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Self-Management as a Class-Wide Intervention: An Evaluation of the "Self & Match" System Embedded within a Dependent Group Contingency

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SELF-MANAGEMENT AS A CLASS-WIDE INTERVENTION: AN EVALUATION
OF THE “SELF & MATCH” SYSTEM EMBEDDED WITHIN A DEPENDENT
GROUP CONTINGENCY

by

Andrew J. Bulla

A dissertation submitted to the Graduate College
in partial fulfillment of the requirements
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SELF-MANAGEMENT AS A CLASS-WIDE INTERVENTION: AN EVALUATION OF THE “SELF & MATCH” SYSTEM EMBEDDED WITHIN A DEPENDENT GROUP CONTINGENCY

Andrew J. Bulla, Ph.D.

Western Michigan University, 2017

The U.S. Department of Education (2015) indicated that about 95% of students with special education eligibility receive some form of education in the general education setting. Students with disabilities tend to engage in more disruptive behaviors than their non-disabled peers (e.g., Murphy, Beadle-Brown, Wing, Gould, Shah, & Homes, 2005). If teachers are spending more time managing disruptive behaviors, time allocated to instruction is lost. Self-management is one evidence-based intervention that has shown consistent effects on increasing on-task behavior and decreasing disruptive behaviors. Although feasible at the individual level, previous research has identified that class-wide self-management interventions may be efficacious but not feasible to implement (Chafouleas, Hagermoser Sanetti, Jaffery, & Fallon, 2011). The current study sought to evaluate the “Self & Match” system (Salter & Croce, 2015), a self-management intervention with a “teacher match” component, embedded within a dependent group contingency, and observe the effects of the intervention on disruptive and on-task behaviors. Results suggest that the intervention may be somewhat effective for mildly disruptive students, but does not appear to overpower competing contingencies for more disruptive students, although performance seemed to improve toward the end of the second intervention phase.

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INTRODUCTION

The Individuals with Disabilities Education Act (IDEA, 2004) specifies that students with a disability must be provided a free and appropriate public education in the least-restrictive environment. In alignment with IDEA 2004, classrooms today are becoming increasingly diverse with the inclusion of students with exceptional needs, and with this comes an increase in students with unique behavioral challenges. The U.S. Department of Education (2015) indicates that about 95% of students with special-education eligibility are receiving some form of education in the general education setting. Past research indicates that students with disabilities tend to engage in more disruptive behavior than their non-disabled peers (e.g., Murphy, Beadle-Brown, Wing, Gould, Shah, & Homes, 2005). If teachers are spending more time managing disruptive behaviors, time allocated to instruction is lost. In a meta-analysis conducted by Wang, Haertel, and Walberg (1990), it was identified that effective classroom management techniques had the highest influence on learning, as well as success outside of the classroom. Classroom management can be defined as teacher actions initiated to manage student behavior, increase engagement with instructional material, or procedures to increase the cooperation and compliance of students. Subsequent research has continued to demonstrate a strong relationship between classroom management and academic achievement (Adeyemo, 2012; Kunter, Baumert, & Koller, 2007). Given this information, a call for effective classroom management procedures that are practical, reliable, and valid is warranted.

Several barriers may impact the degree to which teachers implement effective classroom management, despite the positive outcomes of classroom management. Lack of training is one reason why teachers may not use classroom management techniques.

Emmer and Stough (2001) discuss the fact that training in classroom management in teacher preparation programs may be limited to one or two chapters in a single course during their college experience. This is interesting to note, as teacher preparation programs typically include college coursework, experiential components, and student teaching. Additionally, the authors state that it is typical for teachers to develop their knowledge of classroom management strategies across the duration of their teaching career through professional development and teacher coaching, as opposed to during their collegiate training. The lack of training and/or understanding in classroom and behavior management techniques can result in higher levels of stress for teachers (Clunies-Ross, Little, Klenhuis, 2008), as well as impact teacher burnout rates (Brouwers & Tomic, 2000). Kincaid, Child, Blas, and Wallace (2007) further investigated barriers to the implementation of effective classroom management procedures, and identified the feasibility, or the extent the teacher can easily implement the procedures in addition to other responsibilities, of the intervention directly impacted the integrity with which the intervention was implemented. When interventions or procedures are implemented with a low degree of treatment integrity, the effectiveness of the interventions decreases rapidly (Lane, Bocian, MacMillan, & Gresham, 2004). Taken together, the research suggests a combination of teacher knowledge as well as feasibility directly impacts the adoption, success, and long-term implementation of classroom management techniques. Self-management is one intervention that could be easily trained and feasibly implemented by the teacher.

Skinner (1953) defined self-management in two parts: (1) the controlling response and (2) the controlled response. The controlling response can be conceptualized as variables in the environment that alter the probability of another variable or event. For

example, a controlling response could be a student, Jessica, observing her own behavior, as well as self-delivered reinforcement. A controlled response is the response in which a change was observed given the environmental changes that occurred in the controlling response. For example, the controlled response for Jessica may be speaking out loud, and the controlling response would be a verbal prompt that stated, “Jessica, remember to be quiet.” By arranging the controlling responses, individuals are able to manage a variety of behaviors (controlled responses) that warrant change.

Self-management as an educational behavior-management technique typically includes one or more of the following: (1) self-monitoring, or the ability to discriminate when the behavior did or did not occur, (2) self-reinforcement, or the delivery of positive consequences following a desired behavior, (3) self-evaluation, in which the self-monitored behavior is compared against pre-determined criteria, (4) self-administered or contrived antecedents, in which some antecedent variable is manipulated to increase the probability that the target response will occur, and (5) individual goal setting (Aljadeff-Abergel, Schenk, Walmsley, Peterson, Frieder, & Acker, 2015). For example, Kern, Ringdahl, Hilt, and Sterling-Turner (2001) implemented a self-management procedure that included self-monitoring and self-evaluation with three children who exhibited excessive disruptive behaviors that were deemed to impede their learning and social functioning. The researchers conducted a functional assessment to determine the reinforcer maintaining the target behavior, and identified a socially appropriate alternative behavior that the student could engage in to receive the reinforcer instead of engaging in the disruptive behavior. The participants were then taught how to identify whether or not they engaged in appropriate behavior or used the functionally equivalent request by circling a happy face or sad face during a pre-determined interval. Points were

earned if the student had a certain number of happy faces by the end of the session (e.g., if the student had 13 out of 15 happy faces he/she earned an edible reinforcer). For all three participants, the targeted disruptive behaviors decreased, and the appropriate alternative behavior increased during self-management conditions. This study highlights that the entire scope of self-management components is not necessary for behavior change, as the researchers did not have to implement self-reinforcement, self-administered antecedents, or individual goal setting.

In the classroom setting, self-management interventions typically have a “teacher match” component, in which the student’s self-monitored data are compared against the teacher-monitored data. By adding the “teacher-match” component, teachers are able to monitor the accuracy of student reporting to ensure the reinforcer is delivered for desired classroom behavior. Peterson, Young, Salzberg, West, and Hill (2006) implemented a self-management procedure with a teacher-match component to support five students with behavioral challenges in their general education setting. Students were taught how to monitor their own behavior on a Likert-type scale ranging from unsatisfactory (high levels of disruptive behavior) to honorary (low to zero levels of disruptive behavior). After the student monitored his/her behavior the teacher then completed the same Likert-type scale for the behavior of interest during the same time frame. Points were differentially awarded to the student based on his/her performance (e.g., more points awarded for honorary performance, and less points for unsatisfactory). Additionally, a student earned bonus points when the student matched the teacher’s report exactly, or came within one point of the teacher’s rating. All students had variable levels of disruptive and appropriate behaviors during baseline levels, however, once the intervention was implemented, disruptive behavior decreased for all participants and

appropriate classroom behaviors increased. Also, the teachers' positive perceptions of the participants increased following the intervention.

In addition to self-management interventions being used at the individual level, teachers may adopt self-management procedures as a class-wide intervention (Kern, Dunlap, Childs, & Clarke 1994; Mitchem & Young, 2001). For example, Kern et al. (1994) conducted a study with six elementary students in a self-contained classroom room for students with emotional behavior disturbance in a public school. The authors used a multiple-baseline-across-participants design to evaluate the effects of self-monitoring on disruptive and on-task behavior. During baseline, the teacher implemented the classroom-management procedures common for the classroom, including points for appropriate behavior, loss of points for disruptive behaviors, reprimands for disruptive behaviors, and a school store in which the students could exchange their points for preferred items. In the intervention phase, the students were taught to identify whether they were on-task or off-task, as well as whether they engaged in an individualized target behavior based on their social-skill deficits (e.g., positive adult interactions, positive peer interactions, etc.). After a timer signaled the end of a designated period of time, students circled "yes" or "no" to indicate whether they were on-task and engaged in their individualized target behavior. During initial training, the students would independently score their behaviors and compare responses with the teacher for accuracy. After two days of 80% or higher accuracy, the teacher discontinued the accuracy checks; no programmed consequences were assigned for accurate matching. This continued in a staggered fashion until all students in the class were independently self-monitoring. During the intervention condition, points were only awarded based on the students' self-monitoring record of their own behavior during the class hour. Results indicated

increases in on-task behavior across all students during the intervention condition. Three of the six students had high disruptive behaviors during baseline. With the implementation of the intervention, the disruptive behavior of these three students decreased substantially and the disruptive behaviors for the other three students remained low. Taken together, the results of the study suggest that self-management procedures may be adopted class-wide with success.

It should be noted, however, that the classroom used by Kern et al. (1994) only included six students, which is not typical of most general education classrooms. Similarly, the study did not implement a “teacher match” component, only an initial accuracy check during training, and prior research suggests as the number of students in the classroom increases, so does the potential for inaccurate self-monitoring. For example, Denune, Hawkins, Donovan, McCoy, Hall, and Moeder (2015) implemented a class wide self-monitoring intervention in a classroom of 14 students. The students were required to monitor their own behaviors at four specific times during the class hour. Several students would complete all four of their self-monitoring checks at the beginning of the class and were not monitoring during the other designated self-monitoring checks. The researchers did not have any procedures in place to control for this phenomenon. Inaccurate self-monitoring may limit or weaken the effects of self-management interventions. Given these findings, self-monitoring interventions that incorporate spot checks for student accuracy, such as the “teacher match” component used by Peterson et al. (2006), may be more effective for larger class sizes.

One example of a self-management intervention that has “teacher matches” built in is the “Self & Match” system (Salter & Croce, 2015; Bulla & Frieder, in press). The “Self & Match” system is a commercially available behavior management system that

incorporates self-monitoring as its basis (Salter & Croce, 2015). There are several components in the “Self & Match” system including self-monitoring, goal setting, conditioned reinforcement, teacher matches, and differential reinforcement. In the “Self & Match” system, students receive a form that has three to five preselected questions that probe for specific behaviors (e.g., “Did I keep my hands, feet and objects to myself?” “Did I follow the teacher’s instructions?”). Prior to the class period, the student independently selects what he/she is working for during the class period/week. After a predetermined interval, the student independently answers each question by writing “yes” or “no” in response to the question. The teacher then independently answers each question. Points are differentially awarded based on the student’s responding and accuracy in matching the teacher’s rating. If the student answers “yes,” and the teacher answers “yes,” the student earns two points. If the student answers “no,” and the teacher answers “no,” the student earns one point for accurate monitoring. If there is a mismatch between student and teacher responses, then the student does not earn any points. If, after answering all questions, the student has earned the pre-selected number of points, a token reinforcer is earned. This continues until the student has earned enough “tokens” to exchange for the item or activity he/she selected at the beginning of the intervention. Preliminary research on the “Self & Match” system suggests that it is effective at the individual level (Croce, 2015; Bulla & Frieder, in press), however to date there has been no research conducted on the system at the group level. Despite the effectiveness of the “Self & Match” system at the individual level, it may not be feasible for teachers of classes with larger numbers of students to implement, if the teacher has to check each student’s rating form. Given past research on feasibility being one of the largest factors for adoption of classroom-management strategies, a call for easily trained and

implemented classroom-management strategies is warranted. One solution may be to use a group contingency in which the teacher only has to check a select number of students from the class.

There are three different types of group contingencies typically implemented in school settings, including independent, interdependent, and dependent (Theodore, Bray, & Kehle, 2004). In an independent group contingency, the teacher delivers a specified reinforcer contingent on the behavior of each individual student. The teacher provides feedback to each student, and only those students who engage in appropriate behaviors during the class period earn the reinforcer. Thus, each individual student's behavior determines whether he/she earns the reinforcer for him/herself. For example, if three out of five students engage in appropriate behaviors during the class, only those three students earn the reinforcer. In an interdependent group contingency, the behavior of the class as a whole determines whether the class earns the predetermined reinforcer. For example, every student in the class must engage in appropriate behavior during the class period for the whole class to earn a reinforcer; if one or more students engage in disruptive behavior, the class as a whole does not receive the reinforcer. Lastly, with a dependent group contingency, the behavior of one student determines whether the class as a whole earns the reinforcer. For example, all of the students' names are put in a jar and the teacher randomly selects one name. If the student who is selected engages in appropriate behavior for that class hour, the whole class earns the reinforcer; however, if the student who is selected engages in the disruptive behavior, then the class does not receive the reinforcer.

