engagement in academic and disruptive behaviors as well as passive off-task.

Teacher Behaviors

Frequency of Praise

Pair One

During baseline, Ms. Jackson issued variable levels of general praise ($M = 22$; range $8 – 32$), though stable and decreasing levels of behavior specific praise were observed ($M = 3.8$; range $1 – 6$). When the treatment phase was introduced, an immediate increase in levels of both general and behavior specific praise was demonstrated for both the independent and interdependent conditions. An increase in trend was also observed for the use of behavior specific praise. Although levels of behavior specific praise remained relatively stable, rates of general praise were variable and decreased as the intervention phase continued. Though neither the independent nor
interdependent treatment condition emerged as superior, both resulted in improved frequency of behavior specific praise use. During the independent condition, Ms. Jackson averaged 36.4 general praise statements (range = 10 – 51) and 27.7 behavior specific statements (range = 19 – 33). During the interdependent or team condition, Ms. Jackson averaged 33.3 general praise statements (range = 19 – 52) and 23.4 behavior specific praise statements (range = 15 – 28).

Mrs. Jones presented variable and decreasing levels of both general ($M = 9.3$; range = 1 – 17) and behavior specific praise ($M = 5.2$; range = 1 – 9) during baseline. During treatment conditions, frequencies of behavior specific praise rates increased
immediately in level while frequency of general praise remained similar then gradually decreased in level. In the independent condition, Mrs. Jones averaged 12.7 (range = 0 – 24) general praise statements and 20.9 behavior specific statements (range = 16 – 29). During the interdependent condition, Mrs. Jones ranged from 1 – 15 general praise statements ($M = 5.7$) and 14 – 33 behavior specific statements ($M = 24.1$).

Pair Two

During baseline, Mrs. Crowley’s levels of behavior specific praise remained low and stable, alternating between 0 and 1 praise statement ($M = 0.4$) per 20-minute observation. Her levels of general praise averaged 7.8 statements (range = 3 – 14), showing a decreasing trend over time. Upon introduction of the treatment phases, Mrs. Crowley exhibited an immediate increase in both level and trend. While frequencies were variable at first, as the treatment conditions continued, levels of both behavior specific and general praise stabilized. In the independent condition, Mrs. Crowley averaged 16.8 general praise statements (range = 4 – 33) and 28.7 behavior specific statements (range = 16 – 39). During the interdependent phase, Mrs. Crowley used on average 15.1 (range = 5 – 24) general praise statements and 29.3 behavior specific ones (range = 18 – 35).

Finally, Mrs. Robinson emitted a mean of 9.2 general praise statements (range = 1 – 14) and 1.8 BSP statements (range = 0 – 5) during baseline. Baseline levels of behavior specific praise remained low and stable while levels of general praise varied before stabilizing. During treatment, Mrs. Robinson presented immediate increases in use of behavior specific praise, though levels remained variable throughout the interdependent condition. The independent condition resulted in an increase to 12.2 general statements on average (range = 2 – 33) and 13 BSP statements (range = 8 – 18). The interdependent
condition resulted in a range of 9 – 15 general praise statements ($M = 10.6$) and 2 – 24 behavior specific praise statements ($M = 13.3$).

*Frequency of Reprimands*

*Pair One*

During baseline, Ms. Jackson issued high, varying levels of behavior specific reprimands ($M = 30.8$; range = 16 – 58), though lower, varying levels of general reprimands ($M = 10.7$; range = 4 – 11). When the study’s treatment phase was introduced, an immediate decrease in levels of both general and behavior specific reprimands was demonstrated in both the independent and interdependent conditions. Although levels of behavior specific reprimands increased towards the end of intervention, mean rates of reprimands remained lower than baseline throughout both treatment conditions. During the independent condition, Ms. Jackson averaged 2.7 general (range = 0 – 11) and 6.4 behavior specific statements (range = 1 – 14). During the interdependent condition, Ms. Jackson averaged 2.7 general reprimands (range = 0 – 8) and 9.4 behavior specific ones (range = 1 – 26).

Mrs. Jones presented increasing levels of both general ($M = 13.8$; range = 5 – 31) and behavior specific reprimands ($M = 37.8$; range = 9 – 58) during baseline. During treatment conditions, frequencies of both behavior specific and general reprimands decreased immediately in level. Rates of general reprimands remained low and stable across treatment conditions, while the interdependent condition was more effective in decreasing Mrs. Jones’s use of behavior specific reprimands. In the independent condition, Mrs. Jones averaged 4.3 (range = 1 – 12) general reprimands and 18.6 behavior specific ones (range = 4 – 32). During the interdependent condition, Mrs. Jones


**Figure 2.** Frequency of General and Behavior Specific Reprimands per Teacher

Note: Pair One – left; Pair Two – right. Closed circles = General Reprimands (Baseline); Closed squares = Behavior Specific Reprimands (BSR) (Baseline); Open circles = General Reprimands (Independent); Open squares = BSR (Independent); Circles with X = General Reprimands (Interdependent); Squares with X = BSR (Interdependent).

ranged from 0–7 general ($M = 2.6$) and 6–29 behavior specific reprimands ($M = 16.9$).

*Pair Two*

During baseline, Mrs. Crowley’s use of general and behavior specific reprimands varied in both level and trend, ranging from 5–21 general ($M = 13.4$) and 11–34 behavior specific ($M = 25.2$) per 20-minute observation. During treatment, levels of general reprimands immediately decreased in level and stabilized. Levels of behavior specific reprimands remained variable level and trend throughout treatment. In the independent condition, Mrs. Crowley averaged 4.7 general reprimands (range $= 1–10$) and 16 behavior specific reprimands (range $= 6–33$). During the interdependent phase,
Mrs. Crowley used an average of 3.6 (range = 0 – 9) general and 15.8 behavior specific reprimands (range = 3 – 47).

Mrs. Robinson emitted low, stable levels of general and higher, variable levels of behavior specific reprimands during baseline. She used a mean of 5.8 general (range = 3 – 11) and 15.6 behavior specific reprimands (range = 3 – 26). During treatment conditions, Mrs. Robinson’s use of general reprimands remained stable and low, decreasing in level and trend. Her use of behavior specific reprimands remained variable throughout treatment. The independent condition resulted in an average use of 2.2 general reprimands (range = 0 – 5) and 8.5 (range = 3 – 15) behavior specific reprimands. The interdependent condition led to low levels of general reprimands at $M = 2.9$ (range = 0 – 13) though slightly increased levels of behavior specific reprimands than seen during the independent condition ($M = 11.5$; range = 3 – 25).

