Evaluating the Effects of a Self-Management Program with a Peer-Mediated Praise Procedure

Sean P. Field
Western Michigan University, seanfield84@gmail.com

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EVALUATING THE EFFECTS OF A SELF-MANAGEMENT PROGRAM WITH A PEER-MEDIATED PRAISE PROCEDURE

by

Sean P. Field

A dissertation submitted to the Graduate College
in partial fulfillment of the requirements
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Doctoral Committee:

Jessica E. Frieder, Ph.D., Chair
Rodney D. Clark, Ph.D.
R. Wayne Fuqua, Ph.D.
Richard W. Malott, Ph.D.
Stephanie M. Peterson, Ph.D.
Research has shown self-management to be a powerful tool that can assist students in establishing and maintaining a range of targeted behaviors including increasing academic performance, increasing independence, and the reduction of problem behavior. However, researchers continue to seek means to implement self-management programs that further increase independence for the student as well as promote greater generalization of established skills. One potential means of achieving this is through the use of peers, as they may allow for greater access to reinforcement. Additionally, the use of peers allows for the reduction or removal of additional demands on teachers and classroom staff. The current study evaluated the impact of a self-monitoring program with and without a peer-mediated praise procedure. Seven students were trained to self-monitor for on-task behavior as well as appropriate classroom behavior (e.g., gaining teacher attention, accepting feedback appropriately). In addition, students were trained to request feedback from peers when they had completed a session of self-monitoring. Peers were trained to provide feedback on performance when requested. Self-monitoring alone was responsible for increasing overall performance for five of seven participants. However, the inclusion of the peer-praise component was responsible for even further increases in performance for four of seven students. Further research should seek to evaluate the extent to which peer praise procedures may result in greater generalization of skills as well as the specific aspects of peer praise that may be effective in impacting self-management programming.
ACKNOWLEDGMENTS

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Sean P. Field
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INTRODUCTION

Educational settings represent a diverse environment in which teachers are expected to teach and student are expected to learn. However, there are a variety of barriers that can impact this exchange from taking place. These barriers include limited teacher preparation time, increased class sizes, and problem behavior exhibited by students. Of these barriers, problem behavior is an indicator of increased risk of being excluded from typical educational programming and can result in students being removed from a least restrictive educational setting (George & George, 2005). When students are removed from their classroom not only does it result in the loss of academic instruction but, it can also lead to diminished social and emotional development (Greenbaum & Dedrick, 1996) and even result in an increased risk for engaging in additional problem behavior including, delinquent and criminal behavior (Katsiyannis, Zhang, Barrett, & Flaska, 2004). This concern is even greater for students with increased likelihood to engage in problem behavior behaviors such as those with Emotional Behavioral Disorders (EBD) and those with Developmental Disabilities (DD). In recent years, efforts have been made to assure that children, regardless of need, be provided with a least intrusive educational setting. As the push continues to have students with developmental and emotional behavioral disorders to participate in typical or inclusionary classroom settings (National Center for Educational Statistics, 2015) the need for children to gain the skills necessary to participate in independent class routines has increased. Achieving these outcomes while successfully addressing problem behavior and maintaining appropriate demands on teachers can be complex and involves the use of evidence-based interventions that are carefully implemented and monitored.
In attempting to address some of these issues, particularly the reduction of problem behavior and increasing student engagement, schools are able to call upon an increasing, relevant and evidence-based literature. Common themes within this literature for addressing problem behavior in the classroom setting include determining environmental variables responsible for behavioral concerns, the use of least restrictive interventions to address problem behavior, and the use of data to determine the effectiveness of these programs. While there are a wide number of interventions that utilize these themes, one procedure for addressing problem behavior that has garnered attention in the past two decades is that of self-management (Ganz, 2008).