Research on using group contingencies to manage behavior has demonstrated consistent positive effects on decreasing disruptive behavior and increasing on-task

behavior (Theodore, Bray, & Kehle, 2004; Theodore, Bray, Kehle, & Jenson, 2001; Ling, Hawkins, & Weber, 2011). Theodore, Bray, and Kehle (2004) compared the effectiveness of three different group contingencies on reducing the disruptive behaviors of high school students with emotional behavior disorders. The authors evaluated each group contingency using an alternating treatment design with an initial baseline. During baseline, the teacher continued to employ the typical classroom management strategies already in place. Subsequently, the researchers alternated between three different types of group contingencies in a random order. During the independent group contingency, each student started the class with zero check marks. Anytime the student broke a classroom rule, he received a check mark for disruptive behavior. At the end of the class periods, only those students who had five or fewer check marks earned the reinforcer for the day. In the interdependent group contingency condition, all students had to have five or fewer check marks in order for the whole class to earn the daily reinforcer. Lastly, when the dependent group contingency was implemented, the teacher randomly selected a student's name from a jar, and if that student had five or fewer check marks the whole class received the daily reinforcer. Results suggested that all three group contingencies were effective at reducing disruptive behaviors. Additionally, the teacher rated group contingencies as a highly acceptable intervention to use in the classroom setting, and the students rated their satisfaction with the intervention as neutral. It should be noted that despite the minor differences between the three group contingencies, the researchers selected the dependent group contingency to remain in place after the evaluative component of the study and further observed the effects of the dependent group contingency over time during which disruptive behaviors remained at low levels. The researchers hypothesized that the dependent group contingency was slightly more

effective than the other two contingencies because it included randomization of the criterion for reinforcement.

More recently, a body of research has emerged that combines self-management procedures with group contingencies (Chafouleas, Hagermoser Sanetti, Jaffery, & Fallon, 2012; Coogan et al., 2007; Davies & Witte, 2000; Jones, Boon, Fore, & Bender, 2008). Chafouleas, Hagermoser Sanetti, Jaffery, and Fallon (2012) implemented a self-management procedure in which students in three different eighth grade classes were taught to monitor their own behavior using a self-rating scale ranging from one (low performance) to ten (high performance). After the students rated their own behavior, the teacher would also rate each individual student's behavior. Students earned one classroom point if their rating came within one point of the teacher's rating. During baseline conditions, points could not be used to exchange for any tangible item or social activity. Intervention required the teacher to use an interdependent group contingency tied to the points earned to deliver a reinforcer. Students in each class had to earn a pre-specified amount of points on an individual basis before their specific class could earn a reinforcer. Results indicated that for two of the three classes, students rated higher on preparedness and engagement during intervention conditions over the baseline conditions. The third class was already performing at high levels for preparedness and engagement during baseline, so minor increases were not detectable. Additionally, all three classes scored lower for off-task behavior throughout intervention. Despite the overall effectiveness of the intervention and a high rating for acceptability of the intervention by the teachers, teachers rated the feasibility of the intervention as moderate. The teachers stated that administrative support would be needed, and questioned the feasibility of weekly reinforcers, thus potentially creating a barrier for adoption. One potential way to

increase the feasibility of the intervention is to use other group contingencies that require the teacher to check fewer students' responses. Similarly, the scale that was used to rate the student's behaviors was quite wide (i.e., one to ten), and could lead to subjectivity and/or error in the accuracy of recording for both the student and the teacher. Future research should further control for the extent to which responding is objective and accurate.

Taken together with prior research findings, if self-management procedures are going to be used in classrooms with a large number of students, researchers must ensure that (1) students are accurately monitoring their behaviors, (2) the intervention has positive effects on increasing on-task behaviors, (3) the intervention has positive effects on decreasing disruptive behaviors, and (4) the intervention is feasible for the teachers to implement. Prior research in self-management and group contingencies has focused specifically on embedding self-management procedures within an interdependent group contingency (Chafouleas, Hagermoser Sanetti, Jaffery, & Fallon, 2011; Coogan et al., 2007; Davies & Witte, 2000; Jones, Boon, Fore, & Bender, 2008), which may not be feasible for teachers if they must first check each students' self-monitoring form, and then determine if everyone in the class has met criteria for the daily reinforcer. Thus, a need for research to support an intervention that uses other group contingencies, such as a dependent group contingency, in which the teacher randomly selects one student's form to review for accuracy each day is warranted. Additionally, using self-management procedures with programmed "teacher matches," such as the "Self & Match" system, could increase the overall accuracy of the students' monitoring. The purpose of the current study was to synthesize the research findings on self-management and group contingencies to make interventions at the class-wide level both feasible and efficacious.

More specifically, the current study sought to evaluate the “Self & Match” system embedded within a dependent group contingency, and observe the effects of the intervention on disruptive and on-task behaviors in a general education classroom.

METHOD

Participants

Participants were recruited from a middle school in southwest Michigan. A general education classroom that supports students with and without disabilities was selected for the current study. Inclusionary criteria for the classroom included teacher reports of high rates of disruptive behaviors, a classroom between first and eighth grade, and a classroom that has a minimum of two highly disruptive students. Based on these criteria, a sixth grade science classroom was selected. There were a total of 34 students in the classroom. All students in the class were exposed to baseline and intervention conditions.

The classroom teacher used several forms of instruction including class wide lecture, small group, independent, and paired assignments. Students would move around the classroom frequently because of the different teaching strategies, making class-wide data collection difficult. For this reason, four students were selected to analyze the effects of the intervention on their behavior. Two target students, Adam and Brian, were selected to have their data individually analyzed. Target students were selected based on reports of high rates of disruptive and off-task behaviors. This was determined by a combination of teacher nomination, as well as a history of disciplinary referrals in the school.

Additionally, two comparison students, Joseph and Tobias, were selected based on reports of average classroom behaviors. This was determined by a combination of teacher nomination, as well as a history of two or fewer disciplinary referrals. Comparison students were included in the study based on prior research methodologies (Davies & Witte, 2000), as well as to assess the effects of the intervention for highly disruptive and mildly disruptive students.

Setting and Materials

The setting for the proposed study was a sixth grade science classroom in a local middle school in Southwest Michigan. The middle school resided in a rural, middle class, and predominantly Caucasian county, with minority groups representing less than 10% of the total population. The classroom consisted of 5 rows of tables in the middle of the classroom that sat 20 students total. Additionally, there were two side-rows of tables that sat eight students on each side of the classroom. Students sat in pairs of two at each table (See Appendix E for the classroom layout). Materials for the study included individual self-management forms for each student (see Appendix F), a file folder the same color as their team that held students' "Self & Match" forms, reinforcer surveys that were completed by the students (Appendix K), and items/activities that the students reported as preferred items. These items consisted of candy (e.g., chocolates, gum, hard candies), pens, and extended privileges (e.g., cell phone time, watch preferred video).

Dependent Variables

Two dependent variables were measured in the current study: Disruptive behavior and on-task behavior. Disruptive behavior was defined based on Lannie and McCurdy's (2007) definition of in-school disruptive behavior, as well as classroom observations. Thus behavior was considered disruptive if it was an academically unrelated verbal behavior (e.g., call outs, talking with peers), or motoric behavior (e.g., throwing paper, aggression, getting out of seat without permission, flipping water bottles).

On-task behavior was defined in accordance with Shapiro's (2004) definition of on-task behavior and defined as the student attending to the academic task at hand. For accuracy of data collection, there were two types of on-task behavior: On-task active and on-task passive. On-task active was defined as an observable and overt response to

academic materials. Examples included answering a teacher's question, a student raising his hand, writing on a worksheet, chorally responding, and taking notes; Non-examples included a student looking at his book, talking to a peer, calling out, looking at the teacher. On-task passive was defined as orienting towards the teacher's instruction without any overt responses in response to academic materials. Examples included looking at the teacher, reading along silently, and sitting facing the lecture materials; Non-examples included writing notes in your notebook, answering the teacher's question, and looking at a peer.

Data Recording and Analysis

See Appendix A for a sample data collection sheet. Data were collected on disruptive behaviors using a 10-second partial interval measurement system (Meany-Daboul, Roscoe, Bourret, & Ahearn, 2007), and on-task behavior was measured using a one-minute momentary time sampling procedure (Meany-Daboul, Roscoe, Bourret, & Ahearn, 2007).

Researchers were positioned in the front of the classroom and listened to an auditory track that specified when to observe and record for each 10-second interval. They were positioned so they were not in close proximity to any of the students, to attempt to control for close proximity between the researcher and students having an effect on the students' behavior. They observed one student at the start of the first interval. The audiotape specified the interval (e.g., "Interval One"), when to observe, (i.e., "observe"), and when to record (i.e., "Record"). During that period, if the student being observed engaged in disruptive behavior, the researcher circled a $+/$. If the student being observed did not engage in disruptive behavior, the researcher circled a $-/$. This continued for a total of five intervals. At the start of the sixth interval, the researchers measured on-task behavior

by ways of momentary time sampling. Researchers looked at the student at the start of the sixth interval (i.e., “Interval six. Observe.”), and immediately recorded whether or not that student was on-task during that momentary observation. At the end of the sixth interval, the audiotape prompted the researcher to observe a different student (i.e., “Next student. Interval one.”). This process continued until the two target students and two comparison students were observed once. The researcher then repeated the measurement process for the remainder of the class hour. They were present every full day of class from the beginning of the study, in an attempt to control for reactivity effects from additional staff being in the room and to ensure that any changes in the behavior were a result of the independent variable.

Data for disruptive behavior are expressed as percentage of intervals with the occurrence of disruptive behavior for each student. Data for on-task behavior are expressed as percentage of momentary time observations with the occurrence of on-task behavior for each student.

Procedure

Pre-Baseline Rule Instruction. The researchers met with the classroom teacher prior to collecting data to establish classroom rules. The teacher established three classroom rules that, if followed, would increase the level of on-task behaviors and decrease overall disruptive behaviors in the classroom. The three rules were (1) Be prepared to start class, (2) Stay on-task, and (3) Speak when appropriate. Examples and non-examples were created for each of the three rules. A presentation was delivered by the researchers to the students that explicitly taught each of the rules, gave examples and non-examples, had the students discriminate examples and non-examples of each rule using response cards, and had the students personally give examples of following each rule (See Appendix C

for a copy of the lesson). At the end of the presentation, the students were tested on examples and non-examples of the rules. The lesson lasted less than 30-min total, and all students could discriminate examples and non-examples of rules with 100% accuracy by the end of the lesson.

Baseline. Baseline began following initial rule instruction. The classroom teacher used the pre-existing classroom management procedures. No self-management procedures were used, and no additional changes to the classroom were made outside of the initial rule instruction. Typical classroom management procedures included verbal reprimands, pausing instruction until the classroom was quiet, and sending students out of the classroom if their behavior was deemed too disruptive.

“Self & Match” Training. Prior to the implementation of the “Self & Match” procedure, the researchers presented a 20-min lesson on how to use the “Self & Match” form (Salter & Croce, 2015; See Appendix D for a copy of the lesson). The presentation highlighted how the form would be used, how the students scored the form, how the teacher would score the form, as well as how the students would earn the potential reinforcer for their teams. Students were allowed to ask questions during and after the lesson.

Dependent Group Contingency. Students were divided into six teams based on desk rows. Each vertical row of students served as a team. The teams consisted of six to eight members, depending on their location in the classroom. Each team was assigned a color, and the assigned color corresponded to a folder containing a “Self & Match” form. For example, students on the blue team received a blue folder with their name on it containing a form. Each student’s “Self & Match” form listed the three classroom rules on it with examples and non-examples, as well as an area for both the student and teacher

to record. The students were given their folders at the start of class. The teacher selected which students' forms would be pulled at the end of the class hour prior to the start of class. This was done so the teacher was able to accurately monitor and record whether the students followed the class rules. All students independently completed their "Self & Match" form and the teacher collected them all at the end of the hour. The teacher selected one of the forms from each group's pile (e.g., one folder from the orange team, one folder from the blue team). The teacher scored each selected form in front of the class explaining why he was circling each response for each rule. Points were awarded for student-teacher matches, as well as appropriate behavior. More specifically, two points were awarded for "yes/yes" matches, one point was awarded for "no/no" matches, and zero points were awarded if there was a mismatch (i.e., "yes/no" or "no/yes"). The student's name was kept confidential and the teacher used blanket terms to refer to the student (e.g., This student did a nice job following instructions, so they earned a "yes," however, this student had to be reminded several times to raise their hand before speaking, so he/she earned a "no" for the rule "Did I speak when appropriate?"). If the student that was randomly selected earned five out of six points, then that student's team earned the daily reinforcer. If the student that was randomly selected earned four or less points, then that student's team did not earn the daily reinforcer. This process continued until all forms were scored. Potential reinforcers were selected based on the reinforcer surveys completed by the students. The teacher would randomly select a new reinforcer each day to keep motivation high. If there were any dietary restrictions, students were offered an alternative on days where edible items were selected.

Design

A reversal design was used for the study (Freeland & Noell, 1999). The researcher started with baseline and then commenced to the intervention. The researcher reversed between baseline and intervention conditions multiple times.

Social Acceptability Measures

Social acceptability measures were collected from the teacher (See Appendix G) as well as all of the students in the classroom (See Appendix H). Social acceptability measures for the teacher included the Student-Teacher Relationship Scale – Short Form (Pianta, 1992), as well as a questionnaire soliciting responses in regards to preference of the intervention, acceptability of the intervention, as well as feasibility of the intervention. Students also completed questionnaires on the acceptability of the intervention and their preference for the intervention. Questions were presented in the form of statements to the teacher (e.g., “Self & Match” was easy to use in the classroom). Directly beneath the statement was a Likert-type scale ranging from one (i.e., “Disagree”) to five (i.e., Strongly Agree). The teacher and students completed the questionnaires after the completion of the study.

Interobserver Agreement

Interobserver agreement (IOA) was collected for a total of 33% of all sessions for each participant across both baseline and experimental phases. The average IOA across all sessions for on-task behavior was 83% (range, 33-100%), and for disruptive behavior was 89% (range, 71-100%). Data from all scored sessions are found in Appendix M. Data were collected during the actual research sessions, with researchers listening to the same auditory track. Researchers sat at two opposite sides of the room, and listened to the same auditory track by way of wireless ear buds. Agreement was compared for each session

for each dependent variable using an Interval-by-Interval IOA formula (Cooper, Heron, & Heward, 2007).