Table 2 shows the mean frequency of both general and behavior specific praise and reprimands per teacher participant.

**Student Behaviors**

*Academically Engaged Behavior*

**Pair One**

During baseline, Ms. Jackson’s students presented decreasing and variable levels of academic engagement ($M = 32.5\%$; range= 19.2 – 42.5%). Upon the introduction of the treatment conditions, academically engaged behaviors increased in level and trend to reach an average of 57.3% (range = 43.3 – 77.5%) and 51.7% (range = 31.7 – 67.5%) during the independent and interdependent conditions respectively.
Table 2 *Mean Frequency of Praise and Reprimands per Teacher*

<table>
<thead>
<tr>
<th>Condition</th>
<th>Variable</th>
<th>Ms. Jackson</th>
<th>Mrs. Jones</th>
<th>Mrs. Crowley</th>
<th>Mrs. Robinson</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline</td>
<td>General Praise</td>
<td>22</td>
<td>9.3</td>
<td>7.8</td>
<td>9.2</td>
</tr>
<tr>
<td></td>
<td>Behavior Specific Praise</td>
<td>3.8</td>
<td>5.2</td>
<td>0.4</td>
<td>1.8</td>
</tr>
<tr>
<td></td>
<td>General Reprimands</td>
<td>10.7</td>
<td>13.8</td>
<td>13.4</td>
<td>5.8</td>
</tr>
<tr>
<td></td>
<td>Behavior Specific Reprimands</td>
<td>30.8</td>
<td>37.8</td>
<td>25.2</td>
<td>15.6</td>
</tr>
<tr>
<td>Independent</td>
<td>General Praise</td>
<td>36.4</td>
<td>12.7</td>
<td>16.8</td>
<td>12.2</td>
</tr>
<tr>
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<td>20.9</td>
<td>28.7</td>
<td>13.0</td>
</tr>
<tr>
<td></td>
<td>General Reprimands</td>
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<td>4.3</td>
<td>4.7</td>
<td>2.2</td>
</tr>
<tr>
<td></td>
<td>Behavior Specific Reprimands</td>
<td>6.4</td>
<td>18.6</td>
<td>16.0</td>
<td>8.5</td>
</tr>
<tr>
<td>Interdependent</td>
<td>General Praise</td>
<td>33.3</td>
<td>5.7</td>
<td>15.1</td>
<td>10.6</td>
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<td>24.1</td>
<td>29.3</td>
<td>13.3</td>
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<td></td>
<td>General Reprimands</td>
<td>2.7</td>
<td>2.6</td>
<td>3.6</td>
<td>2.9</td>
</tr>
<tr>
<td></td>
<td>Behavior Specific Reprimands</td>
<td>9.4</td>
<td>16.9</td>
<td>15.8</td>
<td>11.5</td>
</tr>
</tbody>
</table>

Mrs. Jones’s students exhibited relatively stable and decreasing levels of academic behaviors during baseline ($M = 35.6\%$; range = 22.5 – 68.3%). The introduction of treatment conditions resulted in immediate, though variable, increases in engagement. Her class displayed an average of 60.4% AEB (range = 53.3 – 75%) during the independent condition and 52.8% (range = 43.3 – 65%) during the interdependent condition.

*Pair Two*

During baseline, Mrs. Crowley’s students exhibited varying levels of academically engaged behaviors ($M = 45.3\%$; range = 33.3 – 65.8%). Both treatment conditions led to increased levels of engagement, though percentages observed during the interdependent condition were more stable. The independent condition produced an average of 70.1% (range = 59.8 – 80%) AEB while the interdependent contingency resulted in a mean of 63.9% (range = 57.5 – 84.2%).

43
Figure 3. Percentages of Student Behavior per Classroom

Note: Pair One—left; Pair Two—right. Closed circles = Academically Engaged Behavior (AEB) (Baseline); Closed squares = Disruptive Behavior (DB) (Baseline); Closed diamonds = Passive Off-Task (POT) (Baseline); Open circles = AEB (Independent); Open squares = DB (Independent); Open diamonds = POT (Independent); Circles with X = AEB (Interdependent); Squares with X = DB Interdependent); Diamonds with X = POT (Interdependent)

Mrs. Robinson’s class presented the most stable levels of academically engaged behavior during baseline ($M = 34.5\%$; range$= 28.3 – 50\%$). The introduction of the treatment phase led to increases in both level and trend of AEB. The independent condition produced a mean engagement of $63.2\%$ (range $= 50.8 – 80\%$) while the interdependent condition resulted in an average of $66.2\%$ AEB (range $= 56.7 – 71.7\%$).

Disruptive Behavior

Pair One

During baseline, Ms. Jackson’s students presented increasing and variable levels of disruptive behavior ($M = 61.1\%$; range $= 54.2 – 75.8\%$). Upon the introduction of the
treatment conditions, disruptive behaviors decreased slightly in level before continuing a downward trend to reach an average of 38.2% (range = 21.7 – 49.2%) and 43.3% (range = 28.3 – 62.5%) during the independent and interdependent conditions respectively.

Mrs. Jones’s students exhibited relatively stable and increasing levels of disruptive behaviors during baseline (\(M = 58.4\%\); range = 31.7 – 71.7%). The introduction of treatment conditions resulted in an immediate, though variable, decreases in disruption. Her class displayed an average of 36.1% DB (range = 24.2 – 41.7%) during the independent condition and 43.2% (range = 32.5 – 52.5%) during the interdependent condition.

**Pair Two**

During baseline, Mrs. Crowley’s students exhibited varying levels of disruptive behaviors (\(M = 49.9\%\); range = 31.7 – 64.2%). Both treatment conditions led to decreased levels of disruption, though percentages observed during the interdependent condition were slightly higher throughout most of the treatment phase. The independent condition produced an average of 23.9% (range = 17.5 – 32.4%) DB while the interdependent contingency resulted in a mean of 29.9% (range = 12.5 – 41.7%).

Mrs. Robinson’s class presented high, stable levels of disruptive behavior during baseline (\(M = 61\%\); range= 42.5 – 69.2%). The introduction of the treatment phase led to immediate and stable decreases in DB. The independent condition produced a mean disruption level of 30% (range = 16.7 – 41.7%) while the interdependent condition resulted in an average of 28.1% DB (range = 22.5 – 35.8%).

*Passive Off-Task*
Pair One

During baseline, Ms. Jackson’s students demonstrated relatively low and stable levels of passive off-task (POT) ($M = 6.4\%$; range $= 3.3 – 12.5\%$). Upon the introduction of the treatment conditions, level and trend remained stable, resulting in an average POT percentage of $4.5\%$ (range $= 0.8 – 8.3\%$) and $5\%$ (range $= 2.5 – 9.2\%$) during the independent and interdependent conditions respectively.

