ABSTRACT

THE USE OF AN INTERDEPENDENT GROUP CONTINGENCY AND SELF-MONITORING ON CLASSROOM BEHAVIOR FOR STUDENTS WITH EMOTIONAL AND BEHAVIORAL DISORDERS

Teachers are often concerned about their ability to handle the multitude of behavior issues that arise in the classroom. Research has shown using an interdependent group-oriented contingency can reduce problem behaviors, allowing the teacher to spend more time focusing on educating students (Litow & Pumroy, 1975). Self-monitoring techniques for students have also been shown to be beneficial in reducing disruptive behaviors. The present study focused on implementing both an interdependent group contingency and self-monitoring techniques in a classroom for emotionally disturbed students. Visual analysis was used to analyze the results of the current study. Although some results were variable, results indicate the highest percentage of on-task intervals during the intervention package average across the entire class, but varied individually for each participant.

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THE USE OF AN INTERDEPENDENT GROUP CONTINGENCY
AND SELF-MONITORING ON CLASSROOM BEHAVIOR
FOR STUDENTS WITH EMOTIONAL AND
BEHAVIORAL DISORDERS

by
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CHAPTER 1: INTRODUCTION

Educational systems have a far-reaching influence on schools. Schools within the educational system have a unique opportunity and responsibility to impact the classroom. Within the classroom, teachers have a distinctive role in managing student behavior. It is crucial for students to acquire, maintain, and generalize skills. However, many student behaviors can be detrimental to themselves, the teacher, and the rest of the classroom.

According to the World Health Organization (2004), 1 in 5 children are at risk to develop emotional, behavioral, and mental health problems. Delinquent behaviors exhibited by adolescents can harm their families, classmates, teachers, and themselves. Schools often provide services for at-risk individuals, or those who already have a diagnosis of a behavioral or mental disorder (Greenberg, Domitrovich, & Bumbarger, 2001). Yet, according to a study in the Journal of Behavioral Education (Stormont, Reinke, & Herman, 2011), 57% of teachers were not aware the school should provide behavioral assessments and intervention services. Another astonishing finding is that the majority of teachers did not know of the variety of positive behavioral supports provided by the school.

Managing behavior in a classroom is of high importance to teachers. Research has shown proper classroom management of problem behavior leads to greater academic outcomes and increased student involvement (Maag, 2001). Teachers newly entering the educational field report they do not receive adequate training to manage problem behaviors in a classroom environment (Spillman, 1980). They attempt to structure their classroom to give students better opportunities to learn yet do not receive direct instruction on how to manage
challenging behaviors. This is why continuing research for techniques that are beneficial for classroom management is of great importance.

Spillman (1980) describes two reasons teachers quit their job, and why this is detrimental for the education system. The first is “disillusionment and voluntary termination” (Spillman, 1980). When behaviors in the classroom are not managed properly, teachers experience frustration. Teaching in this environment may be less reinforcing because they are exerting effort correcting off-task behaviors rather than helping students learn. According to Spillman (1980), young teachers can leave their job without ever implementing proper classroom management techniques. A second reason for the breakdown of teachers’ classroom management techniques is “poor performance evaluation and lack of a contract reward” (Spillman, 1980). The teachers’ contracts may not be renewed if classroom behaviors are not under control and performance is not at a high standard.

With ever pressing deadlines, increasing classroom sizes, demands to reach state standards, and a slashed budget, now more than ever, teachers are feeling pressured to perform at a higher level. Pressure comes from their administrators, from parents, students, and themselves. In order to be successful and efficient, educators must manage behaviors within their classroom (Barbetta, Norona, & Bicard, 2005). Since so many factors can influence classroom management, it is useful to focus on a few target behaviors. Fortunately it appears that the common mistakes teachers make can be identified and resolved. In other words, a few specific techniques can make a big difference if they replace some common mistakes (Barbetta et al., 2005).

One mistake teachers make is addressing problem behavior by its topography, or only by what the behavior looks like. For example, if a child is
talking while the teacher is talking, this behavior is serving some type of purpose for the student. It is important to find out whether the function is gaining attention from the teacher or gaining attention from the other student in order to develop an effective behavior plan. The error teachers make is only focusing on the fact that this student is talking out of turn and not that it is serving a purpose. Another mistake is asking the child, “Why did you do that?” when asking about a certain behavior (Barbetta et al., 2005). It is common for a student to not know why they are engaging in a behavior, and the information given from the student may not contribute to understanding why they are behaving a certain way. An additional mistake is inconsistency. It is common for teachers to be inconsistent with expectations and reward systems. Consistency is a key factor in promoting efficacy in the classroom (Barbetta et al., 2005; Krasch & Carter, 2009; Skinner, Williams, & Neddenriep, 2004; Spillman, 1980; Walker & Holland, 1979). When students have a good understanding of what is expected of them they are more likely to be successful in a number of ways. They may follow directions closely, focus more on the task, and finish assignments in an efficient manner. Also, when the teacher makes it clear when, why, and how rewards are being delivered, students will be more likely to engage in on-task behavior.

Fortunately for teachers, there are behavioral solutions that will aid them in making the classroom environment manageable. In their influential article, Baer, Wolf, and Risley (1968) outlined the guidelines of the field of applied behavior analysis (ABA). Simply stated, these guidelines should be: applied, behavioral, analytic, technological, conceptually systematic, effective, and capable of generalized outcomes. Applied behavior analysis itself is dedicated to the “improvement and understanding of human behavior” (Cooper, Heron, & Heward,
ABA is an area of study concerned with utilizing the principles of behavior and applying them to the real world.

Behavioral interventions based on the principles of applied behavior analysis have been empirically validated for decades. These interventions range from token economies (Bernard, Cohen, & Moffett, 2009), self-monitoring (Davies & Witte, 2000), and group contingencies (Litow & Pumroy, 1975), to chaining (Seiverling, Pantelides, Ruiz, & Sturmey, 2010), goal setting and public posting (Smith & Ward, 2006). Behavioral techniques have also been utilized successfully in many areas of research, settings, and populations, including sports (McKenzie & Rushall, 1974), autism (Mruzek, Cohen, & Smith, 2007), prisons (Burdon, St. De. Lore, & Prendergast, 2011), children (Davies & Witte, 2000), and education (Heering & Wilder, 2006).

One of the largest areas behavioral practices are applied outside the field of autism is in the educational setting (Skinner & Hales, 1992). According to Bloh and Axelrod (2008), there are federal legislations that now require schools to employ behavioral methods. The California Department of Education now “recognize[s] ABA as a quality practice and recommend it as an instructional strategy” (Bloh & Axelrod, 2008; cde.ca.gov). In other words, teachers should be using ABA techniques in the classroom to elicit desired behaviors, and take charge of problem behaviors.

In an effort to reveal the efficacy of behavior-analytic techniques in the classroom, the following literature review will cover classroom management in general, then specific behavioral methods that have empirical support, and conclude with suggestions about future research.
CHAPTER 2: A REVIEW OF THE LITERATURE

Classroom Management

Evidence-based interventions can be utilized in the classroom to reduce the number of problem behaviors (Greenberg et al., 2001). Research has shown using a classroom-wide system that allows every child to receive a reward if they all reach the same criteria can decrease problem behaviors, thus allowing the teacher to spend more time focusing on educating the students rather than correcting off-task behaviors (Coyne, 1978; Coogan, Kehle, Bray, & Chafouleas, 2007; Litow & Pumroy, 1975; Murphy, Theodore, Aloiso, Alric-Edwards, & Hughes, 2007). Cooper et al. (2007) call this system an interdependent group contingency and define it as “one in which all members of a group must meet the criterion of the contingency (individual and as a group) before any member earns the reward”.

Self-monitoring is another technique used in the classroom that has empirical evidence for reducing problem behaviors (Amato-Zech, Hoff, & Doepke, 2006; Legge, DeBar, & Alber-Morgan, 2010). Self-monitoring techniques range from MotivAiders to behavioral checklists. No matter which technique is used, the same behavioral principles apply. A person observes and records the occurrence of his or her own target behavior and reactivity to the recoding procedures will induce a change in behavior (Cooper et al., 2007). In other words, a person is reacting to the self-monitoring procedure that in turn elicits a change in behavior.

When problem behaviors in the classroom are reduced, the teacher can focus on important matters, such as having more time to teach, reinforcing on-task behaviors, and engaging with the students, instead of being distracted by off-task behaviors. Many different classroom management strategies can be used to either increase on-task behavior or decrease problem behaviors (Maag, 2001; Murphy et
Management of behaviors in the classroom is one piece of the puzzle for students, parents, and teachers. It has a domino effect. If the students perform well, the teachers will keep their job, and parents will better be able to manage behaviors at home (Walker & Holland, 1979).