The experimenter trained all research assistants on how to collect data, by explaining data collection procedures, the data collection sheets, and behaviors being measured. Research assistants then watched previously recorded mock sessions and practiced collecting data. Once he/she scored three consecutive sessions with a minimum of 95% IOA with the experimenter, he/she was permitted to collect data for the study. If the IOA scores fell below 80%, research assistants were retrained using original training procedures until a minimum IOA score of 95% with the experimenter was achieved for three consecutive sessions.

Treatment Integrity

Treatment integrity data were collected for 60% of the sessions across intervention conditions. The average treatment integrity score was 86% (range, 60-100%). Prior to the study, research assistants were given the treatment integrity form and an explanation of how to complete the form. The primary researcher scored the forms live with the research assistants. Once an agreement score of 90% or higher was achieved, research assistants were permitted to collect treatment fidelity data. Sessions that scored below 80% treatment fidelity were reviewed with the teacher in an attempt to reduce any repeated mistakes in the procedure. Trial-by-trial inter-observer agreement (Cooper, Heron, & Heward, 2007) was conducted for 67% of all treatment fidelity sessions. The mean IOA for treatment integrity was 93% (range, 80-100%). (See appendix N).

RESULTS

Results for Adam and Brian are displayed in Figure 1, and mean percentages of on-task and disruptive behaviors are presented in Table 1. During the initial baseline, both students demonstrated variable levels of disruptive and on-task behaviors. Stability in on-task behavior was observed towards the end of the baseline for Adam. On session 17, the intervention was introduced, and the teacher changed the seating arrangement of the classroom. This was unplanned by the researchers, and resulted in Adam sitting next to a preferred peer. When the researchers began the intervention, no substantial decreases in disruptive behavior from baseline levels were observed. Minor decreases in disruptive behavior were observed for Brian. Similarly, there was no substantial change in on-task behavior for either of the students. Adam displayed a decrease in overall levels of on-task and increases in disruptive behavior. Upon returning to baseline, variability across behaviors increased for Adam and was unchanged for Brian. No substantial increases or decreases in behaviors were observed. When the intervention was reintroduced, minor decreases in variability were observed compared to the second baseline. On-task behavior increased for Brian, as well as Adam, but not with the same degree of stability. Disruptive behaviors decreased for both target students, but there was still considerable overlap of data points with preceding baseline conditions. Both on-task and disruptive behavior improved toward the end of the second intervention phase. Overall results suggest that the intervention did not have robust effects on disruptive and on-task behaviors for the two target students.

Figure 1. Results for target students Adam and Brian. On the primary y-axis, the percentage of 10-s intervals with disruptive behavior is displayed. On the secondary y-axis, the percentage of 1-min momentary time observations with on-task behavior is displayed.

Results for Joseph and Tobias are displayed in Figure 2, and mean percentages of on-task and disruptive behaviors are presented in Table 1. During the initial baseline, both students demonstrated variable levels of disruptive and on-task behaviors. Levels of disruptive behaviors were lower for Joseph than Tobias. Moderate reductions in disruptive behavior from baseline levels were observed for both students when the intervention was implemented the first time. There was no substantial change in on-task behavior for either of the students. Upon returning to baseline, variability across behaviors increased for Tobias. Minor reductions in on-task behavior were observed for Tobias, as well as slight increases in disruptive behavior similar to the initial baseline levels. When the intervention was reintroduced, decreases in variability across both behaviors were observed compared to the second baseline for both students. On-task behavior increased and stabilized for Joseph, as well as Tobias but not with the same degree of stability. Disruptive behaviors decreased in overall levels for Joseph. Reductions in disruptive behaviors for Tobias were observed as well compared to both baseline conditions. Both on-task and disruptive behavior improved toward the end of the second intervention phase. Overall results suggest that the intervention had a moderate effect on disruptive behaviors for the two comparison students.

Figure 2. Results for comparison students Joseph and Tobias. On the primary y-axis, the percentage of 10-s intervals with disruptive behavior is displayed. On the secondary y-axis, the percentage of 1-min momentary time observations with on-task behavior is displayed.

Table 1. Mean Percentage of On-task and Disruptive Behaviors.

Student	Baseline 1		Intervention 1		Baseline 2		Intervention 2	
	OT*	DIS.**	OT	DIS.	OT	DIS	OT	DIS
Adam	65	8	60	15	39	21	56	9
Brian	49	43	49	31	57	26	74	16
Joseph	82	6	85	4	79	6	95	2
Tobias	69	27	76	14	68	29	80	11

* On-task behavior

** Disruptive behavior

Table 1. Mean Percentage of On-task and Disruptive Behaviors. Mean percentages of 10-s intervals with disruptive behavior and 1-min momentary time observations for each student across phases are presented.

Social Acceptability

Social acceptability measures were collected from the teacher as well as the individual students. Table 2 presents the teacher's perspective of the students whose behaviors were measured in the current study, Table 3 presents the pre- and post-study conflict and closeness scores, Table 4 presents the teachers' rating of likability and feasibility of the intervention, and Table 5 presents the students' perspectives of the intervention.

Table 2. Teacher's responses to Student-Teacher Relationship Scale.

Question	Adam (Pre)	Adam (Post)	Difference	Brian (Pre)	Brian (Post)	Difference	Joseph (Pre)	Joseph (Post)	Difference	Tobias (Pre)	Tobias (Post)	Difference
I share an affectionate, warm relationship with this child.	2	2	0	3	4	+1	3	3	0	4	3	-1
This child and I always seem to be struggling with each other.	4	4	0	4	2	-2	3	1	-2	2	1	-1
If upset, this child will seek comfort from me.	2	2	0	3	1	-2	3	1	-2	2	1	-1
This child is uncomfortable with physical affection from me.	3	3	0	3	3	0	3	3	0	3	1	-2
This child values his relationship with me.	2	3	+1	4	3	-1	4	4	0	4	3	-1
When I praise this child he beams with pride.	4	4	0	3	3	0	4	4	0	3	4	+1
This child spontaneously shares information about himself.	1	3	+2	4	3	-1	4	2	-2	3	2	-1
This child easily becomes angry with me.	2	4	+2	2	3	+1	4	2	-2	2	1	-1
It is easy to be in tune with how this child is feeling.	4	3	-1	2	4	+2	4	4	0	3	3	0
The child remains angry or is resistant after being disciplined.	4	4	0	2	2	0	2	4	+2	3	1	-2

Table 2 cont.

Question	Adam (Pre)	Adam (Post)	Difference	Brian (Pre)	Brian (Post)	Difference	Joseph (Pre)	Joseph (Post)	Difference	Tobias (Pre)	Tobias (Post)	Difference
Dealing with this child drains my energy.	4	4	0	3	2	-1	4	4	0	-	1	-
When this child is in a bad mood, I know we are in for a long and difficult day.	4	4	0	2	3	+1	4	4	0	3	1	-2
This child's feelings toward me can be unpredictable or can change suddenly.	4	3	-1	2	1	-1	2	1	-1	4	1	-3
This child is sneaky or manipulative with me.	3	2	-1	2	1	-1	2	1	-1	3	1	-2
This child openly shares his/her feelings and experiences with me.	2	2	0	4	1	-3	3	4	+1	3	1	-2

Table 2. Teacher’s Responses to the Student-Teacher Relationship Scale. This table illustrates the teacher’s response to each item on the Student-Teacher Relationship pre- and post-intervention and the difference between ratings of each item.

Table 3. Pre- and Post-study Conflict and Closeness Scores.

Student	Pre		Post		Difference	
	CLO*	CON**	CLO	CON	CLO	CON
Adam	17	28	19	28	+2	0
Brian	23	22	19	17	-4	-5
Joseph	25	24	22	20	-3	-4
Tobias	22	20	17	9	-5	-11

* Closeness

** Conflict

Table 3. Pre- and Post-Study Conflict and Closeness Scores. Pre- and post-study scores on rating of conflict and closeness, as well as the difference between scores for each student are presented.

Results of the teacher’s pre- and post-ratings for each item on the Student-Teacher Relationship Scale (STR-S) are presented in Table 2. The STR-S yields a conflict score, or a score indicating a perceived level of conflict between the teacher and the student, and a closeness score, indicating the perceived level of closeness between the teacher and the student. Scores were determined by adding the total value of questions that probed for the degree of conflict in the student-teacher relationship, as well as the total value of questions that probes for the degree of closeness. Conflict and closeness scores are presented in Table 3. Taken together, three of the four students demonstrated decreases in

their conflict scores, and one student's score remained the same. Additionally, three of the four students demonstrated a decrease in closeness scores, with one target student demonstrating an increase.

Table 4. Teacher's Social Acceptability Questionnaire.

Question	Response
The "Self & Match" system was easy to understand.	4
I enjoyed using the "Self & Match" System.	4
It was easy to implement the intervention.	4
I felt the "Self & Match" system was effective at managing my classroom.	4
I felt the "Self & Match" system increased the work output of my students.	4
I will continue to use the "Self & Match" system.	4
I would not require any administrative support to continue this intervention.	3

Table 4. Teacher's Social Acceptability Questionnaire. This table illustrates the teacher's response to each item on the social acceptability questionnaire.

The teacher responded to a seven-item social acceptability questionnaire at the closure of the study. Each item was evaluated on a five point Likert-scale from Strongly Disagree (1), Neutral (3), and Strongly Agree (5). The teacher gave a rating of the two items assessing feasibility indicating he felt the intervention was easy to understand and easy to implement. In addition, the teacher gave a rating of four on three items assessing acceptability of the intervention indicating that he enjoyed using the intervention, felt the intervention decreased behaviors and increased work output. Lastly, the teacher gave moderate to high scores on questions that assessed long-term adoption of the intervention,

indicating he wanted to continue the intervention but may require some administrative support.

Table 5. Students' Social Acceptability Questionnaire.

Question	Mean	Range
The "Self & Match" system was easy to understand.	4.5	3-5
I enjoyed using the "Self & Match" System.	4.2	2-5
I felt the "Self & Match" helped me stay focused on my work.	3.7	2-5
I hope the class continues to use the "Self & Match" system.	4.3	2-5

Table 5. Students' Social Acceptability Questionnaire. This table illustrates all students' responses to each item on the social acceptability questionnaire.

A total of 27 students completed the social acceptability questionnaire at the end of the study, with all four students included in the study participating. Students on average had high agreement scores for the ease of understanding the intervention ($M = 4.5$; range, 3-5), the favorability of the intervention ($M = 4.2$; range, 2-5), and the degree to which they wanted to continue the intervention ($M = 4.3$; range, 2-5). Students agreed moderately that they felt the intervention helped them focus on their academic work ($M = 3.7$; range, 2-5). Taken together, results from the social validity questionnaire suggest that the intervention was perceived favorably amongst students.

DISCUSSION

The current study sought to extend the research on class-wide applications of self-management as a behavioral intervention. The “Self & Match” system, a commercially available self-monitoring intervention with a teacher match component, was embedded within a dependent group contingency to assess the effectiveness of the intervention on decreasing disruptive behaviors and increasing on-task behaviors. Although the intervention was implemented at a class-wide level, the effects of the intervention were measured on only four students’ behavior: Adam, Brian, Joseph, and Tobias. Two students, Adam and Brian, were selected based on reports of high rates of disruptive and off-task behavior, and two students, Joseph and Tobias, were selected because of moderate to low rates of disruptive and off-task behaviors. Results of the study suggest that the intervention was moderately effective at reducing disruptive behavior and increasing on-task behavior for the two comparison students, though the results were not robust. Additionally, the intervention did not have a significant effect on the two target students’ disruptive and on-task behavior although both students seemed to show decreases in disruptive behavior as the second intervention condition progressed.

Taken together, these findings suggest that students who engage in moderate levels of disruptive behaviors may respond to class-wide interventions more readily than students with more intense behavior needs. This further supports previous research in which students with higher behavioral needs respond slower to class-wide self-management interventions (e.g., Hoff & Ervin, 2013; Trevino-Maack, Kamps, & Wills, 2015). The reduction in disruptive behavior for three of the students during the final intervention condition seems to support this hypothesis.

The differences in responding between target and comparison students fit within the general premise and philosophical underpinnings of Response to Intervention (RtI) and Positive Behavior Interventions and Support (PBIS; Kincaid et al., 2007), where 80% of students typically respond to universal behavior management strategies alone, 15% require additional supports, and 5% require intense behavior services. It can be conceptualized that the comparison students, Joseph and Tobias, are among the 80% of students who respond to universal strategies without any additional interventions. Similarly, it can be further conceptualized that the target students, Adam and Brian, fit within the 15% of students who may require supplemental services in addition to the universal supports. This is supported by the lack of significant changes in on-task and disruptive behaviors for the two target students. Given these findings, data should be examined to determine if additional intervention is warranted. For example, the teacher could keep all students who are responding to the intervention on teams, and implement an independent contingency (e.g., Kern, Dunlap, Childs, & Clarke 1994) for students who may require more frequent feedback. Teachers and practitioners should keep the principles of RtI in mind when implementing class-wide interventions including, but not limited to, frequent progress monitoring and access to supplemental supports to ensure disruptive behaviors are occurring at a level acceptable to the individual teacher.