Mrs. Jones’s students exhibited increasing levels of POT until the end of baseline ($M = 6.1\%$; range $= 0 – 12.5\%$). The introduction of treatment conditions resulted in the stabilization of passive off-task percentages. Her class displayed an average of $3.6\%$ POT (range $= 0.8 – 6.7\%$) during the independent condition and $3.9\%$ (range $= 1.7 – 8.3\%$) during the interdependent condition.

Pair Two

During baseline, Mrs. Crowley’s students exhibited varying levels of POT ($M = 4.8\%$; range $= 1.7 – 11.7\%$). Unlike the previous pair, introduction of the treatment condition led to higher and more variable levels of passive off task in pair two’s classrooms. The independent condition produced an average of $6\%$ (range $= 1.7 – 13.3\%$) POT while the interdependent contingency resulted in a mean of $6.1\%$ (range $= 0.8 – 12.5\%$).

Mrs. Robinson’s class presented varying levels of POT behavior during baseline ($M= 4.5\%$; range $= 0.8 – 8.3\%$). As seen in Mrs. Crowley’s class, the introduction of the treatment phase led to increased levels of POT. The independent condition produced a mean engagement in POT of $6.8\%$ (range $= 3.3 – 11.7\%$) while the interdependent condition resulted in an average of $5.7\%$ POT (range $= 1.7 – 7.5\%$).
Mean levels of student engagement in academic, disruptive, and passive off-task behaviors by teacher are listed in Table 3.

Effect Sizes

Tau-U was calculated to determine the effect each treatment condition had on both the primary and secondary dependent variables. Tau-U was calculated by comparing baseline values to values produced during the independent condition as well as comparing baseline values to values produced during the interdependent condition. Tau-U calculations for general rates of praise were 0.15 during the interdependent condition and 0.35 in the independent condition. The interdependent condition resulted in an effect size of 0.97 for behavior specific praise, while the independent condition resulted in 1.00. When calculated for frequency of general reprimands, the interdependent condition resulted in a Tau-U of -0.81, while the independent condition produced -0.72. Tau-U was -0.51 and -0.60 for rates of behavior specific reprimands in the interdependent and

<table>
<thead>
<tr>
<th>Table 3</th>
<th>Mean Percentages of Student Behavior per Classroom</th>
</tr>
</thead>
<tbody>
<tr>
<td>Condition</td>
<td>Variable</td>
</tr>
<tr>
<td>Baseline</td>
<td>Academically Engaged Behavior</td>
</tr>
<tr>
<td></td>
<td>Disruptive Behavior</td>
</tr>
<tr>
<td></td>
<td>Passive Off-Task</td>
</tr>
<tr>
<td>Independent</td>
<td>Academically Engaged Behavior</td>
</tr>
<tr>
<td></td>
<td>Disruptive Behavior</td>
</tr>
<tr>
<td></td>
<td>Passive Off-Task</td>
</tr>
<tr>
<td>Interdependent</td>
<td>Academically Engaged Behavior</td>
</tr>
<tr>
<td></td>
<td>Disruptive Behavior</td>
</tr>
<tr>
<td></td>
<td>Passive Off-Task</td>
</tr>
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</table>
Table 4 *Tau-U of Praise and Reprimands Across Participants*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Condition</th>
<th>Tau-U</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Praise</td>
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<tr>
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</tr>
<tr>
<td>Behavior Specific Praise</td>
<td>Independent</td>
<td>1.00</td>
<td>Very Large</td>
</tr>
<tr>
<td></td>
<td>Interdependent</td>
<td>0.97</td>
<td>Very Large</td>
</tr>
<tr>
<td>General Reprimands</td>
<td>Independent</td>
<td>-0.72</td>
<td>Large</td>
</tr>
<tr>
<td></td>
<td>Interdependent</td>
<td>-0.81</td>
<td>Very Large</td>
</tr>
<tr>
<td>Behavior Specific Reprimands</td>
<td>Independent</td>
<td>-0.60</td>
<td>Moderate</td>
</tr>
<tr>
<td></td>
<td>Interdependent</td>
<td>-0.51</td>
<td>Moderate</td>
</tr>
</tbody>
</table>

independent conditions, respectively. Tau-U calculations for praise and reprimands are presented across participants in Table 4 and per teacher in Table 5.

Effect sizes for student behavior changes were also calculated. For academically engaged behavior, Tau-U was 0.76 in the interdependent condition and 0.91 in the independent. Disruptive behavior resulted in values of -0.82 and -0.92 in the interdependent and independent conditions. Finally, effect sizes for passive off-task were -0.04 during the interdependent condition as well as -0.02 in the independent condition.

Tau-U calculations for behaviors across students are presented in Table 6 and per classroom in Table 7.

Procedural Integrity

A procedural integrity checklist was used to ensure proper training of teacher participants on the use of behavior specific praise statements prior to intervention. In addition to determining whether behavior specific praise was accurately described, the procedural integrity checklist also assessed whether the differences in independent and interdependent conditions were adequately described to participants (See Appendix F). Procedural integrity data and IOA were calculated for 100% of training sessions.
<table>
<thead>
<tr>
<th>Participant</th>
<th>Variable</th>
<th>Condition</th>
<th>Tau-U</th>
<th>Level</th>
</tr>
</thead>
<tbody>
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<td></td>
<td>Behavior Specific Praise</td>
<td>Independent</td>
<td>1.00</td>
<td>Very Large</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Interdependent</td>
<td>1.00</td>
<td>Very Large</td>
</tr>
<tr>
<td></td>
<td>General Reprimands</td>
<td>Independent</td>
<td>-0.67</td>
<td>Large</td>
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<tr>
<td></td>
<td></td>
<td>Interdependent</td>
<td>-0.79</td>
<td>Large</td>
</tr>
<tr>
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<td>Behavior Specific Reprimands</td>
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<td>Very Large</td>
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<td></td>
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<td>Moderate</td>
</tr>
<tr>
<td></td>
<td>Behavior Specific Praise</td>
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<td>1.00</td>
<td>Very Large</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Interdependent</td>
<td>1.00</td>
<td>Very Large</td>
</tr>
<tr>
<td></td>
<td>General Reprimands</td>
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<td>-0.79</td>
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<td>Interdependent</td>
<td>-0.95</td>
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</tr>
<tr>
<td></td>
<td>Behavior Specific Reprimands</td>
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<td>-0.52</td>
<td>Moderate</td>
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<tr>
<td></td>
<td></td>
<td>Interdependent</td>
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</tr>
<tr>
<td>Mrs. Crowley</td>
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<td>Independent</td>
<td>0.43</td>
<td>Moderate</td>
</tr>
<tr>
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<td>Interdependent</td>
<td>0.60</td>
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<td>Very Large</td>
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<td></td>
<td>Interdependent</td>
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<td></td>
<td>Interdependent</td>
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</tr>
<tr>
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<tr>
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<td>Moderate</td>
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Table 6 *Tau-U of Behaviors Across Students*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Condition</th>
<th>Tau-U</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academically Engaged</td>
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<td>Very Large</td>
</tr>
<tr>
<td>Behavior</td>
<td>Interdependent</td>
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<td>Large</td>
</tr>
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<td>Very Large</td>
</tr>
<tr>
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<td>Interdependent</td>
<td>-0.82</td>
<td>Very Large</td>
</tr>
<tr>
<td>Passive Off-Task</td>
<td>Independent</td>
<td>-0.02</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>Interdependent</td>
<td>-0.04</td>
<td>--</td>
</tr>
</tbody>
</table>