**Emotional Disturbance in Adolescents**

Emotional disturbance is 1 of 12 disabilities that falls under the Individuals with Disabilities Act (IDEA). Students categorized with emotional disturbance can have a wide variety of characteristics that range from depression to physical aggression. The main criteria are the student must present one or more of the five characteristics “over a long period of time and to a marked degree that adversely affects a child’s educational performance” (IDEA, 2004). Emotional disturbance is not a clinical diagnosis, but is classified as an educational disability. As said by the 30th Annual Report, students categorized by emotional disturbance make up 7.5% of the population served under the Individuals with Disabilities Education Act (U.S. Department of Education, 2006). Students with emotional disturbance have the highest percentage of removal, suspension, or expulsion than any other disability listed under the act. They are also at risk for engaging in behaviors of substance abuse, suicide, and violence (Ninness, Glenn, & Ellis, 1993). With these risk factors in mind, it seems necessary for this population to be targeted by behavioral interventions.

A few of the recognized research-supported practices for students with emotional and behavioral disorders are reinforcement delivered by the teacher, positive behavior supports, and self-management techniques (Lewis, Hudson, Richter, & Johnson, 2004). Rafferty and Raimondi (2009) used self-monitoring of independent math practice for students with emotional disturbance. On-task
behavior and academic performance were measured while the students engaged in
two types of self-monitoring. They monitored their attention, their performance,
and then chose which one to monitor in the third condition. The results point to an
increase in both academic performance and on-task behavior and support the use
of self-monitoring techniques in a classroom for emotionally disturbed students.
Also supporting the use of behavioral techniques with the emotionally disturbed
population, Mooney, Ryan, Uhing, Reid, and Epstein (2005) reviewed 22 studies
that utilized self-management procedures for students with emotional or
behavioral disorders. Their findings support using self-monitoring as a procedure
for improvement of skills. Some studies even show support for generalization and
maintenance (Rafferty & Raimondi, 2009). Conversely, the findings indicate a
need for more research in the area of package interventions that utilize more than
one behavioral technique at a time. Of the multi-component interventions
analyzed, goal setting, self-instruction, strategy instruction, self-monitoring and
self-evaluation were the types of techniques combined in different ways as a
package intervention. Given the utility of these combined interventions for
behavioral problems, it seems useful to combine self-management with other types
of behavioral interventions for emotionally disturbed students.

Applied Behavior Analysis and Behavioral Interventions

An example of behavioral strategies in the classroom was demonstrated by
Boniecki and Moore (2003). A token economy and contingent reinforcement were
used to increase class-wide participation during a lecture. During the lecture,
students received a token every time they answered a question posed by the
teacher. Contingent reinforcement was used at the end of class when students
exchanged their tokens for one point of extra credit. Students received an extra
point towards their exam contingent upon how many tokens they exchanged. Results indicated an increase in responding to questions during class. An unplanned result was that students spontaneously asked questions and had comments even when they were not receiving tokens.

Moore, Sweeney, and Butterfield (1993) show a specific example of using behavioral methods to reduce disruptive behavior in the classroom. They used differential reinforcement for three groups of 10 elementary-aged children in a resource classroom. Each student had an “on-task” goal that needed to be met each day. If they did so, they would receive a reinforcer that was chosen randomly at the beginning of the school day. By utilizing differential reinforcement of on-task behaviors, off-task behaviors were reduced. A different study by Riley, McKeivitt, Shriver, and Allen (2011) support the use of behavioral techniques to increase on-task behaviors. They used the teacher’s attention as a reinforcer that was on a fixed-time schedule. Every five minutes the teacher would deliver attention to the students regardless of the behaviors in which they were engaging. During each intervention phase, the percentage of on-task behaviors increased as a result of the teacher’s fixed-time attention schedule.

Each study above supports the use of behavioral techniques in the classroom. Many other different techniques can be used, including self-monitoring, group contingencies, and a package intervention.

**Group Contingencies**

Independent, dependent, and interdependent group-oriented contingencies are the three types of contingencies teachers can implement in their classroom. An independent group contingency is a procedure in which a criterion is presented to the entire classroom and only the students who reach this criterion will be
reinforced. A dependent group contingency is a procedure such that a standard is presented to the class and the reward for the rest of the class depends on the performance of one student. An interdependent group contingency is a technique implemented such that every student in the class receives a reward if every student meets the criterion set by the teacher. If all students in the classroom do not meet the criterion, then no one receives the reward (Litow & Pumroy, 1975).

Litow and Pumroy (1975) first described how group contingencies help a teacher in the classroom. Group contingencies can be more practical economically than other behavior management procedures because it allows for a smaller teacher to student ratio, and the teacher can spend time educating rather than disciplining. Group contingencies can be used to better control and improve classroom behavior than other techniques because they remove social consequences for disruptive behavior. When all students in the class reach the criteria, the social reinforcement from peers can outweigh reinforcement from the teacher (Litow & Pumroy, 1975). Lastly, by emphasizing the class as a whole, there is a reduction on the emphasis of a single student who needs a behavior modification plan, and the class works as a group to remind its members what is expected of them (Davies & Witte, 2000).

Murphy et al. (2007) conducted an experiment providing support for using an interdependent group contingency in the classroom. The group contingency was implemented with a reinforcement strategy in a preschool setting to reduce disruptive behaviors. The teacher described each of the disruptive behaviors, then each of them were operationally defined and data were collected on each student. The intervention included the teacher implementing the interdependent group contingency instead of her regular reprimands and time-out procedures. The teacher gave students checks for off-task behavior and if each received five or less
then they received the “mystery motivator” at the end of the session. If even one student received more than five checks, then no student received the reinforcer. The mystery motivator is a term for the reinforcer that was used if the class reached the set criterion. Results revealed this classroom-wide intervention helped reduce disruptive behavior, illustrating an easy and effective intervention that can be used for children with a wide range of behaviors. An interdependent group contingency with older children might show a larger effect because such children will have higher cognitive abilities to better understand the contingencies placed upon them.

Another study combined an interdependent group contingency with randomized components and found homework accuracy was improved by using behavioral techniques together as a package (Reinhardt, Theodore, Bray, & Kehle, 2009). Six students from a fourth grade general education classroom participated in the study. Reinforcement was based on completion of homework assignments in one of three areas: math, spelling, or reading comprehension. The group contingency component required all students to meet the homework completion criteria set by the teacher each day. The randomization component of the intervention was a mystery motivator box, changing criteria for homework completion, and different subjects for the homework assignments. Different reinforcer choices were written on index cards and placed inside the box. If the students met the homework criteria that day, the teacher would pick a reinforcer from the box. If they did not meet it, then they were informed to try again next time. Results showed an increase in homework completion for all three subjects across all six participants. This study supports evidence for combining group contingencies with another component to increase behaviors.
In another study supporting the use of interdependent group contingencies, the effects of combining peer tutoring with a randomized interdependent group contingency on math fluency was demonstrated (Hawkins, Musti-Rao, Hughes, Berry, & McGuire, 2009). Participants were 11 fifth-grade students at an urban charter school. The teacher wanted to increase math fluency for each child in her classroom. Each treatment phase started with peer tutoring. Students were paired and spent ten minutes tutoring each other on math facts. After the tutoring session the students would spend time testing one another. Following the testing, the randomized interdependent contingency was introduced. During a randomized interdependent contingency any aspect of the contingency can be changed. In this study, the target behaviors and the criteria were randomized. The students either had to display appropriate tutoring skills or answer 12 questions correctly. Criteria were randomly selected each day. The teacher selected the criteria of 58% in order for the entire class to receive the reinforcer. Results revealed each student increased performance levels in math.

Considered together, the studies mentioned above demonstrate support for using an interdependent group contingency in a classroom setting. The results of these studies also add to the research for combining different behavioral approaches into one intervention package.

**Self-Monitoring**

Another technique that has evidence supporting its efficacy in the classroom is self-monitoring. Self-monitoring is a behavior analytic technique that allows for a recording of observable behaviors. Tactile or auditory prompts can be used to alert the person when to keep track of the behavior that is being emitted. Also, behavioral checklists facilitate noting these behaviors. Self-monitoring is
defined as systematically keeping track of one’s behavior. A person monitors the occurrence or lack of occurrence of specific behaviors. There is more research to support self-monitoring than any other self-management strategy (Cooper et al., 2007). The use of such techniques can increase on-task behaviors and decrease problem behaviors (Sheffield & Waller, 2010). However, self-monitoring alone may have transitory effects. Because the efficacy of self-monitoring is due to reactivity, the effects of its use may not be permanent. Therefore, it has been advised that self-monitoring be combined with another strategy in order to maintain behavior change (Cooper et al., 2007).