One reason that the target students did not respond well to the intervention may be due to the temporal location and frequency of feedback given to the students. The students received their “Self & Match” forms at the start of the class hour each day. Students had the opportunity to review their forms to identify if they were the student selected for their team from the previous day. More precisely, the students had the opportunity to receive feedback on their behaviors from the previous day. Reviewing the

feedback may have modified the motivating operation in effect during the class hour. For example, if they did not earn the reinforcer for their team the day before, it is possible that a change in the establishing operation in effect occurred that increased behaviors that have previously resulted in reinforcement for their team. Put another way, students may have been more inclined to follow the classroom rules, because they did not earn the reinforcer for their team. This may have directly impacted the patterns of responding for the students in the classroom.

Conversely, because the teacher selected one form per group each day, the likelihood of getting selected every day was low. There was always a possibility that any given student could engage in disruptive behavior and not have his/her form selected. If a team earned the daily reinforcer, despite several students on that team engaging in disruptive behavior, this could act as an abolishing operation for appropriate behavior for the disruptive students in subsequent sessions. For example, if a student sees that his/her form was not selected, and his/her team still earned the reinforcer despite the disruptive behavior, that student may be less likely to engage in appropriate classroom behaviors.

Due to the way the dependent group contingency was implemented in the study, it may take several days or longer for the students to be exposed to the contingency, as forms are randomly drawn each day. Once a student comes into contact with the contingency, either earning the reinforcer or not earning the reinforcer for their team on one or more occasions, a change in behavior may occur at a steadier and more predictable way. This could explain why the treatment seemed to be more effective as the study progressed for three of the students. Note that Joseph showed a reduction in disruptive behavior on the fourth session of the first application of the intervention, Adam only showed an abrupt change during the fourth session of the second intervention phase, and

Brian showed a general downward trend in disruptive behavior during the second intervention phase.

One way to get a faster change in behavior would be for the teacher to select the forms of more disruptive students at a higher frequency than those students who are already responding well to the intervention. In the current study, data were not collected on which days the forms were selected for the students included in this study. Because of this, no direct relationship between the frequency of feedback and disruptive behaviors can be derived. Further analyses on the effects of the frequency of feedback as well as the temporal location of the feedback on disruptive behaviors is warranted.

Despite the intervention only having moderate effects on the two comparison students' behaviors, several collateral benefits were reported by the teacher and administration. First, several positive changes that occurred within the classroom were reported by the teacher. The teacher noted increases in the amount of work output produced by the students, reductions in the amount of students needing to go back to their lockers at the start of class, and reductions in the amount on inappropriate vocalizations between students. For example, prior to the beginning of the study, the teacher reported concerns of students making degrading remarks to one another during times when students would have to individually speak. These remarks ceased to occur after the implementation of the intervention, and did not return during the second baseline condition. These types of changes were not captured by the data collection system employed in this study. Future evaluations of the intervention may want to record disruptive behaviors in a way that differentiates the intensity or magnitude of the disruptive behaviors. For example, talking to a peer without permission and making a derogatory comment to another student could be scored differently. This could give

researchers a more molecular view of the effects of the intervention on disruptive behavior.

A second collateral benefit of the intervention was the administrative support of additional applications of behavior analysis in the school. It was reported that several teachers, independent of the study, noticed decreases in the disruptive behaviors of the particular class hour used in the study. For example, when the intervention was not in place, the teacher would receive notes from substitute teachers indicating how disruptive the class was. Following intervention, the teacher reported that several teachers would come in unannounced to compliment the class on how well behaved they were. These other teachers expressed interest in learning more about classroom management techniques to the school administration. As a result, the primary researcher is now conducting small workshops with several teachers with disruptive classrooms on how to implement group contingencies within their classrooms. The administration also expressed interest in further research collaborations.

Finally, the students indicated on social acceptability measures that they enjoyed the classroom management procedures, and would like the class to continue using them. This was evidenced not only by favorable scores on social acceptability measures, but also communications with and between students. For example, during the return to baseline, several students approached the researchers and teacher inquiring about when “the folders” would be back. Similarly, prior to the start of class, students were also observed to discuss what they thought would be the “daily reward”.

These collateral benefits, in addition to moderate decreases in the comparison students’ disruptive behaviors, may have directly influenced the social acceptability measures. The current study sought to increase the feasibility and acceptability of class-

wide self-management procedures by implementing a dependent group contingency. Results of the social acceptability questionnaires demonstrated that the teacher found the intervention to be easily understood and implemented. Additionally, the teacher reported that he would continue to use the intervention. These findings further support previous research on the relation between feasibility and adoptability of classroom interventions (Kincaid, Child, Blas, & Wallace, 2007). The teacher also indicated he may require some administrative support. This may be due to the fact that the items used as reinforcers in the study were purchased by the researchers, and the students had the potential to earn a small reinforcer daily. Future research may reduce the need of administrative support by assessing the effectiveness of weekly or monthly reinforcers.

One factor that may have also contributed to the acceptability of the intervention for the current teacher is the non-confrontational manner in which disruptive behaviors are addressed. The teacher was not required to provide feedback contingent on each occurrence of disruptive behavior. Instead, he gave feedback at the end of the class hour on the selected students' forms anonymously. This decreases the response effort from the teacher during the class hour to allow him to focus on the instruction. Additionally, the teacher in the current study anecdotally reported not wanting to address the disruptive behaviors in class directly, and was not in favor of delivering "tallies" for disruptive behaviors (e.g., Theodore, Bray, & Kehle, 2004). A benefit of addressing the behavior at the end of the class hour is that attention is not immediately provided contingent on disruptive behavior. This is especially important, given the relationship between the reinforcing effects of attention and disruptive behaviors (Bulla & Frieder, in press). By delaying the time between the behavior and the feedback, the likelihood that the teacher's attention is reinforcing and further maintaining the behavior is decreased.

Because of the degree of variability in the data, several limitations should be considered. First, the teacher was absent a total of 10 days over the course of the study. No significant differences were observed between sessions in which the regular teacher was present and sessions that with a substitute teacher, and the teacher was absent across both intervention and baseline days. On intervention days in which there was a substitute teacher, a research assistant coached the substitute on how to use the intervention for that class hour. While a potential uncontrolled variable in the study, these situations mirror typical classroom environments in which the teacher may not be present for several days throughout the school year. Further research is warranted to isolate the necessary variables that maintain levels of behavior across familiar and novel teaching staff.

Second, the teacher changed the seating arrangement of the students on the same day the intervention was first introduced. This unexpected change was not planned, and could not be reversed as the change occurred concurrent with when the intervention was introduced. Additional reversals between baseline and intervention conditions could strengthen the experimental control of the study, as baseline and intervention conditions did not replicate for several participants. Further replication and extensions of the procedures used in the current study are warranted.

As this intervention was teacher implemented and the classroom was unchanged with the exception of the intervention, several variables may be left unanalyzed (e.g., instructional modality, inaccurate scoring by the teacher over time). Given the applied nature of the current study, the current intervention was evaluated in the presence of these variables, mimicking the naturally occurring events that take place in a classroom setting. These unanalyzed variables may have contributed to the overall variability of the data.

Several areas of future research could control for potential unanalyzed variables. For example, the students received feedback on their “Self & Match” forms from the prior class session at the start the following class period. As this feedback is likely to increase the probability of appropriate classroom behaviors, this phenomenon was not explicitly measured. Future research could evaluate this by assessing the effects of a class-wide “Self & Match” system with the completed forms returned at the beginning of the hour in one condition and at the end of the class hour in a second condition. Additional considerations for future research include directly comparing the effectiveness of class-wide applications of the “Self & Match” system embedded within different types of group contingencies. The current study sought to evaluate the effectiveness of a dependent group contingency in isolation. No direct comparison was made on the overall effectiveness of the intervention embedded within either an independent or interdependent group contingency. Future research could replicate the findings of Theodore, Bray, and Kehle (2004), in which an alternating treatment design was used to compare the overall effectiveness of the dependent, independent, and interdependent group contingencies. Their results suggested that there was no difference in effectiveness between the group contingencies, however, the dependent group contingency was found to be most feasible. The procedures used in the current study could be embedded within the methodologies used in Theodore et al. (2004) to compare the effectiveness of each group contingency. Additional measures of feasibility could also be compared.

In summary, the “Self & Match” system embedded within a dependent group contingency did not produce robust effects on disruptive and on-task behavior for the target students, and moderate effects on the comparison students’ behavior. The overall level of effectiveness varied across participants. Further modifications, such as other

group contingencies, or more frequent feedback for more disruptive behaviors, should be made if being considered for classroom adoption.

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APPENDIX A: Sample Data Sheet

Researcher: _____ Data Collector: Primary / IOA Session #: _____

Date: _____ Total Students in Class: _____

<div> <div> <div>+/ Disruptive Behavior Occurred</div> <div>/-/ Disruptive Behavior DID NOT occur</div> </div> <div>/X/ On-Task/ Off-Task</div> </div>																			
Student	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	Total
Disruptive Behavior	+/-	+/-	+/-	+/-	+/-		+/-	+/-	+/-	+/-	+/-		+/-	+/-	+/-	+/-	+/-		
On: Active																			
On: Passive																			
Off-Task																			
Student	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	Total
Disruptive Behavior	+/-	+/-	+/-	+/-	+/-		+/-	+/-	+/-	+/-	+/-		+/-	+/-	+/-	+/-	+/-		
On: Active																			
On: Passive																			
Off-Task																			
Student	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	Total
Disruptive Behavior	+/-	+/-	+/-	+/-	+/-		+/-	+/-	+/-	+/-	+/-		+/-	+/-	+/-	+/-	+/-		
On: Active																			
On: Passive																			
Off-Task																			
Student	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	Total
Disruptive Behavior	+/-	+/-	+/-	+/-	+/-		+/-	+/-	+/-	+/-	+/-		+/-	+/-	+/-	+/-	+/-		
On: Active																			
On: Passive																			
Off-Task																			

Notes:

APPENDIX B:

Sample Completed Data Sheet

Researcher: _____ Data Collector: Primary / IOA Session #: _____

Date: _____ Total Students in Class: _____

<div style="display: flex; justify-content: space-between;"> /+/ Disruptive Behavior Occurred /-/ Disruptive Behavior DID NOT occur </div> <div style="text-align: center;">/X/ On-Task/ Off-Task</div>																			
Student	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	Total
Disruptive Behavior	+/-	+/-	+/-	+/-	+/-		+/-	+/-	+/-	+/-	+/-		+/-	+/-	+/-	+/-	+/-		9
On: Active						X													1
On: Passive																		X	1
Off-Task												X							1
Student	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	Total
Disruptive Behavior	+/-	+/-	+/-	+/-	+/-		+/-	+/-	+/-	+/-	+/-		+/-	+/-	+/-	+/-	+/-		
On: Active																			
On: Passive																			
Off-Task																			
Student	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	Total
Disruptive Behavior	+/-	+/-	+/-	+/-	+/-		+/-	+/-	+/-	+/-	+/-		+/-	+/-	+/-	+/-	+/-		
On: Active																			
On: Passive																			
Off-Task																			
Student	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	Total
Disruptive Behavior	+/-	+/-	+/-	+/-	+/-		+/-	+/-	+/-	+/-	+/-		+/-	+/-	+/-	+/-	+/-		
On: Active																			
On: Passive																			
Off-Task																			

Notes:

APPENDIX C:

Rule Lesson

CLASSROOM RULES

- Expectations for EVERY student
- Should follow these rules in the classroom
- Benefits of following classroom rules
 - Get through class faster
 - Less distracting to other students
 - Could earn specific rewards for following the rules

BE PREPARED TO START CLASS

Examples:

- Have your planner out and open
- Have your science log out and open
- Have your books out
- Have a writing utensil

Non-Examples:

- Books are in your locker
- Planner is closed
- Looking around for a pencil

BE PREPARED TO START CLASS

- Is this an example of following the rule?
- Andrew is 5 minutes late to class from talking in the hallway. When he gets in his seat, he forgets he left his book in the locker and leaves to go get it.

NO

BE PREPARED TO START CLASS

- Is this an example of following the rule?
- When the bell rings, Samantha is in her seat with her science log open, all of her materials ready, and a pencil on her desk. The teacher comes around and checks her materials.

YES

BE PREPARED TO START CLASS

- Is this an example of following the rule?
- When the bell rings, Sarah is in her seat with her science log open, but forgot her science book in her locker. She leaves to go get it.

NO

BE PREPARED TO START CLASS

- Is this an example of following the rule?
- Kobe is on time to class and begins to talk with his friends. When the teacher comes around, Kobe has to open all of his books.

NO

BE PREPARED TO START CLASS

- Is this an example of following the rule?
- Geoff is in his seat before the bell rings, has his science book open, science log open, and has started the warm up assignment on the board.

YES

STAY ON-TASK

Examples:

- Pay attention to the teacher
- Only have materials out related to the task
- Do your class-work

Non-Examples:

- Look at cell phone
- Reading non-related materials
- Putting head down on desk
- Getting out of your seat without permission

STAY ON-TASK

- Is this an example of following the rule?
- During class, Christina gets out of her seat to sharpen her pencil 3 times, each time hitting her friend in the head when she walks by him.

NO

STAY ON-TASK

- Is this an example of following the rule?
- Jon refuses to do any work and puts his head on his desk for the whole lesson.

NO

STAY ON-TASK

- Is this an example of following the rule?
- Jamal is listening to the teacher, following along in his science book, and taking notes in his notebook.

YES

STAY ON-TASK

- Is this an example of following the rule?
- Nicole takes notes during the lesson, begins her in class assignment right away, and ignores the students talking next to her.

YES

STAY ON-TASK

- Is this an example of following the rule?
- Mr. Ablao tells all students to take their cell phones out to do an activity on Kahoot. Austin uses his phone to go on facebook and snapchat.

NO

SPEAK WHEN APPROPRIATE

Examples:

- Raise your hand during group instruction
- Speak in low voice during group work
- Speak when class is not in session
- Listen while others are talking

Non-Examples:

- Calling out
- Talking to your peers
- Screaming in the classroom

SPEAK WHEN APPROPRIATE

- Is this an example of following the rule?
- During the lesson, Kimberly blurts out three times without raising his hand.