Self-management has been shown to be an effective procedure for addressing problems for a variety of populations including individuals diagnosed with Autism (National Autism Center, 2015), Attention Deficit Hyperactivity Disorder (ADHD; DuPaul, Eckert, and Vilardo, 2012), and Emotional Behavioral Disorder (EBD; Hansen, Wills, Kamps, & Greenwood, 2014). In addition to these populations, self-management programs have been effective for a wide array of age groups including pre-school children (Reinecke, 1999), adolescents (Wolford, Heward, & Alber, 2001), and adults (Ganz & Sigafoos, 2005). Within these age groups self-management has also been shown to be a robust intervention for developing on-task performance and work completion (Todd, Horner, & Sugai, 1999), increasing social skills (Peterson, Young, Salzberg, West, & Hill, 2006), homework completion (Cancio, West, & Young, 2004), and peer-mediated learning (Wolford et al., 2001). As such self-management appears to provide teachers with a tool that is capable of addressing many of the varied problems teachers can face with their learners.

Self-management can be described as a set of behaviors related to the identifying, monitoring, and arranging antecedents for specified target behaviors and often includes
components related to self-monitoring, self-evaluation, self-instruction, goal setting, and strategy instruction (Mooney, Ryan, Uhing, Reid, & Epstein, 2005). Self-monitoring is a process by which students are expected to determine when a behavior has or has not occurred and accurately record the relevant performance. Self-evaluation requires students to compare their performance, typically recorded during self-monitoring, to a pre-determined goal. Self-instruction includes students managing the presentation of cues to produce or direct their own behavior. Goal setting is the process by which a student identifies a performance level at which he/she would like to perform. Finally, strategy instruction is when a student is provided with a rote skill that will allow him/her to problem solve new situations without the need for additional instruction. Self-management can be conceptualized as a combination of any number of these procedures to address a target behavior, which can include problem behavior or socially acceptable behaviors. As such, when self-management is being used, as an intervention, careful attention must be paid to which components are being implemented.

The most common component of self-management is that of self-monitoring target behavior(s) (McDougall, 1998; Mooney, Ryan, Uhing, Reid, & Epstein, 2005). While self-monitoring, as a means of self-management, has shown to be independently effective (Mooney et. al, 2005) researchers have attempted to increase effectiveness by integrating and adding a variety of additional interventions. Some of these additional interventions include the use of performance specific feedback (Kern, Wacker, Mace, Falk, Dunlap, & Kromery, 1995), the inclusion of function-based reinforcement (Hansen et al., 2014), instruction in students recruiting praise for performance from their teachers (Alber & Heward, 2000), and the inclusion of peers in providing feedback and support in program implementation (Wolford et al., 2001). The goal of including or embedding these additional interventions with self-monitoring is to increase the
durability and generalization of the skill development, as self-management alone is often unable to, individually, produce long term generalized behavioral change.

For example, Hansen and colleagues (2014) examined the effects of using a reinforcement program based on the outcomes of a functional assessment procedure on students’ on-task and disruptive behavior. Following baseline and assessments the researchers evaluated three different conditions including self-management, function-based combined with self-management, and a function-based reinforcement procedure alone. The results of this study indicate that the use of a function-based reinforcer in addition to a self-monitoring program as compared to a self-monitoring program alone was more effective, increasing on-task behavior and decreasing classroom disruptions. While promising, the use of this procedure requires additional teacher involvement in the management of problem behavior and additional supports to provide the function-based reinforcer.

In another evaluation of a combined intervention, Todd et al. (1999) evaluated the effects of a self-monitoring program that included a self-recruited praise component. In this study researchers worked with children in grades three and four, all of whom were on Individualized Education Programs (IEPs). These children were selected due to their rates of problem behavior which included talking to peers, touching peers, making noises, being out of seat and playing with non-work related materials. The researchers exposed students to a self-monitoring and self-recording program which included a schedule for students to request feedback for their performance from their teachers. This intervention was successful in increasing academic engagement and work completion. While, as noted above, this intervention was successful in addressing the problem behavior it was also the case that the teacher had additional demands placed on her throughout the program including additional individual interactions with students.
as well as management of the programming materials and instruction for their use. However, the latter of these two do not represent a unique problem, as almost any program will require some dimension of training and program management. Still the additional time spent providing interaction to an individual student while attempting to maintain an entire classroom may present as a barrier to teachers and educators.