Self-monitoring has proven to be effective across different settings, different populations, and different behaviors. Some of these areas include, but are not limited to, education (Amato-Zech et al., 2006; Broden, Vance Hall, & Mitts, 1971; Brooks, Todd, Tofflemoyer, & Horner, 2003; Dalton, Martella, & Marchand-Martella, 1999), sports (McKenzie, & Rushall, 1974; Polaha, Allen, & Studley, 2004), populations with learning disabilities (Davies & Witte, 2000; Prater, Joy, Chilman, Temple, & Miller, 1991), and substance abuse (Foxx & Brown, 1979).

In the educational setting, Amato-Zech et al. (2006) found that using self-monitoring increased on-task behavior in elementary-aged children in a special education classroom. The three students who participated in the study had learning disabilities or speech and language impairments. Each was given a MotivAider to send a tactile signal as a reminder to self-monitor behavior. A MotivAider is an electronic device worn like a pager. It has a preset time schedule that will send a perceptible signal to the wearer. In this study, when the MotivAider beeped, the students recorded their behavior on a piece of paper as either on-task or off-task. Before the intervention each child was trained on which behaviors were
considered off-task and which on-task. The mean on-task percentage increased from 60% to 90% for the intervals observed. Results bolster the evidence for self-monitoring techniques used in the classroom.

Although self-monitoring has broad applications, using this technique alone may not prove to be as effective as combining it with other techniques (Cooper et al., 2007). Many studies include self-monitoring as one part of an intervention package (Brooks et al., 2003; Dalton et al., 1999; Foxx & Brown, 1979; Maag, Rutherford, & DiGangi, 1992; Prater et al., 1991; Todd, Horner, & Sugai, 1999). Brooks et al. (2003) show support for the use of self-monitoring combined with functional assessment and self-recruited reinforcement using one participant, a 10-year-old girl with Down Syndrome. The study implemented an alternating treatments design (ABCAC). The treatment phase consisted of self-monitoring and self-recruited reinforcement. The participant wore headphones attached to a cassette player. Every 30 minutes a prompt saying “now” would play through the headphones. The participant then marked on a piece of paper whether engagement in on-task behavior occurred or not. At the end of the self-monitoring period the participant was to appropriately seek attention from any adult in the room. At the end of the study the participant’s academic engagement increased as well as appropriate ways of gaining attention. Results of this study show support for self-management as an intervention package when combined with self-recruited reinforcement.

Self-monitoring can both increase or decrease behavior. Dalton et al. (1999) created a self-monitoring program to decrease off-task behavior for two adolescents with learning disabilities. The self-monitoring program consisted of a folder on each student’s desk. Each student would record off-task behaviors by checking “yes” or “no” in response to questions that were written on the form.
Questions included: “Did you get your homework done?” “Are you working?” and “Do you have your homework tonight?” These procedures were conducted four days per week in three different settings. Results indicate a decrease in the number of off-task behavior for each student. Disruptive behaviors also remained at a low rate during the maintenance phases. A different study focusing on increasing on-task behavior used self-monitoring in a classroom for five participants with learning disabilities (Prater et al., 1991). The intervention included using a visual prompt of on-task behaviors, self-recording form, and an audio tone. Every time the tone sounded, the students were to mark a “+” if they were on-task or an “o” if they were off-task. Results of this study indicated a significant increase of on-task behaviors for each of the five participants. Each of these studies further supports the use of self-monitoring techniques for decreasing off-task behavior and increasing on-task behavior.

Different types of self-monitoring practices used in the classroom have empirical support for their use. Checklists (Davies & Witte, 2000), MotivAiders (Amato-Zech et al., 2006), and visual prompts such as posters (Prater et al., 1991) are among the techniques utilized in the educational setting. Despite their empirical support, these self-monitoring techniques alone may only have temporary effects on behavior. The empirical support for interdependent group contingencies has been shown in this literature review. It has also been demonstrated, that when combined with other behavioral interventions, a group oriented contingency has longer lasting and more efficient outcomes.

Interdependent Group Contingency and Self-Monitoring as an Intervention Package

For over four decades, much empirical support had been gathered for the use of self-monitoring and group contingencies in a classroom setting (Broden et
More recently there is growing evidence for the use of combining behavioral techniques into an intervention package to impact classroom behaviors (Chafouleas, Hagermoser Sanetti, Jaffery, & Fallon, 2012). A meta-analysis conducted by Stage and Quiroz (1997) shows self-management, peer feedback, group contingencies, and reinforcement, or a combination of these to be successful in decreasing disruptive behaviors in a general education setting.

In support of using a behavior intervention package, Davies and Witte (2000) utilized self-management, peer-monitoring, and a group contingency with children with attention-deficit and hyperactivity disorder. An ABAB design was used to analyze the frequency of uncontrolled verbalizations during intervention phases. The combination of a group contingency and self-monitoring was used when the students were placed into groups and were instructed to move their own token from a green square to a blue square if they exhibited the target behaviors. If everyone in their group had at least one token left in their green square at the end of the session then everyone in their group received a reward. Students also marked on a checklist whether or not they were prompted to move their token which was another aspect of self-monitoring. The last element of the intervention was the peer monitoring which allowed for the students evaluate with their group their behavior that day. Final results for this study show the intervention package of a group contingency, peer monitoring, and self-monitoring helped to reduce inappropriate vocalizations for students with ADHD. More generally, these results support the use of a group contingency system and self-management techniques in the classroom.

Another study to combine behavioral intervention techniques in the classroom was done by Coogan et al. (2007). Self-monitoring, randomized
reinforcers, randomized criterion, group contingencies, and peer feedback were used to target inappropriate behaviors. The class was separated into groups and each group received a game board with tokens. Each time a student engaged in inappropriate behavior, a token was taken away. If the group criterion was selected, then each group had to have at least one point in order for the entire class to earn a reinforcer. If the individual criterion was selected, one chosen student must not have lost more than 2 points for their team in order for the whole class to get a reward. The peer feedback occurred at the beginning of each class period to discuss the behavior of the group the previous day. Results of this study indicate a decrease in average percentage of off-task intervals during both intervention phases. Although it cannot be concluded which aspect of the intervention worked the best, these results lend support for the use of a behavioral intervention package.

Chafouleas et al. (2012) conducted the most recent study to utilize an intervention packet in a school setting. They combined an interdependent group contingency, self-monitoring, and changing criterion to analyze its effects on student engagement in three general education classrooms. The study was performed across three classrooms with 57 students. Active and passive engagement was measured as on-task behavior and three types of off-task behavior were measured separately. The baseline consisted of just the self-monitoring procedures, and after its conclusion the classes were divided into four to six teams for the interdependent group contingency. A criterion for a predetermined number of points for the week was set for the entire class. Individuals within the groups earned points by filling out their self-monitoring sheets. At the end of the week, if the average number of points earned for every group met the criterion then everyone in the class received a reinforcer. After 3-5
weeks, depending on the classroom, the criterion was raised based on average amount of points earned through previous weeks. The outcome of this study reveals an increasing trend in percentage of engagement for each class. It lends support to the existing research in behavioral package interventions and supports the acceptability of self-monitoring and interdependent group contingencies in the classroom.

As evidenced by the studies mentioned above, combining behavioral techniques into an intervention package can have an impact in the classroom. Although there is good evidence for using multiple component interventions in a general education classroom, extending these procedures to an emotionally disturbed classroom is as of yet unpublished. Considering the usefulness of these procedures in a general education classroom, it seems reasonable to extend the research to a population with frequent behavior problems. Self-monitoring and an interdependent group contingency both rely on some degree of following instructions and value of peer feedback. In addition, consistency of implementation on the part of the teacher is of importance. It is unclear if these procedures can be successfully utilized in an emotionally disturbed classroom.