NO

SPEAK WHEN APPROPRIATE

- Is this an example of following the rule?
- When a student is presenting her project, several students have side conversations.

NO

SPEAK WHEN APPROPRIATE

- Is this an example of following the rule?
- Andrew and Austin are working on a group project. They discuss the project in a low voice and only talk about the course content.

YES

SPEAK WHEN APPROPRIATE

- Is this an example of following the rule?
- Mr. Ablao is teaching a group lesson. Amanda raises her hand to ask a question about the material.

YES

SPEAK WHEN APPROPRIATE

- Is this an example of following the rule?
- The students in the classroom are all talking about their weekend in the classroom. The bell rings and everyone stops their conversations and look at Mr. Ablao when he begins talking.

YES

REVIEW

- Answer these questions on your own!

APPENDIX D: “Self & Match” Lesson

If STUDENT Says:	If Teacher Says:	Number of Points Earned!
Y	Y	2
N	N	1
Y	N	0

Name: _____

Ablao – Self & Match Form									
	Date	Was I prepared to start class?		Did I stay on-task?		Did I speak when appropriate?		# of points	Reward?
		STUDENT	Teacher	STUDENT	Teacher	STUDENT	Teacher		
M		Y / N	Y / N	Y / N	Y / N	Y / N	Y / N		Y / N
T		Y / N	Y / N	Y / N	Y / N	Y / N	Y / N		Y / N
W		Y / N	Y / N	Y / N	Y / N	Y / N	Y / N		Y / N
TR		Y / N	Y / N	Y / N	Y / N	Y / N	Y / N		Y / N
F		Y / N	Y / N	Y / N	Y / N	Y / N	Y / N		Y / N

Five or more points earns the reward for your team.

If STUDENT Says:	If Teacher Says:	Number of Points Earned!
Y	Y	2
N	N	1
Y	N	0

Name: _____

		<div> <div>Was I prepared to start class?</div> <div> <div>Examples</div> <ul style="list-style-type: none"> Planner out and open Science log out and open Books out Writing utensil </div> <div>Non-Examples</div> <ul style="list-style-type: none"> Books are in your locker Planner is closed Looking around for a pencil </div>							
		<div> <div>Did I stay on-task?</div> <div> <div>Examples</div> <ul style="list-style-type: none"> Pay attention Only have materials out related to the task Do your class-work </div> <div>Non-Examples</div> <ul style="list-style-type: none"> Look at cell phone Reading non-related materials Putting head down Getting out of your seat without permission </div>							
		<div> <div>Did I speak when appropriate?</div> <div> <div>Examples</div> <ul style="list-style-type: none"> Raise hand during group Low voice during group work Speak when class is not in session Listen while others are talking </div> <div>Non-Examples</div> <ul style="list-style-type: none"> Calling out Talking to your peers Screaming in the classroom </div>							
								# of points	Reward?
M	Date	Y / N	Y / N	Y / N	Y / N	Y / N	Y / N		Y / N
T		Y / N	Y / N	Y / N	Y / N	Y / N	Y / N		Y / N
W		Y / N	Y / N	Y / N	Y / N	Y / N	Y / N		Y / N
TR		Y / N	Y / N	Y / N	Y / N	Y / N	Y / N		Y / N
F		Y / N	Y / N	Y / N	Y / N	Y / N	Y / N		Y / N

Five or more points earns the reward for your team.

If STUDENT Says:	If Teacher Says:	Number of Points Earned!
Y	Y	2
N	N	1
Y	N	0

Name: _____

Ablao - Self & Match Form									
		Was I prepared to start class?		Did I stay on-task?		Did I speak when appropriate?			
		STUDENT	Teacher	STUDENT	Teacher	STUDENT	Teacher	# of points	Reward?
M	Date	Y / N	Y / N	Y / N	Y / N	Y / N	Y / N		Y / N
T		Y / N	Y / N	Y / N	Y / N	Y / N	Y / N		Y / N
W		Y / N	Y / N	Y / N	Y / N	Y / N	Y / N		Y / N
TR		Y / N	Y / N	Y / N	Y / N	Y / N	Y / N		Y / N
F		Y / N	Y / N	Y / N	Y / N	Y / N	Y / N		Y / N

Five or more points earns the reward for your team.

IF STUDENT Says:	IF Teacher Says:	Number of Points Earned:
Y	Y	2
N	N	1
Y	N	0

Name: _____

Abiao – Self & Match Form									
	Date	Was I prepared to start class?		Did I stay on-task?		Did I speak when appropriate?		# of points	Reward?
		STUDENT	Teacher	STUDENT	Teacher	STUDENT	Teacher		
M		Y / N	Y / N	Y / N	Y / N	Y / N	Y / N		Y / N
T		Y / N	Y / N	Y / N	Y / N	Y / N	Y / N		Y / N
W		Y / N	Y / N	Y / N	Y / N	Y / N	Y / N		Y / N
TR		Y / N	Y / N	Y / N	Y / N	Y / N	Y / N		Y / N
F		Y / N	Y / N	Y / N	Y / N	Y / N	Y / N		Y / N

Five or more points earns the reward for your team.

IF STUDENT Says:	IF Teacher Says:	Number of Points Earned:
Y	Y	2
N	N	1
Y	N	0

Name: _____

Abiao – Self & Match Form									
	Date	Was I prepared to start class?		Did I stay on-task?		Did I speak when appropriate?		# of points	Reward?
		STUDENT	Teacher	STUDENT	Teacher	STUDENT	Teacher		
M		Y / N	Y / N	Y / N	Y / N	Y / N	Y / N		Y / N
T		Y / N	Y / N	Y / N	Y / N	Y / N	Y / N		Y / N
W		Y / N	Y / N	Y / N	Y / N	Y / N	Y / N		Y / N
TR		Y / N	Y / N	Y / N	Y / N	Y / N	Y / N		Y / N
F		Y / N	Y / N	Y / N	Y / N	Y / N	Y / N		Y / N

Five or more points earns the reward for your team.

If STUDENT Says:	If Teacher Says:	Number of Points Earned!
Y	Y	2
N	N	1
Y	N	0

Name: _____

Ablao – Self & Match Form									
		Was I prepared to start class?		Did I stay on-task?		Did I speak when appropriate?
		Examples • Planner out and open • Science log out and open • Books out • Writing utensil	Non-Examples • Books are in your locker • Planner is closed • Looking around for a pencil	Examples • Pay attention • Only have materials out related to the task • Do your class-work	Non-Examples • Look at cell phone • Reading non-related materials • Putting head down • Getting out of your seat without permission	Examples • Raise hand during group • Low voice during group work • Speak when class is not in session • Listen while others are talking	Non-Examples • Calling out • Talking to your peers • Screaming in the classroom		
	Date	STUDENT	Teacher	STUDENT	Teacher	STUDENT	Teacher	# of points	Reward?
M		Y	Y	Y	Y	Y	Y	3	Y / N
T		Y / N	Y / N	Y / N	Y / N	Y / N	Y / N		Y / N
W		Y / N	Y / N	Y / N	Y / N	Y / N	Y / N		Y / N
TR		Y / N	Y / N	Y / N	Y / N	Y / N	Y / N		Y / N
F		Y / N	Y / N	Y / N	Y / N	Y / N	Y / N		Y / N

Five or more points earns the reward for your team.

If STUDENT Says:	If Teacher Says:	Number of Points Earned!
Y	Y	2
N	N	1
Y	N	0

Name: _____

Ablao – Self & Match Form									
		Was I prepared to start class?		Did I stay on-task?		Did I speak when appropriate?
		Examples • Planner out and open • Science log out and open • Books out • Writing utensil	Non-Examples • Books are in your locker • Planner is closed • Looking around for a pencil	Examples • Pay attention • Only have materials out related to the task • Do your class-work	Non-Examples • Look at cell phone • Reading non-related materials • Putting head down • Getting out of your seat without permission	Examples • Raise hand during group • Low voice during group work • Speak when class is not in session • Listen while others are talking	Non-Examples • Calling out • Talking to your peers • Screaming in the classroom		
	Date	STUDENT	Teacher	STUDENT	Teacher	STUDENT	Teacher	# of points	Reward?
M		Y / N	Y / N	Y / N	Y / N	Y / N	Y / N		Y / N
T		Y / N	Y / N	Y / N	Y / N	Y / N	Y / N		Y / N
W		Y / N	Y / N	Y / N	Y / N	Y / N	Y / N		Y / N
TR		Y / N	Y / N	Y / N	Y / N	Y / N	Y / N		Y / N
F		Y / N	Y / N	Y / N	Y / N	Y / N	Y / N		Y / N

Five or more points earns the reward for your team.

Practice with Points?

How do I earn my stuff?

How do I earn my stuff?

Name: _____

If STUDENT Says:	If Teacher Says:	Number of Points Earned!
Y	Y	2
N	N	1
Y	N	0

Ablao – Self & Match Form									
		Was I prepared to start class?		Did I stay on-task?		Did I speak when appropriate?		# of points	Reward
		Examples • Planner out and open • Science log out and open • Books out • Writing utensil	Non-Examples • Books are in your locker • Planner is closed • Looking around for a pencil	Examples • Pay attention • Only have materials out related to the task • Do your class-work	Non-Examples • Look at cell phone • Reading non-related materials • Putting head down • Getting out of your seat without permission	Examples • Raise hand during group • Low voice during group work • Speak when class is not in session • Listen while others are talking	Non-Examples • Calling out • Talking to your peers • Screaming in the classroom		
Date		STUDENT	Teacher	STUDENT	Teacher	STUDENT	Teacher		
M		Y	2	Y	1	Y	0	3	Y
T		Y	2	Y	1	Y	2	5	Y
W		Y / N	Y / N	Y / N	Y / N	Y / N	Y / N		Y / N
TR		Y / N	Y / N	Y / N	Y / N	Y / N	Y / N		Y / N
F		Y / N	Y / N	Y / N	Y / N	Y / N	Y / N		Y / N

Five or more points earns the reward for your team.

APPENDIX E:
Classroom Layout

APPENDIX F: Sample Self & Match Form

If STUDENT Says:	If Teacher Says:	Number of Points Earned:
Y	Y	2
N	N	1
Y	N	0

Name: _____

Ablao – Self & Match Form										
Date	Was I prepared to start class?		Did I stay on-task?		Did I speak when appropriate?		Teacher	# of points	Reward?	
	STUDENT	Teacher	STUDENT	Teacher	STUDENT	Teacher				
	Examples • Planner out and open • Science log out and open • Books out • Writing utensil	Non-Examples • Books are in your locker • Planner is closed • Looking around for a pencil	Examples • Pay attention • Only have materials out related to the task • Do your class-work	Non-Examples • Look at cell phone • Reading non-related materials • Putting head down • Getting out of your seat without permission	Examples • Raise hand during group • Low voice during group work • Speak when class is not in session • Listen while others are talking	Non-Examples • Calling out • Talking to your peers • Screaming in the classroom				
M	Y / N	Y / N	Y / N	Y / N	Y / N	Y / N			Y / N	
T	Y / N	Y / N	Y / N	Y / N	Y / N	Y / N			Y / N	
W	Y / N	Y / N	Y / N	Y / N	Y / N	Y / N			Y / N	
TR	Y / N	Y / N	Y / N	Y / N	Y / N	Y / N			Y / N	
F	Y / N	Y / N	Y / N	Y / N	Y / N	Y / N			Y / N	

Five or more points earns the reward for your team.

APPENDIX G:
Teacher Social Acceptability Survey

1. *The “Self & Match” system was easy to understand.*

1	2	3	4	5
Disagree		Neutral		Strongly Agree

2. *I enjoyed using the “Self & Match” System.*

1	2	3	4	5
Disagree		Neutral		Strongly Agree

3. *It was easy to implement the intervention.*

1	2	3	4	5
Disagree		Neutral		Strongly Agree

4. *I felt the “Self & Match” system was effective at managing my classroom.*

1	2	3	4	5
Disagree		Neutral		Strongly Agree

5. *I felt the “Self & Match” system increased the work output of my students.*

1	2	3	4	5
Disagree		Neutral		Strongly Agree

6. *I will continue to using the “Self & Match” system.*

1	2	3	4	5
Disagree		Neutral		Strongly Agree

7. *I would not require any administrative support to continue this intervention.*

1	2	3	4	5
Disagree		Neutral		Strongly Agree

APPENDIX H:

Student Social Acceptability Survey

1. The “Self & Match” system was easy to understand.

1	2	3	4	5
Disagree		Neutral		Strongly Agree

2. I enjoyed using the “Self & Match” System.

1	2	3	4	5
Disagree		Neutral		Strongly Agree

3. I felt the “Self & Match” helped me stay focused on my work.

1	2	3	4	5
Disagree		Neutral		Strongly Agree

4. I hope the class continues to use the “Self & Match” system.

1	2	3	4	5
Disagree		Neutral		Strongly Agree

APPENDIX I:

STUDENT-TEACHER RELATIONSHIP SCALE – SHORT FORM

Robert C. Pianta

Child: _____ Teacher: _____
 Grade: _____

Please reflect on the degree to which each of the following statements currently applies to your relationship with this child. Using the scale below, circle the appropriate number for each item.