In addition to the integrity of training sessions, procedural integrity was also gathered following each observation. The collection of procedural integrity ensured the primary researcher and secondary observers completed all steps when conducting classroom observations (See Appendix I). IOA for procedural integrity was collected for 35.9% of the total observations across conditions.

**Treatment Acceptability**

Teacher participants were asked to complete the Behavior Intervention Rating Scale (BIRS) to determine how acceptable they found the present study. Ratings on the BIRS ranged from 115 to 128 ($M = 123.8$). To protect anonymity, teachers were asked not to provide their names on the rating scale. One teacher rated the present intervention as 115, with a mean rating of 4.79. A second teacher reported an acceptability level of 124 ($M = 5.17$). Two teachers rated the present intervention as 128, with a mean score of 5.33. All four participants strongly agreed the present study was effective in lowering levels of student problem behavior, was appropriate for changing the behavior of a variety of students, and did not result in negative side effects for student participants.
Three of the four participants enjoyed the procedures used during the current study and would recommend the present intervention to other teachers in the future.

Table 7 *Tau-U of Student Behaviors per Classroom*

<table>
<thead>
<tr>
<th>Participant</th>
<th>Variable</th>
<th>Condition</th>
<th>Tau-U</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ms. Jackson</td>
<td>Academically Engaged Behavior</td>
<td>Independent</td>
<td>1.00</td>
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</tr>
<tr>
<td></td>
<td>Disruptive Behavior</td>
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<td>-1.00</td>
<td>Very Large</td>
</tr>
<tr>
<td></td>
<td></td>
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</tr>
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<td>Passive Off-Task</td>
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<td>Small</td>
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<td>Interdependent</td>
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<td>Moderate</td>
</tr>
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<td>Large</td>
</tr>
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<td>Disruptive Behavior</td>
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<td>-0.76</td>
<td>Large</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Interdependent</td>
<td>-0.67</td>
<td>Large</td>
</tr>
<tr>
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<td>Passive Off-Task</td>
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<td>Moderate</td>
</tr>
<tr>
<td></td>
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<td>Interdependent</td>
<td>-0.32</td>
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</tr>
<tr>
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<td>Interdependent</td>
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<td>Large</td>
</tr>
<tr>
<td></td>
<td>Disruptive Behavior</td>
<td>Independent</td>
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<td>Very Large</td>
</tr>
<tr>
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<td>Interdependent</td>
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<td>Large</td>
</tr>
<tr>
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<td>Passive Off-Task</td>
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<td>Moderate</td>
</tr>
<tr>
<td></td>
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</tr>
<tr>
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</tr>
<tr>
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<td>Behavior Specific Praise</td>
<td>Independent</td>
<td>1.00</td>
<td>Very Large</td>
</tr>
<tr>
<td></td>
<td>General Reprimands</td>
<td>Independent</td>
<td>-1.00</td>
<td>Very Large</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Interdependent</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Interdependent</td>
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<td>--</td>
</tr>
</tbody>
</table>
CHAPTER V – DISCUSSION

Overview

Research has shown increasing levels of behavior specific praise in the classroom can result in improvements in student behavior, specifically increases in academically engaged behavior and decreases in disruption. The present study sought to evaluate the effects of an independent and an interdependent reinforcement contingency on teachers’ use of behavior specific praise in the classroom. Across the four elementary teachers who participated, each saw improvements in mean frequencies of behavior specific praise, decreased levels of reprimands, and improvements in student behaviors upon the introduction of intervention conditions.

Previous Research and the Present Study

As mentioned in the review of the literature, interventions modifying teacher behaviors (i.e., performance feedback, didactic training, and increased use of praise) have been shown to have the largest effect on reducing problem behaviors in the classroom (Stage & Quiroz, 1997; Cavanaugh, 2013; Pisacreta et al., 2011; Reinke et al., 2008). The intervention used in the present study modified teachers’ use of behavior specific praise through two distinct reinforcement contingencies. Prior research has shown the ability of group-based reinforcement contingencies to alter student behaviors, but little had been done in the way of applying these principles to alter teacher behavior. The findings of the present study extend the literature base by showing both an independent and interdependent reinforcement contingency has the ability to increase teachers’ use of behavior specific praise.
Research Questions 1 and 2

Although the primary researcher sought to determine if the introduction of an independent or interdependent reinforcement contingency had a greater effect on increasing teachers’ use of behavior specific praise, results showed no clear indicators of one treatment condition being consistently more effective than the other. Both contingencies resulted in improved use of behavior specific praise. These findings support previous research in several ways.

First, although independent reinforcement contingencies have not been used to specifically modify teachers’ levels of praise, these contingencies have proven useful in modifying other teacher behaviors. Studies such as DiGennero and colleagues (2007) and Noell and colleagues (2000) relied on the use of negative reinforcement, in the form of meeting cancellation, to improve teacher’s levels of treatment integrity. Findings of the present study extend the literature base by showing the use of reinforcement contingencies can not only improve levels of integrity, but also increase teachers’ use of behavior specific praise. Additionally, the implementation of an independent contingency in the present study lead to conclusions that not only are negative reinforcement contingencies effective in modifying behavior as suggested by the literature, but that positive reinforcement may effectively modify teacher behavior as well.