Summary

The current literature review has illustrated frequent mistakes teachers make in the classroom, and how behavior-analytic techniques can provide solutions. Interdependent group contingencies and their relevance to behavior in the classroom were discussed. Self-monitoring techniques were also examined in terms of their efficacy in the school setting. Studies combining behavior-analytic methods were cited to support the use of an intervention packet. Research was reviewed that combines the use of multiple components into one intervention
package, including self-monitoring combined with a group contingency. Although research supports the use of all three of these intervention procedures, there is little research to date using them as a package intervention in a classroom for students with emotional disturbance. Since both techniques have shown to be useful in a classroom setting, it seems reasonable to extend research to a classroom for emotionally disturbed students. In order to further the research on combining behavioral methods in the educational setting, the current study used an interdependent group contingency and self-monitoring to study the effects on on-task behavior in an emotionally disturbed classroom.
CHAPTER 3: METHODS

Participants

The six participants in the study were fourth- through eighth-grade male students in a program titled Opportunities for Mental Emotional Growth and Advancement (OMEGA) at the Shelly Baird School. This school is the last stop before students are put in a non-public school lock down environment. The inclusion criteria for the participants included a mild to moderate learning disability or some other diagnosis for example, an emotionally disturbed (ED) or autism spectrum disorder diagnosis (ASD). To qualify for the study the student’s had to have any condition that qualified them for a moderate-mild placement according to their individualized education plan (IEP). Each of the participants qualified to be in this study because in order for them to attend Shelly Baird School, they must have the label of severely emotionally disturbed. Each of them had ED in conjunction with other disabilities such as schizophrenia, bi-polar disorder, reactive attachment disorder, and post traumatic stress disorder. One of the participants was excluded from the study due to variable attendance, destructive behavior, and participation in a different behavior plan.

Informed Consent

Parents or legal guardians signed a consent form before participation in the study (see Appendix A). Written consent was collected from the vice-principal and teacher before the implementation of the intervention procedures (Appendices B and C). In addition, an assent form was given to and retrieved from each student prior to participation in the study (Appendix D).
Design

This study utilized a single-subject multi-element design (ABCDAE) to analyze the effects of the independent variables on the dependent variables. Each of the 6 participants was exposed to both treatment phases at two separate times, a combination of the independent variables for one phase, two phases of baseline, and a teacher implemented intervention phase.

Measures: Dependent Variables

An in-person interview was conducted with the teacher to determine which behaviors were targeted. A behavioral data sheet from the teacher was also referenced to determine the dependent variables (Appendix E). Two inappropriate behaviors, on-task behavior, and off-task behavior were analyzed across each student.

The primary dependent measure was on-task behavior that was conducive to the classroom environment. The participant was considered on-task if engaged in any of the following behaviors: 1) sitting in seat 2) attending to the teacher or task in front or 3) manipulating materials related to the assigned task.

The secondary dependent variable was inappropriate classroom behaviors. There were two common disruptive behaviors each student engaged in according to the interview and reference sheet. The first behavior measured was inappropriate verbalizations, defined as verbal statements that do not relate to the material or subject matter. Non-compliance was the second variable in the inappropriate behavior category. This was defined as not responding to or inappropriately responding to instructions or question posed by the teacher. Three components needed to be met: 1) a verbal instruction by the teacher 2) lack of engaging in a response within 5 seconds and 3) any attempt to respond is considered compliance.
After becoming familiar with the classroom schedule and teacher interview, the duration of data collection sessions ranged from 45-60 minutes per school day. On-task and off-task behavior data were collected on a 5-minute momentary time sampling schedule. Frequency data were used for inappropriate behaviors.

**Procedures: Independent Variables**

The first independent variable was an interdependent group-oriented contingency. The teacher implemented this once during the school day for approximately eight school days. Scripted directions were written for the teacher to read to the class before the phase started (Appendix F). This document was an overview of what the contingencies of reinforcement are, and what behaviors the data collectors are looking for. The observer had a data sheet with every student’s name on it (Appendix G). Inappropriate verbalizations and non-compliance were in separate boxes underneath each student’s name. Six boxes were created representing each interval for on- and off-task behavior. Each student received a tally mark each time engagement in a disruptive behavior occurred. Every 5 minutes students received a + or – in the on-task and off-task boxes. Every student must be on-task for 70% of the intervals to meet the criteria for reinforcement. Each period was 45-60 minutes, the duration of a structured activity.

A multiple-stimulus without replacement preference assessment was conducted for every participant to select appropriate reinforcers. The teacher approved 10 different reinforcers. Each one was printed on a small ticket and placed inside an envelope with the student’s name on it. Before the start of the first day of the interdependent group contingency phase and the self-monitoring phase, students ranked each reinforcer 1-10, 1 being the most salient and 10 being the
least. Each time the contingency was met, they got to choose between their top two reinforcer cards.

The second independent variable was a self-monitoring technique. A checklist modeled after the Prater et al. (1991) study was used. At the beginning of session, a timer was set to send an auditory signal every 10 minutes. Each student had a self-monitoring sheet on his own small clipboard (see example Appendix H). The small clipboard allowed for them to carry it around in case they did not stay at their desk the entire session. When the device sent its audible signal, each student put a check mark in the “yes” or “no” box depending on which behaviors were engaging in at the time of the timer. Each period was 45-60 minutes, the length of a structured activity, and data collection took place for 6 days.

The baseline condition (A) began with research assistants observing typical classroom routines. They collected frequency data for two problem behaviors per child. They used 5-minute momentary time sampling to collect on-task and off-task behavior data.

After the fifth data collection session, the first treatment phase (B) began. An interdependent group-oriented contingency was implemented. Trained observers had a data sheet with every student’s name on it. Each student received a tally mark next to the problem behaviors were engaging in. Data collectors put a + for on-task behavior or – for off-task behavior in the boxes for each student on a 5-minute momentary time sampling schedule. Every student’s percentage of on-task intervals must have been 70% or higher in order for the entire class to obtain their reinforcer. The class received a reinforcer after the interdependent group contingency had concluded for the day.

The second treatment phase (C) began after the eighth data point for the previous stage. The classroom discontinued using the group contingency. A timer
was set to go off every 10 minutes. Each time it beeped, the students looked at the checklist on their clipboard then put a checkmark in the box that corresponded with the type of behavior they were engaging in at the time of the signal. The timer and checklist were used as self-monitoring techniques to keep the children attending to their own behavior. The timer went off up to 6 times, totaling up to an hour of data collection. If each student’s self-monitoring sheet matched 50% of the data collector’s sheet then received a reinforcer. This procedure lasted 6 school days.

Following the self-monitoring treatment phase the intervention package began (D). The timer continued to be set for 10-minute intervals. The interdependent group contingency was reintroduced. The procedures were the same as in the two previous treatment phases. Research assistants collected data for 6 sessions.

In order to demonstrate experimental control, another baseline phase (A) was introduced. The teacher was instructed to use previous management techniques and the students did not use the self-monitoring sheets. This phase lasted 5 school days.

The last phase of the experiment was chosen by the teacher (E). The teacher wanted to implement procedures for 3 days. The first day was the interdependent group contingency, the second day was the package intervention, and the third day was the interdependent group contingency once again. Data were collected during the 3 days the teacher had chosen.

**Interobserver Agreement**

Interobserver agreement data from 30% of the total data sheets were collected. In addition to one research assistant, a second trained observer was
present at the time of data collection. The number of agreements was divided between two observers and dividing that by the number of agreements plus the disagreements, then multiplying this number by 100 to reach a percentage was used to calculate this rate.

Social Validity

Prior to data collection, a pre-intervention questionnaire was given to the teacher and two classroom aides. This was a 5-point Likert-scale format, and there was space at the bottom to write additional comments (Appendix I). At the conclusion of data collection, a post-intervention questionnaire was given to the teacher and aides to assess their view of the applicability and implementation of the intervention procedures (Appendix J). In addition, the same questionnaire was given to the vice-principal. A different post-intervention questionnaire was given to each student to evaluate the effects of treatment (Appendix K). This was also a 5-Point Likert-scale format, and directions were explained to them by the research assistants.
CHAPTER 4: RESULTS

Baseline

Baseline rates for on-task intervals for participants were collected over four and five sessions. The percentage of on-task intervals for all 6 participants ranged from 0-100%. Participant 1 was on-task for an average of 37% of the intervals during baseline. Participant 2 scored an average of 64% while participant 3 scored 61%, and Participant 4 scored 76%. Participant 5 had the highest baseline rate of on-task intervals with 95%. Participant 6 had the lowest amount of on-task intervals with an average of 36% during baseline. The overall classroom average of on-task interval scores during baseline was 67%; it ranged from 36-95%.

The baseline rates for inappropriate behaviors for Participants 2 and 5 were the lowest average scores of 2 occurrences per session. Participants 1, 3, 4, and 6 had the highest levels of problem behaviors with average scores of 13, 10, 9, and 12.