Definitely does not apply	Not really	Neutral, not sure	Applies somewhat	Definitely applies
1	2	3	4	5

1.	I share an affectionate, warm relationship with this child.	1	2	3	4	5
2.	This child and I always seem to be struggling with each other.	1	2	3	4	5
3.	If upset, this child will seek comfort from me.	1	2	3	4	5
4.	This child is uncomfortable with physical affection or touch from me.	1	2	3	4	5
5.	This child values his/her relationship with me.	1	2	3	4	5
6.	When I praise this child, he/she beams with pride.	1	2	3	4	5
7.	This child spontaneously shares information about himself/herself.	1	2	3	4	5
8.	This child easily becomes angry with me.	1	2	3	4	5
9.	It is easy to be in tune with what this child is feeling.	1	2	3	4	5
10.	This child remains angry or is resistant after being disciplined.	1	2	3	4	5
11.	Dealing with this child drains my energy	1	2	3	4	5
12.	When this child is in a bad mood, I know we're in for a long and difficult day.	1	2	3	4	5
13.	This child's feelings toward me can be unpredictable or can change suddenly.	1	2	3	4	5
14.	This child is sneaky or manipulative with me.	1	2	3	4	5
15.	This child openly shares his/her feelings and experiences with me.	1	2	3	4	5

APPENDIX J: Treatment Integrity Sheet

Participant # _____	Session # _____
Researcher _____	Scored By _____
Condition _____	Date _____
Dependent Group Contingency (It Could be me) Did the Experimenter ...	
Task <i>Mark Y, N, or N/A</i>	Scored
Pass out/distribute the folders to the classroom	
The teacher provides positively stated verbal reminders for disruptive behaviors	
The teacher prompts the students to fill out their forms at the end of the period	
The teachers prompts students to turn in their forms	
The teacher selects one form from each group pile randomly	
The teacher states whether or not the student earned the reward	
The teacher does not announce the student's name, and keeps him/her anonymous	
The teacher delivers to the reward to all students in the group if the selected student earned 5 or more points	
The teacher withholds the reward if the selected student earned 4 or less points	
The teacher continues this until all six groups' forms have been selected	
Total Yes:	Total No:
Score: (Yes/ Yes+No)	

APPENDIX K:
Reinforcer Survey

LIST OF REWARDS

Please write out your top ten favorite things you would like to earn in school for doing a good job in class!

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

APPENDIX L:
Literature Review

Applications of Self-Management as a Class-Wide Intervention: A Critical Review

Andrew J. Bulla
Western Michigan University

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Abstract

Schools use self-management interventions to address behavior problems. These interventions require little teacher effort. Class-wide implementation may enhance the effects and further reduce teacher effort. Thus, this review features research on class-wide self-management intervention in school settings. A literature search yielded 13 studies for review. Results of the review suggest that class-wide self-management interventions improve academic and social behaviors and decrease disruptive behaviors. The review also includes discussion of variables that are relevant to intervention efficacy.

Keywords: self-management, self-monitoring, group contingencies, class-wide interventions, classroom management

The Individuals with Disabilities Education Act (IDEA, 2004) specifies that students with a disability must be provided a free and appropriate public education in the least restrictive environment. In alignment with IDEA 2004, classrooms today are becoming more and more diverse with the inclusion of students with exceptional needs, and with this comes an increase in students with unique behavioral challenges. The U.S. Department of Education (2015) indicates that about 95% of students with special education eligibility are receiving some form of education in the general education setting. Past research indicates that students with disabilities tend to engage in more disruptive behavior than their non-disabled peers (e.g., Murphy, Beadle-Brown, Wing, Gould, Shah, & Homes, 2005). Thus, if more students receiving services under IDEA are receiving general education services, there is the potential that these students may engage in disruptive behaviors. If teachers are spending more time managing disruptive behaviors, time allocated to instruction is lost. Classroom management is one means of reducing lost instructional time. Classroom management can be defined as teacher actions initiated to manage student behavior, increase engagement with instructional material, or increase the cooperation and compliance of students. A meta-analysis of factors that influence learning found that effective classroom management techniques had the greatest influence on learning, academic performance and success (Wang, Haertel, and Walberg, 1990). Subsequent research has provided additional support for the strong relationship between classroom management and academic achievement (e.g., Adeyemo, 2012; Kunter, Baumert, & Koller, 2007).

Despite positive research outcomes, several barriers may impact the degree to which teachers implement effective classroom management. One reason why teachers may not use classroom management techniques is a lack of training. Emmer and Stough

(2001) discuss the fact that training in classroom management in teacher preparation programs may be limited to one or two chapters in a single course during their college experience. Kincaid, Child, Blas, and Wallace (2007) further investigated barriers to the implementation of effective classroom management procedures. The authors identified that the feasibility of the intervention directly impacted the integrity with which the intervention was implemented. When interventions or procedures are implemented with a low degree of treatment integrity, the effectiveness of the interventions decreases rapidly (Lane, Bocian, MacMillan, Gresham, 2004). Prior research suggests a combination of teacher knowledge and the degree of feasibility directly impact the adoption, success, and long-term implementation of classroom management techniques. One intervention that could be easily trained and feasibly implemented by the teacher is a self-management intervention for students.

Self-management as an educational behavior management technique is a packaged treatment that typically includes one or more of the following: (1) self-monitoring or the ability to discriminate when the behavior did or did not occur, (2) self-reinforcement or the delivery of positive consequences following a desired behavior, (3) self-evaluation, in which the self-monitored behavior is compared with pre-determined criteria, (4) self-administered or contrived antecedents, in which some antecedent variable is manipulated to increase the probability that the target response will occur, and (5) individual goal setting (Aljadeff-Abergel, Schenk, Walmsley, Peterson, Frieder, & Acker, 2015). For example, Kern, Ringdahl, Hilt, and Sterling-Turner (2001) implemented a self-management procedure that included self-monitoring and self-evaluation with three children who exhibited excessive maladaptive behaviors that were deemed to impede their learning and social functioning.

Self-management interventions may be an attractive alternative to other classroom management strategies for several reasons. First, self-management interventions require active involvement on behalf of the student. Thus, the focus of the intervention shifts from the teacher to the student, and reduces the overall time demands on the teacher (Shapiro & Cole, 1994). Second, self-management interventions can promote generalization across settings and personnel (Peterson, Young, Salzberg, West, & Hill 2006). And lastly, self-management interventions can address a variety of behaviors in the classroom setting and be individualized to meet the needs of each student (Dunlap, Dunlap, Koegel, & Koegel, 1991).

Despite the effectiveness of self-management interventions, teachers may not be able to feasibility implement the intervention if they check each student's rating form. Feasibility is an important determinant of adoption of classroom management strategies (Kincaid, Child, Blas, & Wallace, 2007). Thus, classroom management strategies that are easy to train and implement are especially valuable. Toward that end, a body of research has emerged that combines self-management procedures with group contingencies (Chafouleas, Hagermoser Sanetti, Jaffery, & Fallon, 2011; Coogan, Kehle, Bray, & Chafouleas, 2007; Davies & Witte, 2000; Jones, Boon, Fore, & Bender, 2008).

There are three types of group contingencies used in schools (Theodore, Bray, & Kehle, 2004). In an *independent group contingency*, the teacher delivers a specified reinforcer contingent on the behavior of each individual student. The teacher provides feedback to each student, and only those students who engaged in appropriate behaviors during the class period earn the reinforcer. Thus, each individual student's behavior determines whether he/she earns the reinforcer for him/herself. In an *interdependent group contingency*, the behavior of the class as a whole determines whether the class

earns the predetermined reinforcer. Lastly, with a *dependent group contingency*, the behavior of one student determines whether the class as a whole earns the reinforcer. Research on group contingencies to manage behavior has demonstrated consistent positive effects on decreasing disruptive behavior and increasing on-task behavior (Theodore, Bray, & Kehle, 2004; Theodore, Bray, Kehle, & Jenson, 2001; Ling, Hawkins, & Weber, 2011).

The available research demonstrates that classroom management can improve learner outcomes, and self-management interventions have practical advantages at the individual and class-wide level (Shapiro & Cole, 1994; Dunlap et al., 1991; Coogan et al., 2007). Despite the growth in research on class-wide applications of self-management interventions, several variations in methodologies across different applications make it difficult to identify effective components of the intervention. The purpose of the present literature review is to synthesize the current research on the application of self-management interventions at the class-wide level, assess the efficacy of the class-wide implementation of self-management, and identify variables relevant to the effectiveness of the packaged intervention.

Method

Location and Selection of Articles

The reviewed studies meet five criteria. First, studies were published in a peer-reviewed journal. Second, studies utilized an experimental, quasi-experimental, or single case research design. Third, self-management was the primary intervention evaluated in the study. Fourth, the intervention was applied to an entire class or group. Fifth, the study was conducted in an educational setting.

The search process was comprised of several phases. First, an electronic search was conducted in two databases known to contain psychological and educational research: PsycINFO and ERIC. The search terms included descriptors related to self-management intervention as a class-wide intervention. The authors searched “all text” of the database for a combination of the following terms: *Self-management*, or *self-monitoring*, or *self-evaluation*, AND *classwide*, or *class-wide*, or *group*, *group contingency*, or *group contingencies*. A total of 33 articles were identified from this initial search. After the pool of articles was identified, the authors individually read the abstract from the identified studies, and excluded any study that did not meet criteria. A total of 22 articles were excluded based on abstract alone. A total of 11 studies that met inclusionary criteria were identified from this process. The authors subsequently searched through each study’s introduction and reference sections to identify any additional studies that might be included in the review. A total of three studies were identified with this method and were included in the current review. Lastly, upon analyzing each article, it was discovered that one article (Mitchem & Young, 2001) was a summary of another peer-reviewed paper included in the study (Mitchem, Young, West, & Benyo, 2001), and was excluded from the current review. The entire search processed yielded a total of 13 articles that met inclusion criteria.

Coding and Selection of Variables

Each of the 13 articles identified through the search methods were then individually analyzed and coded for several variables. Four broad categories subsumed several subcategories: Participant and setting characteristics, intervention components, dependent measures, and outcomes. Participant and setting characteristics were coded for specific information about participants and settings in each study. Intervention

components referred to specific components of self-management and group contingencies implemented in each study, and were coded for the type of group contingency utilized, components of self-management implemented, the inclusion of a teacher-match component, and whether reinforcement was implemented. Dependent measures referred to what behaviors were being measured in the study. Outcomes referred to the specific outcomes associated with each implementation of the intervention, and were coded for effects of the intervention, teacher acceptability and student acceptability, intervention feasibility, and treatment integrity.

Evaluating Intervention Effects

All of the studies included in the current review utilized single-case research designs. The effects of the intervention were evaluated by visual inspection of the data. The authors examined each graph for predictable and consistent replication of behavior change in the presence of the independent variable. Similarly, the authors examined each graph individually to evaluate changes in magnitude and rate. Magnitude referred to changes in the overall level of responding, and the overall averages of the data sets between conditions. Rate referred to changes in the overall direction of the data path, and the increases and/or decreases in the data set. For an intervention to be deemed effective, studies had to demonstrate a change in the rate and magnitude of the dependent variable from baseline conditions. Lastly, changes in rate and magnitude were compared to the goal of the study, more specifically, to see if the dependent variables were increased and/or decreased to socially acceptable levels. These methods are consistent with best practices in evaluating intervention effects in single case designs (Kazdin, 2011).

Results

Results from participant and setting characteristics, intervention components, dependent measures, and outcomes, as well as each subcategory are presented below. Additionally, results from participants and setting characteristics as well as intervention components are presented in Table 1, and results from dependent measures and outcomes are presented in Table 2.

Participant and Setting Characteristics

Participants. Of the 13 studies identified, seven studies (54%) indicated that students included in the classrooms were receiving some kind of special education services, and six studies (46%) indicated that the students/classrooms were referred for being at-risk for special education eligibility or for being highly disruptive. Categories were mutually exclusive, and studies were not counted as both including special education and at risk students.

The majority of studies (85%; $n=11$) indicated the class size, and two (15%) only specified the number of students whose data were analyzed (Coogan et al., 2007; Miller et al., 1993). The authors calculated the average number of students per class by dividing the total number of students by the total number of classrooms. The average class size was 19.5 students (*range*, 6-33).

Setting. A large percentage of studies (54%) were conducted in the general education setting in regular education classrooms ($n=7$). Of the remaining studies, the second most common setting was a remedial classroom for students who were at risk or currently receiving pull out special education services ($n=3$), followed by alternative schools for students with emotional/behavioral disorders ($n=2$), and the least common setting was a self-contained classroom housed within a local school district ($n=1$).