In addition to the findings related to the use of independent contingencies, results of the present study have implications regarding the use of interdependent contingencies to modify behavior. Prior to the present study, interdependent contingencies had rarely been used to modify teacher behavior. Smith and colleagues (2013) demonstrated the use of an interdependent contingency to modify behaviors of camp counselors at a summer
day program for children with disabilities. The present study extends these findings to show interdependent contingencies are not only effective at increasing use of praise in a camp setting with students who have disabilities, but also in a general education classroom during regular instruction.

Research Question 3

Although improvements in the use of behavior specific praise were seen across all participants, results for each teacher varied in terms of which reinforcement contingency proved more successful. In their 1982 study, Gresham and Gresham compared the effects of three types of group contingencies on the reduction of disruptive behavior in a self-contained classroom. Results indicated the dependent and interdependent conditions were more effective at producing decreases in disruptive behavior when compared to an independent contingency. Unlike Gresham and Gresham (1982), the present study found lower rates of disruptive student behaviors during the independent condition.

Additionally, Little, Akin-Little, and Newman-Eig (2009) evaluated the effects of an interdependent group contingency on increased work completion. Although this study resulted in improvements in homework (i.e., academically engaged behaviors), the present study found contrasting results. Higher rates of student academic engagement were observed during the independent treatment condition for three of the four classrooms who participated. More recently, Little and colleagues (2015) conducted a meta-analysis of the effects of the three types of group contingencies on student outcomes. A variety of dependent variables were evaluated, however, across targets, dependent group contingencies were found to have the largest effects sizes. Relevant to the present study are their findings related to independent and interdependent group
contingencies. Independent contingencies were found to have an effect size of 3.27, while interdependent contingencies produced an effect size of 2.88 (Little, Akin-Little, & O’Neill, 2015). The present study, however, found higher rates of behavior specific praise (the primary dependent variable) during the interdependent contingency for three of the four teacher participants.

While in contrast to previous research, these differences may be due to the nature of the contingencies in the current study. Whereas Gresham and Gresham (1982) as well as Little and colleagues (2009, 2015) sought to measure student behaviors as a primary dependent variable, the present study focused instead on altering teacher behaviors. The opposite focus may account for differing results between the present study and past research evaluating the effects of group contingencies on student disruptive and academically engaged behaviors.

Research Question 4

Regardless of intervention conditions, improvements in both academically engaged behavior and disruption were seen in each of the participant’s classrooms. Although several teachers presented higher levels of general praise in baseline than those found by White (1975) and Reinke and colleagues (2013), low levels of academically engaged behaviors were still present. These results are consistent with the research base suggesting the use of behavior specific rather than general praise is more effective in producing desired student behaviors (Chalk & Bizo, 2004). Similarly, past research has made an important distinction that behavior specific praise is more efficient in not only decreasing disruptive behavior, but also teaching replacement behaviors (O’Leary and O’Leary, 1977). As teachers’ use of behavior specific praise increased, not only did
disruptive behavior decrease, but academically engaged behavior increased. This further supports previous findings showing the role increased behavior specific praise plays in teaching positive replacement behaviors. These results also support findings that interventions designed to modify teacher behaviors result in decreased levels of disruption when compared to other interventions (i.e., cognitive-behavioral strategies; Stage & Quiroz, 1997).

Though the present study demonstrated the positive effects behavior specific praise can have on student behaviors, it also resulted in an unintended increase in passive off-task behavior. Two of the four classroom teachers praised students frequently during intervention conditions for sitting or waiting quietly. The reinforcement principles in play for behavior specific praise to increase academically engaged behavior were also applied to increasing passive off-task. Students praised for sitting or waiting quietly rather than being academically engaged demonstrated higher levels of these behaviors during treatment conditions.

Research Question 5

White (1975) noted teachers were more likely to engage in very low levels of behavior-specific praise, yet higher levels of behavior-specific rather than academic-based reprimands. In keeping with findings of past research, the present study noted higher rates of behavior specific rather than general reprimands and general rather than behavior specific praise. Consistent with previous research, the present study also documented in decreased levels of reprimands following the increase in use of praise (Reinke et al., 2008). Similarly, the present study showed not only improvements in use of praise, but also decreases in rates of reprimands following performance feedback. The
present study incorporated verbal performance feedback into both the independent and interdependent treatment conditions.

Research Question 6

Consistent with past praise research, teachers found the use of praise to be effective in reducing problem behaviors and increasing academic engagement following the present study. Additionally, previous research using group contingencies has resulted in socially valid perceptions of the intervention (Barrish et al., 1969; Christ & Christ, 2006; Hunt, 2012). Although acceptability of group contingency research has most often been examined with student participants, teacher participants responded slightly to strongly agree when asked if they enjoyed the procedures used in the current study. In addition to student acceptability, prior research in the area of group contingencies has evaluated teacher perception of intervention procedures in terms of meaningfully changing student behaviors. Social validity findings from the current study extend the literature by indicating not only are group contingency procedures found acceptable for altering student behaviors, but are also rated as acceptable by teachers when used to alter their own behavior.

Limitations and Future Directions

Although all four participants demonstrated improvements in levels of behavior specific praise during the intervention phase of the present study, several limitations must be addressed. First, although mean frequencies and percentages of the primary and secondary dependent variables allow the researcher to determine which of the two conditions resulted in greater change per participant, these changes were not consistently demonstrated across participants or even pairs. Future research and replication is needed
to determine if extending the treatment phase would result in more divergence between reinforcement conditions. Relatedly, if a particular treatment emerged as more effective, future studies should consider including a final “better” treatment phase as originally proposed for the present study to verify treatment effects.

Another limitation of the study, as is concern in much of single case design research, is the potential scope of generalization. The small sample size and limited range of demographic diversity in participants, both teachers and students, makes it difficult to determine if a replication of the study with a different population would result in similar findings. Future research should consider extending the present study to other demographics and age ranges. Researchers may also consider replicating the present study using teachers with more extensive classroom experience.

Because the current study relies on tangible reinforcement such as notepads, pencils, sticker pads, dry-erase markers, and sticky notes be presented following goal completion, it may be difficult for some school districts to implement this intervention. That being said, it was found to increase teacher levels of behavior specific praise, increase academic engagement in the classroom, and decrease disruptive behaviors. Although it may not feasible to implement district wide, these data lend valuable support to the use of the present intervention to improve both use of praise as well as overall classroom environment.

Finally, it is unknown whether the resulting improvements in both use of behavior specific praise and student behaviors would last over time. A follow-up phase to assess maintenance was proposed for the present study, though it was dropped from the
methodology due to time constraints. Future research would benefit from assessing lasting treatment effects through the inclusion of a maintenance follow-up phase.