Wolford, Heward, and Alber (2001) evaluated the effects of providing middle school students with instruction to gain attention from not only their teachers but, also their peers, specifically in relation to assistance with task completion. Each student was individually trained to recruit assistance from peers during work activities. The results of this study suggest that peer attention, even in the form of assistance as opposed to praise, resulted in increasing on-task behavior, in an increase of positive praise provided by the peers, and an increase in positive teacher opinion of the procedure. In addition, results of this study indicate that peers enjoyed participating in the program and increases in students’ overall use of praise outside the confines of the study itself occurred. Although this study demonstrates the power of peer interactions as an intervention there remain several issues including, the extent to which the request for assistance was necessary, whether the requests resulted in increased work accuracy and completion; and, how peers effectively discriminated when they should or should not provide the praise/feedback for targeted behaviors.

Despite the promising outcomes outlined in the Wolford et. al. (2001) study, as well as other investigations demonstrating the effectiveness of interventions that blend self-monitoring and self-recruited or teacher-mediated praise (Alder & Heward, 2000), there remains a near absence of research evaluating the utility of self-recruited praise from peers combined with self-management is of particular interest due to the unique pressures facing teachers, including
increased class sizes, increased instructional demands, and limited preparation time for instructional design. In addition, teachers have shown appreciation for interventions that utilize peer involvement and reduce additional demands that children with behavioral support needs may require (Mahoney et al., 2005).

Thus, the goals of the current research included two main questions. First, what are the effects of a self-management program, including components of self-monitoring and self-recording, on successful academic behaviors for students? Second, what are the effects of a self-recruited, peer-mediated, praise component in conjunction with a self-management program?

METHOD

Participants

Participants were recruited from an elementary school located in southwest Michigan. The school was a self-contained building for the broader Intermediate School District (ISD) and, as such, included children from a variety of different schools located within the district. The school district was located in a rural, low socioeconomic (SES), region located in southwest Michigan. Students in this program were removed from their home school district as a result of problem behavior and declining academic performance. Participants consisted of all the students within an existing classroom in the school. The class consisted of children grades three through five, ages 8 through 11 years, with a current educational diagnosis of emotional disturbance (ED). The class for this study was selected based on a variety of issues including students’ limited or lack of ability to remain on-task, the presence of problem behavior during independent work sessions such as interrupting peers, and failure to complete work. Additionally, this classroom was identified due to the teacher’s desire to have assistance in managing these issues for these students. A total of 10 participants were included in the current study, three of whom,
(i.e., Participants 2, 3, and 7) did not complete the entire study due to a change in placement/classroom. Data for their performance is reported for the sessions/components of the study that were completed. No additional identifiable information was collected for the students on any of their individual needs or behavioral features due to the nature of the study.

**Setting**

All sessions were conducted in the general academic setting. This environment included typical classroom features such as desks, chairs, and work materials located in a classroom for children grades three to five. The classroom was divided into three academic work areas, which generally organized students according to their respective academic instructional levels. Each work area consisted of four to five chairs surrounding either a half-circle desk or group of four to five desks. Sessions occurred during class periods one and two, reading and writing, respectively. These times were either spent engaging with Direct Instruction materials, individual or group readings, or independent work periods. In addition to the three work areas, there were several desks on the perimeter of the room for students to work individually as needed. These desks were similar to those in the work areas except they were isolated from peers and were utilized by staff as part of their behavior management programs as well as an alternative to the group work environment should a student request a break or an opportunity to work away from their peers. The classroom staff determined use of these desks, thus students did not have independent access to these desks throughout instruction. In addition to the physical layout of the classroom, the teacher used a self-monitoring program that was implemented for 10 “good behaviors” for each of the students and allowed students to earn points. These points were tied to a token system that included a response-cost component for exhibiting problem behaviors.
including yelling, physical aggression, or engaging in activities away from your desk without permission.