Table 1

Participant, Setting, and Intervention Variables

Study	Participant and Setting Characteristics		Intervention Components			
	Participants	Setting	Components of Self-Management	Teacher -Match	Group Contingency	Reinforcement
Battaglia et al., 2015	65 students across three classrooms	General education classroom	Self-Monitoring	No	Dependent	Criteria – 5 or more points from selected self-monitored forms
Chafouleas et al., 2011	57 students across three classrooms	General education classroom	Self-Monitoring	Yes	Interdependent	Criteria – Students were grouped together. Group must have minimum amount of points
Coogan et al., 2007	Class size N/S ¹ 3 general education students, 2 students with ADHD ²	General education classroom	Self-Monitoring (Individual and Group)	No	Interdependent /Dependent (chosen randomly)	Criteria – Individual student or class as a whole had to meet pre-specified criteria
Davies & Witte, 2000	30 students in one class 4 students with ADHD, 4 matched control students	Alternative school	Self-Monitoring (Individual and Group)	No	Interdependent	Criteria – At least one dot had to be on the group board
Denune, et al., 2015	14 students with emotional/behavioral disorders in one class	Alternative school	Self-Monitoring	No	Interdependent	Criteria – Class as a whole had to earn a certain amount of points

¹Not specified² Attention Deficit Hyperactivity Disorder

Table 1 Continued

Study	Participant and Setting Characteristics		Intervention Components			
	Participants	Setting	Components of Self-Management	Teacher -Match	Group Contingency	Reinforcement
Hoff & Ervin, 2013	64 students across three classes 3 students "at risk"	General education classroom	Self-Monitoring (individual and group)	Yes	Interdependent	Point Exchange – earned points for appropriate behavior and matching
Johnson et al., 1996	25 students in one class	General education classroom	Self-Monitoring Self-Reinforcement	No	Independent	Points Earned – earned points towards final grade
Kern et al., 1994	6 boys with emotional behavioral disorders	Self contained classroom	Self-Monitoring	Yes	Independent	Point Exchange – earned points for following classroom rules
Miller et al., 1993	Class size N/S 4 boys referred for non-engagement	Remedial classroom	Self-Monitoring	Yes	Independent	Criteria –earned at the end of each monitoring period for accurate monitoring and appropriate behavior
Mitchem et al., 2001	97 students across three classes 10 students "at risk"	General education classroom	Self-Monitoring	No (Peer)	Interdependent	Point Exchange – earned team points for appropriate behavior

Table 1 Continued

Participant and Setting Characteristics			Intervention Components		
Study	Participants	Setting	Components of Self-Management	Teacher -Match	Group Contingency
Rooney et al., 1984	14 students in one class 2 students with SLD ³ 2 students referred for disruptive behaviors	General education classroom	Self-Monitoring	No	Independent
					Reinforcement Criteria – earned a piece of candy if all intervals were self-monitored
Terenzi et al., 2010	15 students in one class 3 students with ADHD/SLD	Remedial classroom	Self-Monitoring	Yes	Interdependent*
					Point Exchange – Students earned points for appropriate behavior and matching the teacher's rating
Trevino-Maack et al., 2015	15 students across three classes	Remedial classroom	Self-Monitoring	Yes	Independent
					Point Exchange – earned points for appropriate behaviors

³ Specific Learning Disability

* Not specified in the study. Determined based on description in procedures

Table 2

Dependent Measures and Outcome Variables

Study	Dependent Measures			Intervention Effects	Outcomes		
	Academic	Pro-Social	Disruptive Behaviors		Teacher and Student Acceptability	Intervention Feasibility	Treatment Integrity
Battaglia et al., 2015	X ¹	- ²	X	Group – All three classrooms experienced increases in academic behavior and decreases in disruptive behaviors	Teacher – rated intervention highly acceptable	N/S	100%, 100%, and 76% of steps implemented correctly for each classroom
Chafouleas et al., 2011	X	-	X	Group – All three classrooms experienced slight increases in academic behavior and substantial decreases in disruptive behaviors	Teacher – rated intervention highly acceptable	Teacher rated that the intervention was slightly feasible	74%, 87%, and 88% of steps implemented correctly for each classroom
					Student – N/S		
Coogan et al., 2007	-	-	X	Individual – N/S Group – N/S Individual – All 5 students experienced decreases in disruptive behavior	Teacher – rated intervention highly acceptable Student – rated intervention neutrally	N/S	94% of steps implemented correctly for the classroom

¹ Was included as a dependent measure² Was not included as a dependent measure³ Not specified

Table 2 Continued

Study	Dependent Measures			Outcomes			
	Academic	Pro-Social	Disruptive Behaviors	Intervention Effects	Teacher and Student Acceptability	Intervention Feasibility	Treatment Integrity
				Group – N/S	Teacher – N/S	N/S	N/S
Davies & Witte, 2000	-	-	X	Individual – All four students and their matched controls experienced substantial decreases in disruptive behaviors	Student – rated the intervention as highly acceptable		
Denune, et al., 2015	X	-	X	Group – The classroom demonstrated increases in academic behaviors, and decreases in disruptive behaviors Individual – N/S	Teacher – rated intervention highly acceptable; preferred group contingency	N/S	N/S
Hoff & Ervin, 2013	-	-	X	Group – All three classroom demonstrated decreases in disruptive behaviors Individual – All 3 students experienced decreases in disruptive behavior	Teacher – rated intervention highly acceptable Student – rated intervention highly acceptable	Teacher rated intervention as feasible	94%, 88%, and 100% of steps implemented correctly for each classroom

Table 2 Continued

Study	Dependent Measures			Outcomes			
	Academic	Pro-Social	Disruptive Behaviors	Intervention Effects	Teacher and Student Acceptability	Intervention Feasibility	Treatment Integrity
Johnson et al., 1996	X	-	X	Group – The classroom demonstrated increases in academic behaviors, and decreases in disruptive behaviors	Teacher – rated the intervention as highly acceptable Student – N/S	N/S	Anecdotal Report
Kern et al., 1994	X	-	X	Individual – N/S			
				Group – N/S	Teacher – N/S Students – N/S	N/S	N/S
Miller et al., 1993	X	-	X	Individual – Increases in academic behavior for all six students. Three participants demonstrated lower levels of disruptive behavior. Three participants sustained low levels of disruptive behavior			
				Group – N/S Individual – All 4 students demonstrated increases in academic behavior and decreased in disruptive behavior, however data were variable between conditions	Teacher – rated intervention highly acceptable Student – N/S	Teacher rated intervention as highly feasible	Average of 95% and 93% of steps implemented correctly in classrooms one and two

Table 2 Continued

Study	Dependent Measures			Outcomes			
	Academic	Pro-Social	Disruptive Behaviors	Teacher and Student		Intervention Feasibility	Treatment Integrity
				Intervention Effects	Acceptability		
Mitchem et al., 2001	X	X	-	Group – The classroom demonstrated increases in academic behaviors	Teacher – rated the intervention as highly acceptable	No Quantitative measures	96.7% of steps implemented correctly
				Individual – Target students demonstrated increases in academic and pro-social behavior	Student – rated the intervention as highly acceptable		
Rooney et al., 1984	X	-	-	Group – N/S	Teacher – N/S	N/S	N/S
				Individual – Increases in academic behavior for all four students.	Students – N/S		
Terenzi et al., 2010	X	-	X	Group – N/S	Teacher – rated intervention highly acceptable	Teacher rated intervention as highly feasible*	Anecdotal report
				Individual – All 4 students demonstrated increases in academic behavior and decreased in disruptive behavior.	Student – N/S		

* Verbal reported from the teacher contradict this rating

Table 2 Continued

Study	Dependent Measures			Outcomes			
	Academic	Pro-Social	Disruptive Behaviors	Intervention Effects	Teacher and Student Acceptability	Intervention Feasibility	Treatment Integrity
Trevino-Maack et al., 2015	X	-	-	Group – The classroom demonstrated increases in academic behaviors Individual – All students demonstrated increases in academic behaviors	Teacher – rated the intervention as highly acceptable Student – rated the intervention as highly acceptable	Neutral rating on feasibility	100% of steps implemented correctly

Intervention Components

Components of self-management. Studies were evaluated to see which of the components of self-management specified by Aljadeff-Abergel, Schenk, Walmsley, Peterson, Frieder, & Acker (2015) were used. Components were categorized as either (1) self-monitoring, (2) self-reinforcement, (3) self-evaluation, (4) self-administered or contrived antecedents, and (5) individual goal setting. All studies utilized self-monitoring as a component of the self-management intervention ($n = 13$). All of the studies utilizing self-monitoring required students to monitor their own behavior (100%; $n=13$), however a small amount of studies also required students to monitor the classroom's behavior as well (23%; $n=3$). Only one study utilized self-reinforcement as a component of the self-management intervention (Johnson et al., 1996). No study included self-evaluation, self-administered or contrived antecedents, or individual goal setting.

Teacher-match. A teacher-match component, in which students' self-monitored responses are compared against the teacher's, was included in 46% of the studies reviewed ($n=6$). Of those studies utilizing a teacher-match component, the most common form of matching was between the individual student and the teacher ($n=3$), followed by utilizing matching during training only ($n=2$), and lastly matching the classroom's rating and the teacher's ($n=1$). Of the studies that included a teacher-match component, four studies included a reinforcement component for matching the teachers rating (e.g., Chafouleas et al., 2011). Additionally, 46% of the studies did not include a teacher-match component within the self-management intervention ($n=6$), and only one study utilized a peer-match component, in which the students' compared self-monitored responses against their peers (Mitchem et al., 2001).

Group contingency. A total of six studies (46%) utilized an interdependent group contingency when utilizing self-management interventions at the class-wide level. Of the remaining studies, the second most common group contingency was an independent group contingency (38%, $n=5$; e.g., Kern et al., 1994). The remaining two studies utilized a dependent group contingency ($n=1$), or randomly selected an interdependent or dependent group contingency each day ($n=1$).

Reinforcement. All studies ($n=13$) utilized a reinforcement procedure as part of the intervention. A large percentage of the studies (92%; $n=12$) utilized classroom rewards (e.g., food, prize box, homework pass, etc.) and privileges (e.g., time to talk with friends, extra recess time, etc.) as the reinforcer. One study (Johnson et al., 1996) used the classroom grade as a reinforcer, in which students' performance on self-monitoring forms influenced their final grade. Additionally, the way in which the reinforcer was earned varied throughout the studies. The most common delivery methods were meeting some pre-determined criteria by the end of class ($n=7$), cashing in points or tickets earned for backup reinforcers ($n=5$), and earning points toward final grades ($n=1$).

Dependent Measures

A large percentage of the studies measured some academic related behavior (77%; $n=10$) or disruptive behavior (77%; $n=10$). Of those studies that measured academic related behavior, eight studies measured on-task behavior (80%), and two measured the completion of academic tasks (20%). Pro-social behaviors (e.g., social skills targeted for intervention) were measured least often ($n=1$), and studies often measured more than one behavior at a time (i.e., one response class for reduction and one response class for acceleration) (62%; $n=8$), and five studies (38%) only measured one response class (i.e., academic, pro-social, or disruptive).

Outcomes

Effects of the intervention. Individual graphs were analyzed for each study to determine the relative effectiveness of each intervention. A total of nine studies (69%) evaluated the effects of the intervention for individual students in the classroom. A total of 54 students had their behaviors individually measured during baseline and intervention conditions. Of those students, 38% were targeted for the reduction of disruptive behaviors ($n=21$); 86% of those students ($n=18$) demonstrated reductions in disruptive behaviors from baseline to intervention conditions, and 14% of the students ($n=3$) were already demonstrating low levels of disruptive behavior during baseline conditions and the low levels of disruptive behaviors maintained during intervention conditions. Of the 54 students who had their behaviors individually analyzed, 87% ($n=47$) were targeted for increases in academic or social behavior; 91% of those students ($n=43$) demonstrated stable increases in academic or social behavior, and 9% ($n=4$) demonstrated increases, however data were very variable across intervention and baseline conditions, with a large portion of overlapping data points.

A total of seven studies (53%) evaluated the effects of the intervention for the entire classroom. A total of 14 classrooms were observed and data measured on classroom behavior. Of those classrooms, 85% ($n=11$) were targeted for reduction in disruptive behaviors. All 11 classrooms were observed to have lower instances of disruptive behavior during intervention conditions as compared to baseline conditions. A total of 11 classrooms (85%) targeted on-task behavior to increase. Of those 11 classrooms, 73% ($n=8$) demonstrated large increases in on-task behavior during intervention conditions; 27% ($n=3$) of classrooms demonstrated a slight increase in on-task behaviors, however the data were variable during intervention conditions and had a

large degree of overlapping data points between baseline and intervention conditions. Additionally, all three of those classrooms were a part of the same study (Chafouleas et al., 2011). It should be noted that the dependent variables were measured utilizing indirect measures of behavior (i.e., the students self-report), and the authors only conducted random direct observation of on-task behavior at various points of time. Thus, strong causal claims about the intervention cannot be made for these three classrooms.

Teacher and student acceptability. A high percentage of studies (77%; $n=10$) reported teacher acceptability in the results section. Of those studies, 100% of the respondents rated the intervention as highly acceptable. It should be noted that in one study (Denune, et al., 2015), the teacher reported that she preferred the group contingency alone, and would most likely not continue with self-management interventions but continue with a group contingency intervention.

A moderate percentage of studies (38%; $n= 5$) reported student acceptability in the results section. Of those studies 80% of the studies ($n=4$) reported that students showed preference for the intervention, and would like to continue with the intervention. A total of 20% of the studies ($n=1$) reported that students rated the intervention as neutral, neither liking nor disliking the intervention.

Intervention feasibility. A total of five studies (38%) reported data on the feasibility of the intervention. Of those five studies, 80% ($n=4$) reported that the teachers in the study found the intervention to be feasible, and 20% ($n=1$) reported a neutral rating for feasibility. A teacher in one study (Terenzi et al., 2010), rated the intervention as feasible (i.e., 4 out of 5 points), however stated that the intervention was time consuming, difficult to implement, and took a lot of the teacher's time. Thus, measure of intervention feasibility may not be accurately represented within the current literature base.

Treatment integrity. A moderate percentage of studies (69%; $n=9$) reported some form of treatment integrity as part of the study. Of those 9 studies, 77% ($n=7$) reported quantitative measures of treatment integrity (e.g., percentage of steps correct), and 22% ($n=2$) reported anecdotal descriptive reports of treatment integrity. A total of two of the studies reporting quantitative measures of treatment integrity (29%) report treatment integrity measures falling below 80%.

Discussion

The purpose of this review is to synthesize the research on the application of self-management interventions at the class-wide level. The review includes assessment of intervention efficacy and identification of variables relevant to effective implementation. A total of 13 studies that met inclusion criteria were analyzed and coded. Results of the review indicate that class-wide self-management interventions effectively improve academic behaviors (e.g., on-task, academic tasks, completed, etc.), and decrease disruptive classroom behaviors (e.g., calling out, off-task, out of seat, etc.). These effects were obtained in a variety of school settings including general education, self-contained and remedial classrooms, and alternative educational placements.