Implications for Applied Practice

Although negative reinforcement has previously been used to improve levels of teacher integrity, positive reinforcement has been rarely used to modify other teacher behaviors. The results of the present study indicate that positive reinforcement was effective in increasing frequency of behaviors specific praise in the classroom. Although these results indicate the utility of such procedures, several considerations must be made for practice in applied settings. The present study cost approximately $95 to fund. While seemingly a small amount of money, the current study only focused on the behavior of four teachers. As of the 2011-2012 school year, the average public school district in the United States had 187 active teachers (National Center for Education Statistics, 2012). The cost to supply reinforcement to a more extensive amount of staff may be prohibitive to some school districts.

Whereas the teachers in the current study were provided with tangible rewards in the form of school supplies, more cost-effective reinforcers may considered in future evaluations. In his 2013 review, Bear noted teachers “generally prefer praise over punishment and criticism, but also over the use of tangible rewards” (p. 328). Riffel (2011) compiled a list of 82 low to no-cost reinforcers that may be used in response to teacher performance. Although some suggestions require a small monetary investment, Riffel also suggests items such as kudos in the form of positive praise notes from administration to individual staff, duty-free lunches, notes of praise for staff achievement in school newsletter, and recognition as PBIS teacher of the month may be sufficient.
teachers prefer to use praise over tangible rewards to alter student behaviors, it may be a worth line of research to evaluate whether praise may be effective in changing their own behavior as well.

Regardless of the type of reinforcement used to increase desired teacher behavior, administrator support is key. Often times school psychologists or behavior specialists are viewed as external consultants rather than in-house staff. Due to this, administrator support is essential in the implementation of suggested interventions. The present study was conducted in an elementary school with little PBIS integrity, but strong administrator desire for change. When administrators are willing to support the need for intervention, the rest of the staff were able to follow suit. Although the current study benefited from administrator buy-in, this component may be lacking in some districts. Without administrator support, consultants may find it difficult to fund tangible rewards for praise use as well as struggle to obtain approval for the use of non-monetary rewards.

As mentioned in the limitations section, certain elements of the present student may be difficult to implement in some school districts; however, the current study’s potential utility for applied practice is clear. Teachers often fail to implement interventions as intended due to delayed improvements in student behavior, lack of training in behavior management procedures, and at times, differences in beliefs and values regarding reinforcement (Bear, 2013). Researchers have sought to improve these behaviors through performance feedback, didactic training, and various forms of consultation, but the present study suggests that reinforcement may also be a viable option. Whereas researchers often focus on applying reinforcement to alter student behavior, the present study suggests teacher behaviors respond positively to
reinforcement as well. Although limitations exist, future researchers may seek to evaluate the use of monetary versus non-monetary reinforcement to modify teacher behaviors in applied settings. As previously mentioned, teachers often prefer to use praise over tangible rewards in the classroom (Bear, 2013). Because of this, future researchers may evaluate the effects of using praise itself, whether from an outside consultant or from a school administrator, to increase the use of praise in the educational setting.

Conclusions

Although the results of the current study must be considered in light of several limitations and its implications for private practice, the data indicate that both an independent and interdependent reinforcement contingency were effective in increasing teachers’ use of behavior specific praise. Additionally, the present study resulted in increased levels of academic engagement and decreased levels of disruptive student behaviors in each participant’s classroom, regardless of the treatment condition. Though one contingency did not emerge as consistently visually or statistically superior, the participants found both intervention conditions to be socially valid and effective in improving the overall classroom environment.
APPENDIX A – Approval from the Institutional Review Board

NOTICE OF COMMITTEE ACTION

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

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

PROTOCOL NUMBER: 17031601
PROJECT TITLE: Evaluating the Effects of Independent Versus Interdependent Contingencies on Teachers’ Rates of Behavior Specific Praise
PROJECT TYPE: New Project
RESEARCHER(S): Ashleigh Eaves
COLLEGE/DIVISION: College of Education and Psychology
DEPARTMENT: Psychology
FUNDING AGENCY/SPONSOR: N/A
IRB COMMITTEE ACTION: Expedited Review Approval
PERIOD OF APPROVAL: 03/20/2017 to 03/19/2018

Lawrence A. Hosman, Ph.D.
Institutional Review Board
APPENDIX B – Teacher Consent Form

Current Study: Evaluating the Effects of Independent versus Interdependent Contingencies on Teachers’ Rates of Behavior Specific Praise

Purpose: The current study is designed to evaluate the effects of two different reinforcement strategies on teachers’ use of praise and reprimand in the classroom.

Procedures: A part of the current study, should you agree to participate, you will be asked to engage in several different steps of the research process. First, the primary researcher, Ashleigh Eaves, will conduct an overall classroom observation. During this observation, both your behavior and the behavior of your students will be taken into account. The researcher will be looking at your natural rates of praise and reprimands as well as how often your students engage in appropriate as well as disruptive behaviors. If your class meets criteria to move forward in the study, Ashleigh Eaves, as well as other students in the School Psychology Doctoral Program at the University of Southern Mississippi will return to your classroom for regular observations. Following initial observations, you will be asked to attend a short training on Behavior Specific Praise. The training should last no more than 30 minutes. During each observation in the days following the training, you will have the opportunity to earn various rewards if you meet your daily praise statement goals. During these reward conditions, you may be working for a reward on your own, or you may be partnered with another teacher participant to work as a team. The day’s goal and whether you are working solo or as a team that day will be told to you before the observation begins. If you meet your goal, you will receive the reinforcer you and the researcher decide on prior to observation.

Benefits and risks: The current study may result in improved student behaviors (i.e., increased academic engagement; decreased disruptive behaviors) as well as may add a new instructional tool to your classroom management skill set. One potential downfall of this study is the need for regular observation. Though researchers will be as un-intrusive as possible, their presence could be a distraction for some students.

Voluntary Nature of the Study/Confidentiality: Your participation in the current study is completely voluntary. Should you wish to withdraw from the study at any point, you will be able to without penalty, judgement, or loss of future services from the primary researcher. In addition to voluntary participation, you have a right to confidentiality. All materials associated with the current study will be secured in a locked cabinet and/or stored on a password-protected computer. Only the primary researcher, her faculty supervisors, and other students closely involved in data collection will see the results of daily observations. Both your and your students’ identifying information will be removed to maintain privacy should the current study be submitted for publication or presentation.

Consent: If you are interested in participating in the current study, please read the information below and return the signed letter to Ashleigh Eaves. Remember to keep a copy of this consent document for your records.
If you have any questions regarding the above study, feel free to contact Ashleigh Eaves (ashleigh.eaves@usm.edu) or Dr. Keith C. Radley, PhD (keith.radley@usm.edu or 601-266-5255).