**Materials**

During the baseline and post-training baseline conditions students were provided with no additional materials other than those that were already being used in the setting. These materials typically included pencils, erasers, work materials, students’ point sheets, for the reinforcement system utilized by the class, and the students’ daily workbooks. During the self-monitoring with or without peer feedback sessions the same materials were present as in the baseline phases in addition to the self-monitoring form (see Figure 1). The targeted behaviors were consistent with those identified on the observation form (see Appendix A) utilized by the researchers to track performance.

<table>
<thead>
<tr>
<th>Behaviors</th>
<th>Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>On-Task</td>
<td></td>
</tr>
<tr>
<td>Follow Instruction</td>
<td></td>
</tr>
<tr>
<td>Accept Feedback/No Gain</td>
<td></td>
</tr>
<tr>
<td>Gain Attention</td>
<td></td>
</tr>
<tr>
<td>Session Earned</td>
<td></td>
</tr>
</tbody>
</table>

GOAL: ___________

Did I Meet My Goal: Y or N

*Figure 1. Self-monitoring form*
The form was used for each participant to track and record performance throughout the session. This form was printed on an 8.5-inch x 11-inch piece of paper. Three copies of the self-monitoring form were provided to the participants at the start of each session in which self-monitoring was being implemented. During the initial social skills training participants were provided with a list of each of the skills being targeted in the current study (see Appendix C) and no additional materials. During the self-monitoring with or without peer praise recruitment training students were provided with the self-monitoring form as well as pencils to utilize throughout the training as part of a demonstration of competency prior to completion of the training. This form was the same as the one utilized during the self-monitoring with and without peer praise recruitment phase of the study. To assist with timing and management of the self-monitoring and self-monitoring with peer praise recruitment sessions a MotivAider® (see Figure 2) as well as a small clicker, similar to those used in dog training, were used.

![MotivAider®](image)

*Figure 2. MotivAider®*

The MotivAider® was used to signal the intervals for the researchers to provide the class signal, utilizing the clicker, for the self-monitoring recordings. The clicker was used to signal for all of the students to complete their self-monitoring form for the appropriate interval.
Dependent Variable and Measurement

The dependent variables were on-task and off-task behavior, following instructions, gaining teachers’ attention appropriately, accepting “no” for an answer, and accepting teacher criticism/feedback.

On-task and Off-task Behavior

On-task behavior was defined as the student facing the instructor when staff or the classroom teacher was speaking to the student or facing the assigned instructional materials. For a student to be scored as on-task the student had to be in the assigned instructional area, unless instructed to do otherwise by the classroom staff or teacher. Behaviors considered on-task included the student sitting in their chair, using a pencil to make marks in a workbook, facing the teacher, and responding to questions posed by the teacher.

Off-task behavior was defined as the student engaging verbally (speaking to or making inappropriate noises) or physically (touching, poking, or touching them with their learning materials) with peers when they have not received permission or instruction to do so from the classroom teacher or staff. Additionally, off-task behavior was defined as the student being out of their designated instructional area (i.e. being out of their chair or in any other location within the classroom) without staff or teacher permission, engaging in any problematic behaviors including hitting peers, damaging property, displaying inappropriate gestures (e.g. facing away from work, swinging a fist in the air, mocking gestures such as thumbs down), or using instructional materials in an inappropriate fashion (e.g. writing on desk, crumbling or ripping up materials, or throwing materials).

Both on-task and off-task behaviors were recorded with the behavior tracking sheet (see Appendix A). A two-hour observation window in which five-minute observation sessions were
completed on each student in a random order until each student present had been recorded twice, unless unavailable, was used to gather data on both dependent variables. Each 5-minute observation consisted of a 15-second momentary time sample interval recording procedure. On-task behavior was measured such that if a student engaged in on-task behavior for the first three seconds of each observation interval he was scored as on-task. Off-task behavior was measured using a partial-interval recording procedure, such that if a student engaged in any off-task behaviors during this three second window they were scored as off-task.