Classroom Interventions

Interdependent Group Contingency

Across seven sessions, on-task interval scores for Participant 1 show stable results except for the seventh session. Compared to baseline, there was an average 18% increase in on-task intervals. The 70% on-task interval criterion set by the teacher was met across all seven sessions. The secondary measure of inappropriate behaviors is also shown on the secondary y-axis. The average inappropriate behavior score for Participant 1 was 13 per session, a 3-point decrease from baseline (Figure 1).
Figure 1. Average percentage of on-task intervals and frequency of inappropriate behavior for Participant 1.

Across eight sessions, on-task interval scores for Participant 2 were relatively stable, staying above the 70% criteria the entire phase. There was an average increase of 25% on-task intervals from baseline to the treatment phase. There was an inappropriate behavior average of 3 per session, a 1 point decrease from baseline (Figure 2).

Across seven sessions, Participant 3 had stable data for six out of the seven sessions. Compared to baseline, there was a 27% increase of on-task intervals. Participant 3 had an average inappropriate behavior score of 5 instances per session, a 5 point decrease from baseline (Figure 3).

Across seven sessions, Participant 4 had relatively stable data, staying above the 70% criterion throughout the phase. There was a 93% average on-task interval score. Compared to baseline, there was a 17% increase in on-task interval scores. Participant 4 had an average of 10 inappropriate behaviors per session, a 1 point decrease from baseline with a decreasing trend (Figure 4).
Figure 2. Average percentage of on-task intervals and frequency of inappropriate behavior for Participant 2.

Figure 3. Average percentage of on-task intervals and frequency of inappropriate behavior for Participant 3.
Figure 4. Average percentage of on-task intervals and frequency of inappropriate behavior for Participant 4.

Across six sessions, Participant 5 had very stable and high levels of on-task intervals. There was a 4% increase in average on-task interval score compared to baseline. Participant 5 had inappropriate behavior scores of an average of 0.5 per session. This was a 1.5 score decrease from baseline (Figure 5).

Figure 5. Average percentage of on-task intervals and frequency of inappropriate behavior for Participant 5.
Across seven sessions, Participant 6 had highly variable data. There was an 8% increase in on-task intervals compared to baseline levels. The average instance of inappropriate behavior per session was the same as baseline level (Figure 6).

For the entire class, the data for average percentages of on-task intervals was relatively stable for 4 data points. It stayed above the 70% criterion for 7 out of the 8 sessions. The class average on-task score for the entire treatment phase was 82%, a 15% increase from baseline level. The cumulative inappropriate behavior scores for this phase was an average of 38. This average score is a 6 point decrease from baseline (Figure 7).
Figure 7. Average percentage of on-task intervals and frequency of inappropriate behavior for the entire class.

Self-Monitoring

Across sessions during the self-monitoring phase, Participant 1 had relatively stable data except for one of the sessions. Overall, Participant 1 had an average percentage of 78 per session, a 10% increase from baseline. During this phase, the inappropriate behavior score had an average of 7 per session. The average score is a 6 point decrease from baseline level.

Participant 2 had stable on-task interval percentages except for the first session this phase. The average on-task percentage across the phase was 80%, a 16% increase from baseline. The inappropriate behavior scores for this phase was an average of 2 per session. This is the same average score as baseline.

During the self-monitoring phase, Participant 3 had relatively invariable data. The average on-task percentage was 96% per session, a 35% increase from the baseline level. The inappropriate behaviors for participant 3 had an average of 5 instances per session. The average of 5 is a 5 point decrease from baseline.
Across sessions, Participant 4 had an increasing trend of on-task interval scores. Compared to baseline, there was a 13% increase in average of on-task intervals. Inappropriate behavior scores for this phase was an average of 5 per session. The average number of inappropriate behaviors is a 4 point decrease from baseline.

Across six sessions, average percent of on-task interval scores for Participant 5 were very stable. There was a 3% increase from baseline level. The average of inappropriate behaviors was 0.3 per session. The average per session of inappropriate behaviors is a 1.7 decrease from baseline.

The average percent of on-task interval scores for Participant 6 was once again variable from session to session. Although these numbers are variable, the average percentage per session was 45%, a 9% increase from baseline. The average number of inappropriate behaviors decreased by 9 points compared to baseline.

The class’s cumulative scores for percentage of on-task intervals were variable, ranging from 63-98%. The average percentage per session was 80%, a 27% increase from the baseline average. The cumulative inappropriate behavior scores was an average of 21 per session. The average inappropriate behavior score decreased by 23 points compared to baseline.

**Interdependent Group Contingency and Self-Monitoring**

During this package intervention phase, Participant 1 was only present for four out of the six sessions. The average percentage of on-task intervals for the entire phase was 71%, a 3% increase from baseline. Inappropriate behavior scores for Participant 1 were an average of 7 instances per session. The average score decreased by 6 points compared to baseline (Figure 1).
Participant 2 had invariable on-task interval data for four sessions then had a decreasing trend for the last two data points. The average percentage per session was 92%, a 28% increase from baseline. The average inappropriate behavior score stayed the same at 2 compared to baseline (Figure 2).

On-task interval scores stayed relatively stable, above 80% throughout the phase for Participant 3. A 33% increase in average percentage per session was revealed with an average on-task interval score of 94%. There was an average of 3 instances of inappropriate behaviors per session, a 7 point decrease from baseline level (Figure 3).

Participant 4 had invariable on-task interval scores for three sessions then showed a decreasing trend. The average on-task interval of 95% shows a 19% increase from baseline. Participant 4 had an average of 4 instances of inappropriate behavior per session. This is a decrease of 5 points compared to baseline (Figure 4).

Across the package intervention phase, Participant 5 had stable data, with an average of 98% on-task intervals per session. Participant 5 did not show any inappropriate behaviors during this phase, a 2 point reduction compared to baseline (Figure 5).

Participant 6 had variable on-task interval scores. The average on-task interval score across the phase was 60%, a 24% increase from baseline. Participant 6 had an average of 4 inappropriate behaviors per session. The mean number of inappropriate behaviors for this phase reveals an 8 point decrease (Figure 6).

The percentages of on-task intervals for the entire class stabilized across the last four session of the phase. The average percentage per session increased to a score of 86%, a 19% margin from baseline. The scores for inappropriate behaviors
decreased for this phase to an average of 18 instances per session showing a 26 point decrease from baseline (Figure 7).

**Second Baseline**

Participant 1 showed a reduction of on-task intervals during the reversal phase. The average percentage per session dropped to 57%. Inappropriate behavior scores were an average of 9 per session.

Across five sessions, Participant 2 also showed a decreasing trend in on-task intervals. Scores of inappropriate behaviors stayed the same at an average of 2 per session.

Participant 3 had a variable but large reduction in percentage of on-task intervals. The mean percentage per session was 62%, only 1% higher than the original baseline. Inappropriate behavior scores had an average of 4 occurrences per session.

Participant 4 also showed an immediate decrease in percentage of on-task intervals, with an average of 72% per session. The average inappropriate behavior score was 3 with scores ranging from 2 to 5.

During the reversal, Participant 5 had variable on-task interval scores. The average percentage of on-task intervals decreased to 87% which is lower than the original baseline. Inappropriate behavior scores stayed at 0 through the entire phase.

Participant 6 reverted back to baseline levels during the reversal phase. The percentages of on-task interval scores were variable throughout the phase. The average percentage of on-task intervals per session was the same as the original baseline at 36%. The mean number of inappropriate behaviors was 6 per session with scores ranging from 4 to 15.
The percentages of observed on-task intervals for the entire class were variable, ranging from 44-78%. The average percentage per session was 65%, a lower percentage than the original baseline. The average inappropriate behavior average score was 23 occurrences per day.

**Teacher-Implemented Treatment**

Participant 1 showed a strong immediate decrease and then a strong increase in his on-task interval percentage during this phase. His scores were 18 and 78% which average to be 48% on-task intervals per day, a lower percentage than the first and second baseline. For inappropriate behavior, an average score of 6 was obtained, an even lower number than any other phase (Figure 1).

Across the first session, Participant 2 showed a decreasing trend in percentage of on-task intervals with a score of 45%. For the last two sessions, the average on-task intervals showed an increasing trend. Overall average of on-task intervals for this phase was 78%, slightly higher than the second baseline. For Participant 2, the average number of inappropriate behaviors increased to 3 per session (Figure 2).

During this teacher-implemented treatment phase, Participant 3 maintained low interval scores until the last session. The average number of inappropriate behaviors increased to 6 during this phase (Figure 3).