Both this project and this consent document have been reviewed by the Human Subjects Protection Review Committee at USM, which ensures that research projects involving human subjects follow federal regulations. Any questions or concerns about rights as a research subject should be directed to the Institutional Review Board Office, The University of Southern Mississippi, Box 5147, Hattiesburg, MS 39406-5147, (601) 266-6820.

Sincerely,

________________________________________
Ashleigh E. Eaves, B.A.
School Psychologist-in-Training
Department of Psychology
The University of Southern Mississippi
Mississippi

________________________________________
Keith C. Radley, Ph.D.
Supervising School Psychologist
Department of Psychology
The University of Southern Mississippi

THIS SECTION TO BE COMPLETED BY TEACHER

Please Read and Sign the Following:

I have read the above documentation and consent to participate in this project. I have had the purpose and procedures of this study explained to me and have had the opportunity to ask questions. I am voluntarily signing this form to participate under the conditions stated. I have also received a copy of this consent. I further understand that all data collected in this study will be confidential and that my name, my student’s name, and their parents’ will not be associated with any data collected. I understand that I may withdraw my consent for participation at any time without penalty, prejudice, or loss of privilege.

________________________________________
Printed Name of Teacher

________________________________________
Signature of Teacher             Date
Teacher Information:

Name: _________________________________________

Gender: _______ Race: _______

Highest Degree Earned: _______________________

Years of Experience: _______

Current subjects taught: ____________________________

Student Information:

Total Number of Students in Class: _______

Number of: Males _______ Females _______

Number of students per race: African-American _______

Caucasian _______

Hispanic _______ Asian _______

Other (please specify) __________________________

Circle one category:

General Education Inclusion Self-contained

Number of students with Special Education rulings in Class: _______
APPENDIX D – Observation Form

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APPENDIX E – Behavior Specific Praise Handout

Behavior-Specific Praise in the Classroom

Praise is a powerful tool for educators. When used effectively in the classroom, it can increase the social and academic performance of students, as well as improve classroom climate. General praise can be reinforcing for some students, but the most powerful praise is specific to a student’s behavior. Behavior-specific praise (BSP) gives students specific, positive verbal feedback indicating approval of social or academic behavior (e.g., “Sydney, I like how you are sitting with your hands to yourself”). It is an evidence-based classroom management strategy that improves student behavior by letting students know exactly what they are doing correctly. BSP can also be easily incorporated into any instructional setting. For example, in the cafeteria, students can be praised for standing quietly in line while waiting for food, or in the library for reading quietly to themselves.

WHAT DOES BEHAVIOR-SPECIFIC PRAISE LOOK LIKE?
BSP is a non-intrusive way to reinforce specific, desired behaviors of your students. This classroom management strategy can be differentiated based on age of students, development, the settings in which you teach, and your school’s culture (e.g., “Thumbs up for sitting crisscross on the rug” versus “Thank you for engaging in our discussion about the chapter”). Using BSP can increase students’ time on-task and decrease their disruptive behavior.

How much BSP should you give?
A general 4:1 ratio of praise to reprimand statements is desirable. Using about 6 praise statements every 15 minutes is also recommended.

For more information about the technical assistance project funded to support schools in your region, please see page 4 of this guide.
### EXAMPLES OF BSP

- Thank you for keeping your hands to yourself. Ana!
- Great job being quiet, Joachim!
- Jaime, I like that you are sharing your materials with Mohammed.
- Great job taking turns in group discussions, class!
- Laura, excellent use of our new vocabulary word!

### NON-EXAMPLES OF BSP

- Don't touch him!
- Good job!
- Way to go!
- Stop that!
- That's not nice! We don't behave that way in our classroom.

### WHY IS BEHAVIOR-SPECIFIC PRAISE SO IMPORTANT?

More than 30 years of research has indicated teacher praise is an effective management strategy for increasing students’ appropriate behavior in the classroom. Further, an increase in teacher BSP can also improve academic outcomes for students.

When implemented consistently and correctly, BSP increases instructional time, on-task behavior, and correct academic responses. It may also decrease the teacher’s time spent on correcting inappropriate behaviors. This helps create a more positive and productive classroom environment where students know the behavioral expectations. It also builds students’ confidence as they receive BSP for their actions and accomplishments.

### HOW DO I IMPLEMENT BEHAVIOR-SPECIFIC PRAISE IN THE CLASSROOM?

First, think about the behaviors you would like to see in your classroom (e.g., listening while others are speaking, giving your best effort). Write down a list of specific behaviors that will help students continue to progress academically and behaviorally in your classroom (e.g., pay attention to the speaker, raise your hand and ask questions when confused). Then use this list to begin noticing and acknowledging student behavior. You may post some of these positive behavioral expectations around your classroom as a reminder for you to praise those specific behaviors. This can also serve as a reminder for students to display the desired, specific, appropriate behaviors.

### WAYS TO REMEMBER TO USE BEHAVIOR-SPECIFIC PRAISE (BSP) IN THE CLASSROOM:

- Remind yourself with written prompts (e.g., on the board, on post-it notes, in your lesson plans).
- Create laminated cards of BSP statements and locate them in visible places throughout the classroom.
- Set a goal for yourself and tally the number of BSP statements you make during a lesson.
- Monitor your efforts by recording lessons (e.g., video, audio) to determine whether you are consistently using BSP.

### HOW DO I TEACH BEHAVIOR-SPECIFIC PRAISE TO FACULTY AND STAFF?

There are many ways to equip educators to use BSP effectively in their classroom. One way is to provide training to faculty and staff before the school year starts. During this training, provide examples and non-examples, and allow faculty and staff to practice this strategy. Methods to do so will vary to accommodate your school and student needs. Regardless of method, administrators and team leaders should provide feedback to teachers to improve and reinforce their use of BSP.