Following Instructions

Following instructions was recorded using an event recording system. An opportunity to follow instruction was defined as the teacher providing the student, or group of students, with an explicit prompt to engage in a behavior. These included providing students with prompts to begin writing in their books, to respond to a specific cue from a lesson plan, or to begin working on an independent work task. Only instructions to complete work that were delivered to the target student or a group of students that included the target student were counted as opportunities. If the student followed or initiated the instruction provided by the teacher within five seconds of the request, they were scored as following instructions. If the student failed to begin the task within five seconds of the opportunity they were scored as failing to follow instructions for that opportunity. Following the end of the observation period each student had his or her percentage of following instructions calculated. Percentage of following instructions was calculated by dividing the total number of opportunities in which the student successfully followed instruction by the total number of opportunities and multiplying the resulting quotient by 100.
Gaining Teacher’s Attention Appropriately

Gaining teacher’s attention was recorded across two categories, teacher prompted attention and free operant teacher attention. Teacher prompted attention was recorded when the teacher asked a question of the student in a group instruction setting and the student responded to the question either correctly or incorrectly. Free operant teacher attention was recorded when the student sought the teacher’s attention independently, that is, there was no discrete instruction or opportunity presented by the teacher to respond or gain her attention. Gaining the teacher’s attention appropriately, for both categories, was defined as the student raising his hand above his head and waiting quietly until called upon by the teacher. If the student raised his hand and the teacher was facing away from them the student was allowed to state the name of the teacher once, in a calm and pleasant tone, and to then continue waiting for the teacher to attend. Gaining the teacher’s attention inappropriately, again, for both categories, was defined as any of the following, raising more than one hand at a time, waving hand(s) in the air, shouting the answer to the question, verbally stating the teacher’s name more than once, or verbally stating anything other than the teacher’s name. If an opportunity was provided to the group to respond to a question and the student did not respond appropriately or inappropriately, no opportunity was recorded. Free operant teacher attention, due to the free operant nature of the target behavior, was measured utilizing a frequency count for the session. Free operant teacher attention was the only dependent variable that was measured utilizing frequency per session.

Accepting “No” for an Answer

Accepting “no” for an answer was recorded using an event opportunity recording system. An opportunity to accept “no” occurred following a request that directly impacted the permission of the student to engage in a behavior was made and the teacher responded by saying “no”. For
example, if the student asked if he could sharpen his pencil and the teacher replied “no” and instructed him to use another writing utensil, this was scored as an opportunity. A student was scored as accepting “no” if he responded by looking at the teacher and stating he understood (e.g., stating “o.k.” or stating “alright”) or quietly returning to their work. A student was scored as not accepting “no” if he engaged in any behavior other than that described above, such as arguing with the teacher, whining, complaining, or exhibiting any other problem behavior. An example of failing to accept “no” would be following a request to use the bathroom and the teacher replied “no” the student responds by kicking the desk and telling the teacher he hates it at this school.

Accepting Criticism/Feedback

Accepting criticism or feedback was recorded using an event recording system. An opportunity to record was scored if the student received individual or group feedback regarding their individual, or class-wide, performance in the classroom. Some examples included correction for poor behavior or acting out or failure to complete an assignment within the allotted time and feedback on worksheets completed in class. Accepting criticism or feedback was scored as correct if the student responded to the teacher by stating “o.k.” or “I understand”. If a student asked for clarification (e.g., “What do you mean my hand writing wasn’t good, can you tell me what was wrong with it?”) and accepted the response from the teacher and did not repeat the need for clarification this was also recorded as correctly accepting criticism or feedback. Additionally, if a student returned to their work without statement was considered a correct response. The student was scored as incorrectly accepting criticism or feedback if he argued with the teacher, whined about the feedback, or complained about the feedback they received. An example of not accepting criticism or feedback appropriately included when the student states
“It’s not fair, you never correct anyone else”, placing one’s head down on the table, or crumpling up their work or destroying the materials following receiving feedback.