Throughout the first session of this phase, Participant 4 showed a decreasing trend in average percentage of on-task intervals to, and an increasing trend for the last two sessions. The average inappropriate behavior score stayed the same at 3 instances per session (Figure 4).

For Participant 5, the average percentage of on-task interval scores were showing a decreasing trend for the first session then showed an increasing trend
during the last two sessions. The average percentage across all sessions during this phase was 84%, lower than both baselines. The instances of inappropriate behavior per session stayed the same at zero (Figure 5).

Participant 6 had stable low percentages of on-task intervals across all 3 sessions. These scores are significantly lower than both baseline phases. The average of inappropriate behaviors remained the same at 8 per session (Figure 6).

The class wide percentages of on-task interval scores showed a decreasing trend at the beginning of the phase then showed an increasing trend for the last two sessions. The overall average percentage of on-task intervals was 61%, a lower score than either baseline. The average inappropriate behavior score was 24 instances per session (Figure 7).

**Interobserver Agreement and Treatment Integrity**

Interobserver agreement (IOA) was conducted by the main researcher and four research assistants. Reliability data were collected for 30% of the data collection sessions. Average percentage of IOA was 67, 83, 96, 98, 96, 92, 86, 95, and 95%, respectively. The overall mean percentage of IOA was 90%.

Treatment integrity was conducted through the use of a checklist. For the interdependent group contingency phase, the checklist contained seven items (Appendix L). Each of the items described a step of the intervention that was either completed or not by marking yes, no, or not applicable. For the self-monitoring phase, the same type of checklist was used that contained six items to be checked yes or no (Appendix M). For the package intervention, the checklist was a combination of the first two checklists containing eight items (Appendix N). For the teacher intervention phase, both the interdependent group contingency and the package checklists were used. Before the start of each intervention phase, the
researcher sat down with the teacher and explained the directions and checklist. The teacher was also given a sheet of paper with directions for each treatment phase. Treatment integrity checks were conducted for 100% of the intervention sessions. Observation of the treatment integrity in the classroom showed an average of 86% adherence to procedures during the first three phases while treatment integrity dropped to 56% during the teacher implemented intervention.

Social Validity

A pre-and post-questionnaire was given to the teacher and two aides in the classroom (see Appendices I & J). The same post-questionnaire was given to the vice-principal at the conclusion of the study. A post-questionnaire was given to the students on the last day of the intervention (see Appendix K). The goal of these questionnaires was to measure the staff members’ and students’ attitudes towards behavioral interventions, the methods, the importance and efficacy of the interventions, the likeliness that they will use them in the future, and the results of the study. The Likert-scale ranged from strongly disagree (1) to strongly agree (5). Results from the staff’s pre-questionnaire reveal the average score of statements supporting behavioral interventions was 4.3. The average score for statements not in favor of behavioral interventions was 3.6. The teacher and aide 1 had an average of 4.5 for the statement that they were aware of all the behavioral interventions the school had to offer while aide 2 had a low score of 1.

The post-questionnaire from the staff shows an average score of 4.7 for statements in support of the behavioral interventions used in this study. The average score for statements not in favor of the interventions used in this study was 2.8. For the vice-principal, the average score supporting this study was 4.3, and 2.3 for statements against the behavioral interventions utilized. The vice-
principal wrote on her questionnaire that getting the teacher to commit the time is
takes to be consistent and monitor interventions for this population is difficult.
Scores on the student post-questionnaire reveal an average overall rating of 4.7 for
each item. Specifically, the “enjoyed working as a team” item was scored a 5 from
each participant. On the last day of data collection, the teacher provided positive
verbal feedback. He commented how he enjoyed the group environment which
allowed the students to support each other in working towards a common goal.
CHAPTER 5: DISCUSSION

Implications of the Current Findings

Summary of results shows: Across all 6 participants the average percentage of on-task intervals increased compared to original baseline levels during three of the treatment phases. Similarly, the cumulative on-task scores for all the students in the class show a 13-19% increase from the initial baseline. These results show some support for current research using behavioral techniques in the educational setting, extending previous findings to the emotionally disturbed classroom environment (Amato-Zech et al., 2006; Chafouleas et al., 2012; Lewis et al., 2004). A slight overall decreasing trend in inappropriate behavior was seen across the intervention phases. Although this behavior was a secondary variable and carried no weight with the group contingency, the decreasing trend seems noteworthy because it may add to the existing literature on using these techniques in the classroom (Murphy et al., 2007; Todd et al., 1999). A possible explanation is that the response cost for engaging in off-task behavior could have impacted the amount of inappropriate behaviors. Also, self-monitoring could have helped the students become aware of their problem behaviors.

It is interesting that different phases were responsible for positive effects with different students. Participants 2, 4, and 6 had the highest on-task score during the package intervention. Participant 3 was the only one who had the highest percentage during the self-monitoring phase while Participants 1, 4, and 5 obtained their highest scores during the interdependent group contingency phase. These results may indicate a need to tailor the interventions per student depending on the size of the class. Results could also show the functions of each student’s behaviors are different. It may have been helpful to conduct a functional
assessment then decide which intervention would be appropriate for each student. Students who showed the most modest results should be the ones targeted for these types of interventions.

Particularly noteworthy was the decrease in treatment integrity for the teacher implemented intervention phase. This phase was designed to allow the teacher to independently execute the procedures used during the previous intervention phases. The cumulative average of on-task behavior decreased by 6% and each participant’s average on-task interval scores decreased by a margin of 14-53% compared to the previous intervention phases. Inappropriate behavior was higher than two of the intervention phases and the second baseline. Concurrent with this decrease of on-task intervals, treatment integrity decreased to an average of 56%. Although it cannot be concluded that there is a direct correlation between the treatment integrity and the decrease in on-task intervals, it appears the teacher did not find the procedures practical. However, other factors may be responsible, because since teacher acceptability was not directly manipulated. These factors could be the end of the school year, the teacher being relocated after having taught in this class for 30 years, or the amount of prompting the research assistance provided for the teacher. This result is consistent with the research that shows teacher fidelity is correlated with problem behavior (Benner, Beaudoin, Chen, Davis, & Ralston, 2010). For the ED population, it is essential to find interventions that work quickly and are easily implemented.

Finally, most of the current studies did not assess the social validity of the procedures from the student’s perspective. During this study, students’ average score of the procedures was moderately high. Interestingly, all of the students strongly agreed with the statement “enjoyed working as a team”. This may speak to the acceptability of an interdependent group contingency in the classroom.
Another interesting result pertaining to social validity is the teacher rated the effectiveness and importance of the procedures moderately high to high scores yet put an average score for the usability of the techniques in the future. This could indicate the teacher recognizes the value of behavioral interventions, but does not find them completely feasible for his classroom. Ultimately, a behavioral intervention is beneficial if it is applied consistently and correctly. If teachers do not continue to use the techniques suggested by Board Certified Behavior Analysts (BCBA) other behavioral processes are unlikely to be adapted.

These interventions were used because they are relatively easy, and unobtrusive in the classroom. Unfortunately, the drop in treatment integrity and variable data could point to the inefficacy of using these interventions for this population.

**Limitations**

The results of this study showed to be effective across participants during three intervention phases, but there are some limitations. First, the teacher allowed the students to leave the room whenever and for however long they wanted. When a student was angry, upset, or bored, would leave the room for durations ranging from 1 minute to the entire 60 minutes. If these students were gone longer than 10 minutes, they were excluded from the group contingency. These students were considered off-task while they were out of the room, but inappropriate behavior data could not be taken on them. This could have led to the inappropriate behaviors being lower than they actually would have been if the student had remained in the room.

Second, the students had a substitute teacher on Day 18. As compared to other data points during this phase, two students had a drop in their on-task
interval percentages that day and it may have been due to the presence of the substitute.

The third limitation is that of treatment integrity. Although the teacher was shown the checklist and directions were explained or repeated as needed, treatment integrity dropped below 80% seven times during the study. The research assistants would prompt the teacher when it seemed the treatment integrity was low, but the amount of help the research assistants gave to the teacher during the first three phases may have inhibited him from learning to apply them during the teacher-implemented phase. During this final phase, the treatment integrity was 57% or lower. This may be due to extraneous variables, such as the end of the school year, lack of preparation, or lack of motivation on the part of the teacher. Despite the reasons, with that low of treatment integrity it is hard to know if the package would have provided better results should it have been delivered more consistently.

A fourth limitation is the lack of control of antecedent procedures implemented by the teacher. Because the interdependent group contingency is a consequence-based procedure and self-monitoring is controlled by the student, the other types of antecedent procedures the teacher used were not under the control of the experimenter. For example, the teacher used a point system, and points were taken away when a student acted out. This may have impacted the students’ behavior because they were not solely reliant on the group contingency and self-monitoring.