### SUMMARY

BSP is an intervention you can incorporate into your classroom to increase appropriate student behaviors. BSP can help equip students with the academic, behavioral, and social skills needed to be successful. Further, this classroom management strategy may help increase the amount of time students are on-task and
Adapted from:

APPENDIX F – Integrity Form: Teacher Training

Teacher: ________________________________  Date: ________________

Observer: ________________________________  IOA: Yes  No  ______%

<table>
<thead>
<tr>
<th>Step</th>
<th>Yes</th>
<th>No</th>
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<tbody>
<tr>
<td>1.</td>
<td>Teacher is given handout on behavior specific praise.</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Teacher is given examples of both general and behavior specific praise.</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Teacher is provided with rationale for use of behavior specific praise in the classroom.</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Teacher is explained the two contingencies involved in the study.</td>
<td></td>
</tr>
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<td>5.</td>
<td>Teacher is informed of the differences in reinforcement for each contingency.</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Teacher is asked if he/ she has any questions.</td>
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<tr>
<td>7.</td>
<td>Researcher answers all teacher questions.</td>
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</table>

Number of Steps Marked “Yes”: _____ / 7

Treatment Integrity Percentage: ______
APPENDIX G – Behavior Intervention Rating Scale (BIRS)

1=Strongly Disagree 2=Disagree 3=Slightly Disagree 4=Slightly Agree 5=Agree 6=Strongly Agree

<table>
<thead>
<tr>
<th>Question</th>
<th>Rating</th>
</tr>
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<tbody>
<tr>
<td>1. This would be an acceptable intervention for the students’ problem behaviors.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>2. Most teachers would find this intervention appropriate for behavior problems in addition to the ones described.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>3. The intervention was effective in changing the students’ problem behaviors.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>4. I would suggest the use of this intervention to other teachers.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>5. The students’ behavior problems were severe enough to warrant the use of this intervention.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>6. Most teachers would find this intervention suitable for the behavior problems described.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>7. I would be willing to use this in the classroom setting.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>8. The intervention did not result in negative side-effects for the students.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>9. The intervention was an appropriate intervention for a variety of students.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>10. The intervention was consistent with those I have used in the classroom setting.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>11. The intervention was a fair way to handle the students’ problem behaviors.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>12. The intervention was reasonable for the behavior problems described.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>13. I liked the procedures used in this intervention.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>14. The intervention was a good way to handle the students’ behavior problems.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>15. Overall, the intervention was beneficial for the students.</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>16. The intervention quickly improved students’ behaviors.</td>
<td>1 2 3 4 5 6</td>
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<tr>
<td>17.</td>
<td>The intervention produced a lasting improvement in the students’ behaviors.</td>
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<tr>
<td>18.</td>
<td>The intervention improved students’ behaviors to the point that it did not noticeably deviate from other classroom’s behaviors.</td>
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<tr>
<td>19.</td>
<td>Soon after using the intervention, I noticed a positive change in the problem behaviors.</td>
</tr>
<tr>
<td>20.</td>
<td>The students’ behavior remained at an improved level even after the intervention discontinued.</td>
</tr>
<tr>
<td>21.</td>
<td>Using the intervention not only improved the students’ behaviors in the classroom, but also in other settings (e.g., other classrooms, home).</td>
</tr>
<tr>
<td>22.</td>
<td>When comparing students with a well-behaved peer before and after the use of the intervention, the students’ and the peer’s behavior were more alike after using the intervention.</td>
</tr>
<tr>
<td>23.</td>
<td>The intervention produced enough improvement in the students’ behaviors so the behaviors were no longer a problem in the classroom.</td>
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<tr>
<td>24.</td>
<td>Other behaviors related to the problem behaviors were likely to be improved by the intervention.</td>
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Adapted from:

APPENDIX H – Observer Script: Independent Contingency

BEFORE OBSERVATION

Introducing Daily Reward:

Hi _____________ (teacher’s name). Before we start today’s observation, I just wanted to let you know you are working independently to access your reward. If you meet your goal of 10 behavior specific praise statements, you will be able to choose a prize. I’ll raise my hand to let you know when the observation is beginning.

AFTER OBSERVATION

Delivering Daily Reward (Criteria was Met):

Great job today! You delivered _____ (number of) behavior specific praise statements. You met your goal! You can chose your prize (present reward basket). I’ll see you again tomorrow!

Withholding Daily Reward (Criteria was NOT Met):

You delivered _____ (number of) behavior specific praise statements today and you needed 10 to receive a reward. Don’t worry though, we can try again tomorrow!
APPENDIX I – Observer Script: Interdependent Contingency

BEFORE OBSERVATION

Introducing Daily Reward:

Hi _____________ (teacher’s name). Before we start today’s observation, I just wanted to let you know you are working with ______________ (second teacher’s name) to access your reward. If together you use 20 or more behavior specific praise statements, you will each be able to choose a prize. I’ll raise my hand to let you know when the observation is beginning.

AFTER OBSERVATION

Delivering Daily Reward (Criteria was Met by the Pair):

Great job today! You delivered ______ (number of) behavior specific praise statements and ___________ (second teacher’s name) delivered _____ (number). That is ______ (total for pair) behavior specific praise statements between the two of you. Together you met your goal! You can choose your prize (present reward basket). I’ll see you again tomorrow!

Withholding Daily Reward (Criteria was NOT Met by the Pair):

You delivered ______ (number of) behavior specific praise statements today while _____________ (second teacher’s name) delivered _______ (number). That is _____ (total for pair) between the two of you. You needed 20 behavior specific praise statements to receive a reward. Don’t worry though, we can try again tomorrow!
APPENDIX J – Integrity Form: Treatment and Procedural

Teacher: _____________________________       Date: ______________

Observer: ________________________________      IOA: Yes   No   _____%

**Treatment:**

<table>
<thead>
<tr>
<th>Step</th>
<th>Yes</th>
<th>No</th>
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<tbody>
<tr>
<td>1.</td>
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<tr>
<td></td>
<td>Appropriate script is used to inform teacher of daily goal, condition, and available reinforcer.</td>
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<td>2.</td>
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<td>Teacher is informed of his/her performance following observation.</td>
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<td>3.</td>
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<td></td>
<td>Appropriate script is used to inform teacher of reinforcement delivery/ withholding.</td>
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<td>4.</td>
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<td></td>
<td>Reinforcer is delivered or withheld based on performance.</td>
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</table>

Number of Steps Marked “Yes”: _____ / 4

Treatment Integrity Percentage: _____

**Procedural:**

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<tbody>
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<tr>
<td></td>
<td>Observer sits in non-intrusive location in classroom.</td>
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<tr>
<td>2.</td>
<td></td>
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<td></td>
<td>Observer signals teacher that observation period is beginning.</td>
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<td>3.</td>
<td></td>
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<td></td>
<td>Observation is conducted for 20 minutes.</td>
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<td>4.</td>
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<td></td>
<td>Observer does not provide additional feedback or guidance to teacher.</td>
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</table>

Number of Steps Marked “Yes”: _____ / 4

Treatment Integrity Percentage: _____
REFERENCES


*Educational Psychology in Practice, 20*, 335-351.


Stormont, M., Smith, S., & Lewis, T. J. (2007). Teacher implementation of precorrection and praise statements in Head Start classrooms as a component of a program-wide system of positive behavior support. *Journal of Behavioral Education, 16*, 280-