For all target behaviors that were scored using an event recording system, only the first opportunity was recorded during each interval. As such, during a 5-minute session, with a 15-second observation interval, a maximum of 20 opportunities (with their respective behaviors) could have been scored each session. Students were selected from a list of names each day. Selection was random other than the requirement that each student be observed twice during each observation session.

**Observer Training**

Observers included the primary researcher and research assistants. All observers were trained in the use of the recording system and in the use of the MotivAider®, used to manage timings for the researchers to signal with the clicker the opportunity for students to record their behavior as outlined in the self-monitoring phase below. Each training session included verbal reviews of the target behaviors, their examples and non-examples, and the use of the data collection sheet (appendix A) including scoring and summarizing data. In addition, modeled instances and non-instances of the target behaviors were provided for each of the data collectors. If during the study IOA fell below 80% observers received additional training and clarification of the target behaviors, a review of the reported discrepancy, and clarification for future recording instances. These reviews and training took place during weekly reviews with the research team.

**Independent Variable**

Three independent variables were implemented in the current study. They included training on social skills (see Appendix B) including those directly measured as the dependent variables, the use of the self-monitoring form (Figure 1), and praise from peers/students.
following the completion of a sheet of the self-monitoring form. Training for the social skills took place immediately following baseline. Training for self-monitoring included assisting the participant in being able to utilize the self-monitoring form, training in discrimination of the target behaviors, and in recording performance utilizing the form. For peer praise recruitment, participants were trained that following the completion of an entire sheet, or upon request by the teachers, they would be able to show their sheet to their peer-student(s). Participants would then receive feedback on their performance during the observed interval. The independent variable was evaluated through the use of a reversal design.

Procedures

Baseline

During baseline student performance on the dependent measures was recorded by trained observers using a 15-second interval with momentary, event opportunity, and frequency count recording systems as described above for a duration of five-minutes, rotated across participants. No additional environmental modifications were present during this phase of the study. Students participated in their typical classroom routines including all assigned class activities and work. Baseline continued for a period of two weeks.

Social Skills Training

Training, as outlined in appendix B, was provided to all students in the class on the skills identified as being critical for success in the classroom. These skills are outlined in appendix C. This training was completed in a group format and followed the procedure outlined in appendix C. The skills identified for training were adapted from *How to Deal with Students Who Challenge and Defy Authority* by Peterson, Peterson, and Lacy (2003). The training lasted 30 minutes. In addition, the training included teaching the participants to provide descriptive praise
as opposed to generic praise. Descriptive praise included objective statements regarding the specific behaviors that were exhibited during the interval and for which the praise was being delivered. Following this training an additional baseline phase was implemented identical to the baseline condition previously described.

**Self-Management Training**

Following baseline and social skills training, each participant was trained in the use of the self-management form. During this training, participants were provided with access to written definitions of on-task behavior as well as the other trained skills outlined in the social skills training phase outlined above. Students were presented with verbal descriptions of the target behaviors and asked to record the appropriate code on the self-management form. Each student’s form was checked for errors following each example and corrections made as necessary.

Each participant was trained on how to use the form correctly by identifying the proper interval for recording and to indicate whether or not he exhibited the target behavior(s) in the respective interval. For example, if the participant successfully exhibited the target behaviors, he was eligible to indicate that he had earned the interval as indicated by a “+” on his self-management form. If the student successfully exhibited all of the defined behaviors during the interval he was eligible to indicate that he had earned the interval. Students were then taught to evaluate whether or not he reached their goal at the end of a session, with each session consisting of five intervals, by comparing the number of intervals earned with that of their goal. The goal for each student was to achieve four out of five successful intervals by demonstrating the target behaviors. Following the training the self-management condition described below was implemented.
Self-Management Condition

During the self-management condition, students utilized the self-management form (figure 1). Students were asked to complete the self-management form each time they were prompted, as signaled, via the use of a clicker, activated by the observer at each interval. The signal was provided on a variable interval (VI) schedule. This interval was measured via use of the MotivAider® which provided a tactile prompt to the researcher that it was time to signal the class with the clicker. During the initial phase of the self-management condition the schedule was a VI-3-min schedule. Following eight sessions the schedule was changed to a VI-10-min. The schedule modification was in response to a request by the classroom teacher who expressed that the frequency of recording opportunities with a VI-3-min schedule to be too intrusive to the classroom routine.