The last limitation is the inadequate amount of time for follow-up data to determine if the teacher utilized any of the intervention procedures in the future. Due to the school year ending, these data could not be collected. These types of
data would speak to the social validity of the procedures as well as their generalizability in the classroom.

The limitations related to this study should be taken with caution in interpreting the results. Nonetheless, they are consistent with the boundaries and complications that come with conducting applied intervention research in a naturalistic setting. While gaining control over extraneous variables would produce cleaner results, it may also limit the applicability of such techniques in a true classroom setting. In order to get Applied Behavior Analysis adopted in school settings, this factor should be examined more closely.

**Future Research**

Future studies in the area of interdependent group contingency and self-monitoring techniques may demonstrate reliable results if the interventions are conducted in a few of the classrooms over a longer period of time. These results could contribute to the external validity of the techniques. If future research was conducted in this specific classroom, a particular target behavior could be lengthening the duration of staying in the classroom or shortening the duration outside of the classroom which would increase the consistency of observations. This would also allow for more opportunities for students to be on-task because they are in the classroom environment. Finally, other studies may have better control over the use of the original classroom management techniques during the intervention phases. In applied settings it is difficult for a teacher to stop using techniques have been using the majority of the school year. A decrease in the use of original classroom techniques and an increase in using behavioral techniques could prove to be a useful experiment.
Despite the limitations, these findings potentially have the implications of highlighting the complexity of translating research into practice. Correctly implementing procedures with consistency is a difficulty teachers face in the classroom (Cook, Landrum, Tankersley, & Kauffman, 2003). Future research may be able to focus on the shortcomings of the current experiment, and directly manipulate components that allow for a smooth transition from a controlled setting into a naturalistic environment. Finally, the teacher, vice-principal, and students expressed enjoyment in participating in this current research project. They were welcoming when the project first began, open to new ideas, and tried their best to accommodate the needs of the experiment.
REFERENCES
REFERENCES


APPENDICES
APPENDIX A: PARENT CONSENT FORM
Your child is invited to participate in a study conducted by Michelle Britten, who is graduate student at California State University, Fresno under the supervision of Dr. Amanda Adams, PhD, BCBA. The implementation of this project is to complete the graduate degree process by conducting a thesis required by the Department of Psychology. There will be no extra fee for this service. By signing this document, I understand I can withdraw my child’s participation at anytime.

If you decide to participate, your child will be participating in an interdependent group contingency and self-monitoring procedures. The purpose of these techniques is to see an increase in good behavior and a decrease in problem behavior in the classroom. The group contingency is intended to foster a sense of togetherness between the students to achieve the same goal. The self-monitoring techniques are proposed to allow the student to be more aware of their own behavior. Each of these techniques will only last an hour once a day, and will not interfere with their academic involvement. All services performed under this agreement are free of charge. The length of this study will be approximately 8 weeks.

Any information that is obtained in connection with this study and that can be identified with your child will remain confidential and will be disclosed only with your permission or as required by law.

Your decision whether or not to participate will not prejudice your future relations with California State University, Fresno or your child’s school placement. If you decide to participate, you are free to withdraw your consent and to discontinue participation at any time without penalty. The Committee on the Protection of Human Subjects at California State University, Fresno has reviewed and approved the present research.

If you have any questions, please ask us. If you have any additional questions later, Dr. Adams (aadams@csufresno.edu) will be happy to answer them. Questions regarding the rights of research subjects
You will be given a copy of this form to keep.

YOU ARE MAKING A DECISION WHETHER OR NOT TO PARTICIPATE. YOUR SIGNATURE INDICATES THAT YOU HAVE DECIDED TO PARTICIPATE, HAVING READ THE INFORMATION PROVIDED ABOVE.

________________________________________
Signature

________________________________________
Date

________________________________________
Relationship to Participant

________________________________________
Signature of Investigator

________________________________________
Date

________________________________________
Name of Child
APPENDIX B: VICE-PRINCIPAL CONSENT FORM
To whom it may concern:

This letter is to grant Michelle Britten, Applied Behavior Analysis, M.A. student at California State University, Fresno permission to address classroom management techniques in Mr. Sellers classroom here at Shelly Baird School in our OMEGA program.

As per our communications it is my understanding the overall goal is to decrease problem behaviors, and gain social validity for the teacher. You will be in the classroom for about 8 weeks long, and an hour a day in the classroom. The construct will be conducted during a structured activity or lesson. There are two techniques that will be used. One is self monitoring, the kids will have a checklist on their desk and when the timer goes off they will mark on the sheet whether they were on-task or not. The second one is a group contingency where if all the kids in the class meet a certain criteria then they all will receive a reward. A questionnaire will be given to the teacher and students to see whether these interventions were
helpful. And lastly that you will fully train the teacher and students on what to do and what is expected.

It is both our pleasure and honor to work with Ms. Britten and we look forward to supporting the task at hand.

Should you have any comments or questions regarding this arrangement, please do not hesitate to contact me at 559-589-2556 or mbrock@kingscoe.org.

Respectfully:

Michele L. Brock, M.S., P.P.S
KCOE Assistant Principal
Shelly Baird School

Shelly Baird School                959 Katie Hammond Lane                (559)584-5546
Kings County Office of Education   Hanford, CA 93230                     fax: (559) 589-7004
APPENDIX C: TEACHER CONSENT FORM
TEACHER CONSENT FORM

Your classroom is invited to participate in a study conducted by Michelle Britten, who is graduate student at California State University, Fresno under the supervision of Dr. Amanda Adams, PhD, BCBA. The implementation of this project is to complete the graduate degree process by conducting a thesis required by the Department of Psychology. There will be no extra fee for this service. By signing this document, I understand I can withdraw my participation at anytime.

If you decide to participate, you will be participating in an interdependent group contingency and self-monitoring procedures. The purpose of these techniques is to see an increase in good behavior and a decrease in problem behavior in the classroom. The group contingency is intended to foster a sense of togetherness between the students to achieve the same goal. The self-monitoring techniques are proposed to allow the student to be more aware of their own behavior. Each of these techniques will only last an hour once a day, and will not interfere with their academic involvement. All services performed under this agreement are free of charge. The length of this study will be approximately 8 weeks.

Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission or as required by law.

Your decision whether or not to participate will not prejudice your future relations with California State University, Fresno or your position at Shelly Baird. If you decide to participate, you are free to withdraw your consent and to discontinue participation at any time without penalty. The Committee on the Protection of Human Subjects at California State University, Fresno has reviewed and approved the present research.

If you have any questions, please ask us. If you have any additional questions later, Dr. Adams (aadams@csufresno.edu) will be happy to answer them. Questions regarding the rights of research subjects
may be directed to Constance Jones, Chair, CSUF Committee on the Protection of Human Subjects, (559) 278-4468.

You will be given a copy of this form to keep.

YOU ARE MAKING A DECISION WHETHER OR NOT TO PARTICIPATE. YOUR SIGNATURE INDICATES THAT YOU HAVE DECIDED TO PARTICIPATE, HAVING READ THE INFORMATION PROVIDED ABOVE.

__________________________________________  ______________
Signature                                        Date

__________________________________________  ______________
Signature of Investigator                        Date
I, ______________________, have been asked to participate in a research study about behavior in the classroom. The study has been explained to me by Michelle Britten, a graduate student at Fresno State, and my teacher Mr. Sellers.

I understand I will be asked to track my own behavior, and that if everyone in the class behaves a certain way then we will all receive a reward. I know that my participation is voluntary, and that I can stop at any time without punishment.

The person doing this study will not give anyone my name, and my name will not appear in any reports for this project.

I was also informed that if I have a question about the project, I can call Michelle Britten at 559-786-2840. If I have a question about my rights, I can call Constance Jones at (559) 278-4468.

I am willing to take part in this study.