Despite the overall effectiveness of the intervention, a low percentages of studies reported intervention feasibility, and those that reported it had inconsistencies and inaccuracies in the reporting. Thus, it is difficult to determine the feasibility of implementing class-wide self-management based on the currently available data. Similarly, a total of nine studies calculated treatment integrity. Of those nine studies only seven used quantitative methods of measuring treatment integrity. Given the lack of consistent measures for both implementation feasibility and treatment integrity, it is difficult to determine the relationship between the feasibility of the intervention and the

degree to which it is being implemented with a high degree of integrity. Future research should focus on more objective and standardized methods of collecting implementation feasibility and treatment integrity data.

Result of the current review indicate that self-monitoring is the most common self-management component implemented in class-wide interventions. Additionally, other components of self-management are not being utilized. This proves problematic for two reasons. First, if teachers are delivering reinforcers, evaluating students' performance, and modifying antecedents in the environment, then the bulk of the intervention is still largely teacher directed. If current interventions are still largely teacher directed, it reduces the advantages that are inherent in self-management interventions. Second, when requiring large groups of students to self-monitor their own behavior, the accuracy of the responding may decrease. For example, Denune, Hawkins, Donovan, McCoy, Hall, and Moeder (2015) implemented a class wide self-monitoring intervention in a classroom of 14 students. The researchers required students to monitor their own behaviors at four specific times during the class hour. The authors reported that several students would complete all four of their self-monitoring checks at the beginning of the class, and were not monitoring during the other designated self-monitoring checks throughout the class period. One way in which teachers can ensure accuracy of responding is to include teacher-match components. Teachers can compare the students' self-monitored reports against the teacher's, and points awarded for accurate recording. However, only 46% of the studies included in this review utilized a teacher-match component as part of their intervention. Future research should focus on the efficacy of self-monitoring interventions with and without teacher-match components to determine if accurate recording influences the effectiveness of the intervention.

A potential reason for excluding the teacher-match component may be that in classrooms with a large amount of students, it may be time consuming to check each student's individual self-monitoring form. Researchers may control for this by altering the way in which the intervention is utilizing the group contingency. Interdependent and independent were the most commonly implemented group contingencies. Both of these group contingencies require monitoring each student's behavior individually. For example, in the independent group contingency, each student earns the reward based on his or her behavior, and in the interdependent group contingency the class earns the reward based on all of the student's behaviors. If individual students are self-monitoring, the teacher has to effectively review each student's self-monitoring form to determine if the criteria were met. One alternative is to implement a dependent group contingency. This requires the teacher to select a few of the self-monitoring forms at random, and determine if the student displayed appropriate classroom behavior and accurately monitored his/her behavior. The selected student's form determines the delivery of the classroom reward, as opposed to the entire class. Past research has demonstrated that dependent group contingencies are equally effective at reducing disruptive behaviors as independent and interdependent (Theodore, Bray, & Kehle, 2004).

The current review suggests several considerations for future research on and applications of class-wide self-management interventions. First, additional components of self-management should be incorporated into the intervention to fade back teacher involvement, and increase student independence. Second, researchers should ensure that procedures are in place to ensure accurate self-monitoring. One solution to this may be a teacher-match component, however, one study demonstrated positive effects when using a peer-matching component (Mitchem et al., 2001). Future research should investigate to

extent to which peers can be used to enhance self-management interventions. Third, dependent group contingencies are underrepresented in the literature on class-wide self-management interventions. Researchers should consider the use of dependent group contingencies more often, as past research has demonstrated its effectiveness and ease of implementation (Theodore, Bray, & Kehle, 2004). Lastly, future research should include objective measures of teacher feasibility and treatment integrity to identify the extent to which these two variables are related.

Several limitations to the current review should be noted. First, it is possible that the inclusion criteria for the review may have excluded a number of studies related to class-wide applications of self-management. The authors attempted to control for this by reviewing each introduction and reference section for additional studies related to the topic. Second, as this is a narrative literature review, no statistical measures were calculated to determine effect size. It is possible that statistical analyses may suggest different outcomes in terms of intervention effectiveness. The authors opted not to use statistical measure for single case designs, as it has been suggested that current models being used may present inaccuracies in detecting intervention effects, and as such has come under scrutiny from the field (Wolery, Busick, Reichow, & Barton, 2010). Lastly, the small number of studies included in the review reduce the overall degree to which claims can be asserted. Future research in the area of self-management at the class-wide level will serve to enhance our understanding of the intervention.

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APPENDIX M:

Interobserver Agreement Data

1701				1702				1703				1704			
Session	On-Task	Disruptive		Session	On-Task	Disruptive		Session	On-Task	Disruptive		Session	On-Task	Disruptive	TOTAL IOA Per Session
3	0.63636364	0.90909091		3	1	0.77272727		3				3	0.7	0.93333333	0.825252525
4	0.9	1		4				4	0.88888889	0.7755102		4	0.66666667	0.71111111	0.807029478
8	0.81818182	1		8	0.81818182	0.98181818		8	0.77272727	0.89090909		8	0.8	0.86	0.862045455
14	1	0.9375		14	1	0.95555556		14	0.9	0.9		14	1	1	0.961631944
16	0.66666667	0.87234043		16	0.875	0.9		16	0.88888889	0.95555556		16	0.88888889	0.82222222	0.858695331
19	0.77777778	0.91111111		19	0.88888889	0.8		19	1	0.91111111					0.881481481
22	0.88888889	0.93023256		22	0.66666667	0.75555556		22	0.88888889	0.93333333					0.843927649
24	0.88888889	0.97777778		24	0.88888889	0.86666667		24	0.77777778	0.84444444		24	0.875	0.9	0.877430556
30	0.9	0.92		30	1	0.86666667		30	0.77777778	0.73333333					0.866296296
33	0.88888889	0.97777778		33				33	0.66666667	0.84444444		33	0.88888889	0.82222222	0.848148148
34				34	0.77777778	0.84090909		34	0.88888889	0.97777778		34			0.871338384
38	0.66666667	1		38	0.33333333	0.90909091		38	0.66666667	0.91111111		38			0.747811448
39	1	0.97368421		39	1	1		39	0.75	0.95		39	0.825	0.875	0.921710526
TOTAL IOA Per Student	0.83602694	0.94245956			0.84079431	0.8771809			0.81847643	0.88562753			0.83055556	0.86548611	

APPENDIX N:

Treatment Integrity Data

Date	Session	Treatment Integrity	IOA
2/20/17	17	100%	
2/22/17	19	90%	
2/24/17	21	90%	100%
2/27/17	22	60%	100%
3/1/17	24	70%	80%
3/20/17	34	100%	100%
3/22/17	36	90%	
3/24/17	38	80%	80%
3/27/17	39	90%	100%
Total:		86%	93%

APPENDIX O:

HSIRB Approval Letter

WESTERN MICHIGAN UNIVERSITY

Human Subjects Institutional Review Board

Date: October 25, 2016

To: Jessica Frieder, Principal Investigator
Andrew Bulla, Student Investigator for dissertation
Elijah Schoonard, Student Investigator

From: Amy Naugle, Ph.D., Chair

Re: HSIRB Project Number 16-10-37

This letter will serve as confirmation that your research project titled "Self-Management as a Class-wide Intervention: An Evaluation of the "Self & Match" System Embedded Within Group Contingencies" has been **approved** under the **exempt** category of review by the Human Subjects Institutional Review Board. The conditions and duration of this approval are specified in the Policies of Western Michigan University. You may now begin to implement the research as described in the application.

Please note: This research may **only** be conducted exactly in the form it was approved. You must seek specific board approval for any changes in this project (e.g., ***you must request a post approval change to enroll subjects beyond the number stated in your application under "Number of subjects you want to complete the study."*** Failure to obtain approval for changes will result in a protocol deviation. In addition, if there are any unanticipated adverse reactions or unanticipated events associated with the conduct of this research, you should immediately suspend the project and contact the Chair of the HSIRB for consultation.

Reapproval of the project is required if it extends beyond the termination date stated below.

The Board wishes you success in the pursuit of your research goals.

Approval Termination: October 24, 2017

1903 W. Michigan Ave., Kalamazoo, MI 49008-5456

PHONE: (269) 387-8293 FAX: (269) 387-8276

CAMPUS SITE: 251 W. Walwood Hall

OCT 25 2016

HSIRB Office

**Western Michigan University
Department of Psychology**

Principal Investigator: Jessica E. Frieder, Ph.D., BCBA-D
Student Investigator: Andrew J. Bulla, M.A., BCBA
Title of Study: Self-Management as a Class-wide Intervention: An Evaluation of the "Self & Match" System Embedded Within Group Contingencies

You have been invited to participate in a research project titled Self-Management as a Class-wide Intervention: An Evaluation of the "Self & Match" System Embedded Within Group Contingencies." This project will serve as the student investigator's dissertation for the requirements of the doctor of philosophy degree in psychology. This consent document will explain the purpose of this research project and will go over all of the time commitments, the procedures used in the study, and the risks and benefits of participating in this research project. Please read this consent form carefully and completely and please ask any questions if you need more clarification.

What are we trying to find out in this study?

The current study seeks to evaluate the effects of the "Self & Match" system, a self-management behavior management system with a "teacher match" component, at a class wide level on disruptive and on-task behaviors.

Who can participate in this study?

You can participate in this study if you currently are a teacher, and teach a class that engages in moderate to high levels of disruptive behaviors.

Where will this study take place?

The study will take place in the classroom assigned to you.

What is the time commitment for participating in this study?

Research sessions will occur during a regularly schedule class period. Only one session will be conducted per day, for a total of five days per week. Total participation can range from two to four months in total.

What will you be asked to do if you choose to participate in this study?

If you choose to participate in this study, you will be asked to implement a few variations of the "Self & Match" system: "Just Recording," "I Can Earn it for Me," "I Can Earn it for Everyone." (1) Just Recording: Each student will receive a "Self & Match" form with the three classroom rules on it. At the beginning of the hour, they will be reminded how to use the system under this condition (e.g., "Remember, we are just going to be recording today."). At the end of the

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learning hour, the students will each individually fill out their form based on their individual behavior, (2) "I Can Earn it for Me: At the end of the class period, the students will each individually fill out their form based on their individual behavior. After all students complete this, you will go around and also fill out each student's form. Students get two points for a "Yes/Yes" match, one point for a "No/No" match, and zero points for a "Yes/No," or a "No/Yes" mismatch. Students will need to earn at least five out of six points to earn the reward. Students earn the reward based on their own behavior and their own scoring of the self-management form, and (3) All students will independently fill out their "Self & Match" form and you will go around and collect them all at the end of the hour. You will randomly select one of the forms from the pile and score that student's form in front of the class. The student's name will be kept confidential and the teacher will use blanket terms to refer to the student (e.g., "This student earned 5 out of 6 points"). If the student that is randomly selected earns five out of six points, then the whole class receives the daily reward.

What information is being measured during the study?

We will be recording data on the level of disruptive behavior in your classroom. More specifically, we will be recording on the amount of disruptive behaviors (e.g., call outs, out of seats, side conversations, etc.), as well as on-task and off-task behavior at the class wide and individual level for certain students. Additionally, we will ask you and your students to complete acceptability surveys on the interventions. Lastly, we will ask that you complete a pre-post survey measuring your perspectives on classroom and individual behaviors.

What are the risks of participating in this study and how will these risks be minimized?

There are no known risks to you for participating in the study. Your students may experience discomfort if they are selected for the dependent group contingency, and they do not earn the reward for the class. To reduce this risk, the researchers will not disclose the identity of the individual selected for the group contingency, as well as only list the number of points earned for that class period. By failing to describe what behaviors did not allow the class to earn the reward, the identity of the individual is better protected because little identifiable information is given, making it difficult to draw assumption

What are the benefits of participating in this study?

You may experience positive outcomes throughout and immediately following the study. The class-wide intervention has the potential to decrease the amount of disruptive behaviors in the classroom, as well as increase on-task behavior. Additionally, the study may give you effective tools to handle disruptive classroom behaviors. In the same regard, the school may experience positive benefits from the study, because of the potential for effective classroom management techniques that they may replicate in other classrooms. Lastly, there may be benefits to the field of education and behavior analysis.

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Are there any costs associated with participating in this study?

Time is a potential cost to you and your students. Depending on the level of comfort with the classroom management procedure, you may experience minor losses in instructional time. Based on the prior literature, we hope to assuage this by providing a competency based training to you and your staff. If the intervention can be implemented effectively, time may be saved managing the classroom behavior, and more time can be allocated to instruction.

Is there any compensation for participating in this study?

There is no compensation for participating in this study.

Who will have access to the information collected during this study?

Only research personnel will have access to the data, as well as you and your principal upon request. All data will be stored on Western Michigan University's campus in a locked file cabinet in Wood Hall for a minimum of three years. No students' names will be used throughout the duration of the study.

What if you want to stop participating in this study?

You can choose to stop participating in the study at anytime for any reason. You will not suffer any prejudice or penalty by your decision to stop your participation. You will experience NO consequences either academically or personally if you choose to withdraw from this study. The investigator can also decide to stop your participation in the study without your consent.

Should you have any questions prior to or during the study, you can contact the primary investigator, Andrew Bulla at (269) 387-4495 or andrew.j.bulla@wmich.edu. You may also contact the Chair, Human Subjects Institutional Review Board at 269-387-8293 or the Vice President for Research at 269-387-8298 if questions arise during the course of the study.

This consent document has been approved for use for one year by the Human Subjects Institutional Review Board (HSIRB) as indicated by the stamped date and signature of the board chair in the upper right corner. Do not participate in this study if the stamped date is older than one year.

I have read this informed consent document. The risks and benefits have been explained to me. I agree to take part in this study.

Please Print Your Name

Participant's signature

Date