______________________________  __________
Student Signature               Date
APPENDIX E: REFERENCED TEACHER DATA SHEET
# Social Emotional Data

**Name:**

**Benchmark:**

<table>
<thead>
<tr>
<th>Date</th>
<th>Trial 1</th>
<th>Trial 2</th>
<th>Trial 3</th>
<th>Trial 4</th>
<th>Trial 5</th>
<th>Trial 6</th>
<th>Trial 7</th>
<th>Trial 8</th>
<th>Trial 9</th>
<th>Trial 10</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Monthly Summary:**

- [ ]
- [ ]
- [ ]
- [ ]

**Verbal**

- A hyper-excessive talking
- B sexually oriented comments
- C disrespectful comments
- D ugly comments to provoke
- E explosive outburst
- F refusing to follow directions
- G ugly comments about assignments
- H disrespectful to staff
- I MYOB
- J argumentative
- K Protesting

**Conduct**

- L no idea
- M irritating noises to annoy
- N personal space
- O bed ticket
- P throwing/slamming things
- Q leaving room without permission
- R distracting from outside
- S not keeping hands/feet to self
- T fighting
- U sexual gestures
- V self-abusive behaviors
- W tearing up work
- X refusing to do work
- Y several prompts to get back to work
- Z defacing/destruction of property
- a8 emotional shutdown
- bb other
- cc other

**Explanation of * behavior:**

- [ ]
- [ ]
- [ ]
- [ ]
- [ ]
- [ ]
- [ ]
- [ ]
APPENDIX F: INTERDEPENDENT GROUP CONTINGENCY DIRECTIONS
Starting today, we are going to try something different. It will last for about the next week or so. We are going to do it during this time every day unless otherwise stated. What we will be doing is called an IGC. Basically it means we all need to work as a team. EVERYONE will need to:

- Stay on-task
- Work on their assignments
- Listen to the teacher
- Use positive statements
- Ask questions and make statements related to the material

If everyone does these things then everyone will receive a reward. If someone in your group does not reach their goal for the day then no one will receive a reward. Each day is a new chance to earn a reward. Does everyone understand? Let’s all work as a team to achieve our goal!

If you leave the room for longer than 10 minutes you will not get to participate in the IGC and receive a reward.
APPENDIX G: CLASSROOM DATA SHEET
# Classroom Behavior Data Sheet

<table>
<thead>
<tr>
<th></th>
<th>Monday ( )</th>
<th>Tuesday ( )</th>
<th>Wednesday ( )</th>
<th>Thursday ( )</th>
<th>Friday ( )</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>William</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inappropriate Vocalizations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Noncompliance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>On-task/Off-task</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cantrell</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inappropriate Vocalizations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Noncompliance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>On-task/Off-task</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Dylan</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inappropriate Vocalizations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Noncompliance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>On-task/Off-task</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Harold</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inappropriate Vocalizations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Noncompliance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>On-task/Off-task</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Joey</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inappropriate Vocalizations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Noncompliance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>On-task/Off-task</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Joseph</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inappropriate Vocalizations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Noncompliance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>On-task/Off-task</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

On-task/Off-task: Momentary time sampling 5-min intervals (+) (-)
IAV: Frequency (/)
Noncompliance: Frequency (/)
APPENDIX H: SELF-MONITORING SHEET
<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>YES</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>NO</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**NAME:**

**DATE:**

**WAS I WORKING?**
APPENDIX I: TEACHER PRE-INTERVENTION QUESTIONNAIRE
Please rate how strongly you agree with the statements below. The scale ranges from strongly disagree (1) to strongly agree (5).

<table>
<thead>
<tr>
<th>Statement</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavioral interventions should be used in the classroom.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>Behavioral interventions are effortful.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>I am aware of all the behavioral interventions my school has to offer.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>Behavioral interventions only work for a limited number of students.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>Behavioral interventions are important/effective.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>Behavioral interventions are too time consuming.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>An effective goal for my classroom is to decrease disruptive behavior.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>I am willing to try new behavioral intervention techniques.</td>
<td></td>
</tr>
</tbody>
</table>
Behavioral interventions only last for a short period of time.

If you have concerns about the project, please write them below:

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

If you have any expectations about the project, please write them below:

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
APPENDIX J: TEACHER POST-INTERVENTION QUESTIONNAIRE
Teacher Questionnaire

Please rate how strongly you agree with the statements below. The scale ranges from strongly disagree (1) to strongly agree (5).

The directions and purpose for this study were clear.
1 2 3 4 5

These types of behavioral interventions are too time consuming.
1 2 3 4 5

The interdependent group contingency was important/effective
1 2 3 4 5

Behavioral interventions like these only work for a short period of time.
1 2 3 4 5

Self-monitoring is an important/effective skill for my students to practice.
1 2 3 4 5

Behavioral interventions only work for a limited number of students.
1 2 3 4 5

I will use parts of or all of the techniques used in this study in the future.
1 2 3 4 5
I do not think other teachers at my school will use these behavioral techniques.

1 2 3 4 5

The intervention package was important/effective.

1 2 3 4 5

The outcome of this study will be useful for other classrooms.

1 2 3 4 5

Additional comments:

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
APPENDIX K: STUDENT POST-INTERVENTION QUESTIONNAIRE
Please circle how much you agree with the statements below. Circle the 1 if you do not agree! And circle the 5 if you really agree!

The directions were explained so that everyone in the class could understand them.

1  2  3  4  5

The checklist on my clipboard helped me to keep track of my behavior.

1  2  3  4  5

The rewards (tickets) for participating were important.

1  2  3  4  5

I enjoyed working as a team.
I would participate in a study like this in the future.

Anything else you want to say? Write it below!
APPENDIX L: TREATMENT INTEGRITY CHECKLIST FOR INTERDEPENDENT GROUP CONTINGENCY
Treatment Integrity Checklist

Teacher name: __________________  Day of the week:   M   T   W   Th   F

RA name: ______________       Date: ______________

<table>
<thead>
<tr>
<th></th>
<th>Observed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Directions were read or given to students</td>
<td>Yes  No  N/A</td>
</tr>
<tr>
<td>2. Students were reminded of expected behaviors</td>
<td>Yes  No  N/A</td>
</tr>
<tr>
<td>3. Teacher was present during entire session</td>
<td>Yes  No  N/A</td>
</tr>
<tr>
<td>4. Students were prompted at least 3 times during session</td>
<td>Yes  No  N/A</td>
</tr>
<tr>
<td>5. Students were praised for engaging in expected behaviors</td>
<td>Yes  No  N/A</td>
</tr>
<tr>
<td>6. Reinforcement was delivered for meeting criteria</td>
<td>Yes  No  N/A</td>
</tr>
<tr>
<td>7. The class was informed they did not meet the criteria</td>
<td>Yes  No  N/A</td>
</tr>
</tbody>
</table>

Total: _____/6 = ________%
APPENDIX M: TREATMENT INTEGRITY CHECKLIST FOR SELF-MONITORING
# Treatment Integrity Checklist

Teacher name: ____________________  
Day of the week:  M  T  W  Th  F

RA name: ________________________  
Date: _______________________

<table>
<thead>
<tr>
<th></th>
<th>Observed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Self-Monitoring sheets were handed out</td>
<td>Yes  No  N/A</td>
</tr>
<tr>
<td>2. Directions read/explained to students</td>
<td>Yes  No  N/A</td>
</tr>
<tr>
<td>3. Teacher present during entire session</td>
<td>Yes  No  N/A</td>
</tr>
<tr>
<td>4. Students were prompted at least 3 times during session</td>
<td>Yes  No  N/A</td>
</tr>
<tr>
<td>5. Students were praised for engaging in SM</td>
<td>Yes  No  N/A</td>
</tr>
<tr>
<td>6. Students were given reward for matching 50% or more with the RA’s sheet</td>
<td>Yes  No  N/A</td>
</tr>
</tbody>
</table>

Total: _____/6 = _______%
APPENDIX N: TREATMENT INTEGRITY CHECKLIST FOR PACKAGE INTERVENTION
Treatment Integrity Checklist

Teacher name: ____________________ Day of the week: M T W Th F
RA name: __________________ Date: ______________________

<table>
<thead>
<tr>
<th></th>
<th>Observed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Directions were read or given to students</td>
<td>Yes</td>
</tr>
<tr>
<td>2. Students were given self-monitoring sheets</td>
<td>Yes</td>
</tr>
<tr>
<td>3. Students were reminded of expected behaviors</td>
<td>Yes</td>
</tr>
<tr>
<td>4. Teacher was present during entire session</td>
<td>Yes</td>
</tr>
<tr>
<td>5. Students were prompted at least 3 times during session</td>
<td>Yes</td>
</tr>
<tr>
<td>6. Students were praised for engaging in expected behaviors</td>
<td>Yes</td>
</tr>
<tr>
<td>7. Reinforcement was delivered for meeting criteria</td>
<td>Yes</td>
</tr>
<tr>
<td>8. The class was informed they did not meet the criteria</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Total: _____/7 = _______%
California State University, Fresno

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Michelle Diane Britten

Type full name as it appears on submission

July 5, 2012

Date