Self-Monitoring and Peer Praise Recruitment Condition

During the self-monitoring with peer praise recruitment phase participants used the self-management form as outlined in the self-management condition. However, during this condition, following the completion of five intervals, each student was asked to evaluate his performance on the self-monitoring form and identify if their goal of four out of five sessions completed successfully was achieved. If any of the students were unsure, they were instructed to ask their teacher or staff working with them. If successful, students were allowed to speak with a peer at their table to inform them of their success and spend up to 30 seconds discussing and showing their self-management form to their peers. Since this occurred at the same time for all students in the classroom the duration of this interaction was approximately one-minute in duration, 30 seconds for each student. If a student did not meet their goal they were instructed to inform their peer they had not in fact met their goal. The peer had been instructed, as outlined in appendix B,
on how to provide feedback when someone requests feedback and has not met their goal. If one student had met their goal and the other, peer did not meet theirs, feedback was given in accordance with the performance of the individual providing feedback.

**Inter Observer Agreement**

Inter observer agreement (IOA) was collected for 28 of the 75 observations (37.3%) via the use of a simultaneous and independent secondary data collector. IOA was calculated based on an interval-by-interval IOA approach across and within each monitored behavior (Cooper, Heron, & Heward, 2007). As such, each interval in which the two observers had the same recording code was scored as an agreement, and each interval in which the two observers did not have the same behavior recorded was scored as a disagreement. For IOA regarding the event opportunity behaviors (i.e. accepting feedback, accepting no, following instructions, and teacher prompted attention) only intervals in which an opportunity was recorded were calculated as part of the IOA measure. As such, intervals in which neither observer indicated any opportunity would not be counted as an interval of agreement but rather not counted as an interval. The researcher calculated IOA by dividing the total number of agreements by the sum of the agreements and disagreements and multiplying the quotient by 100%. For free operant teacher attention, which was recorded using a frequency measure, IOA was calculated by dividing the lower total frequency within session by the greater total frequency and multiplying the resulting quotient by 100%. Overall IOA across participants was calculated to be 93.9% (range, 89%-99%). However, due to the fact that IOA for each participant was calculated across instances of agreement and non-agreement for each of the dependent variables it is likely the IOA scores for on-task heavily weighted the overall IOA score, resulting in an inflated agreement score. This is due to the fact that on-task opportunity was scored for every interval while the other targets were
recorded utilizing an event recording system in which intervals were only scored if an opportunity for a behavior to take place were to occur. As such, IOA was additionally calculated for each of the dependent variables across each participant. For on-task the overall IOA score was 98.6% (range, 96%-100%). For following instructions, the overall IOA score was 74.8% (range, 60%-92%). For accepting feedback, the overall IOA score was 34.2% (range, 0%-50%). For accepting no, the overall IOA was 88% (range, 75%-100%). For teacher prompted attention, the overall IOA was 59.4% (range, 0%-100%). For free operant teacher attention, the overall IOA score was 73.9% (range, of 40%-100%). A breakdown of individual as well as overall IOA scores for each participant across dependent variables are outlined in table 1.
Table 1 - Inter-observer agreement scores for individual participants and overall IOA

<table>
<thead>
<tr>
<th>Participant</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
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<tbody>
<tr>
<td>Overall %</td>
<td>95.00</td>
<td>83-100</td>
<td>99.00</td>
<td>97-100</td>
<td>92.00</td>
</tr>
<tr>
<td>Overall %</td>
<td>99.00</td>
<td>95-100</td>
<td>100.00</td>
<td>100.00</td>
<td>99.00</td>
</tr>
<tr>
<td>Follow Instructions</td>
<td>77.00</td>
<td>0-100</td>
<td>92.00</td>
<td>92.00</td>
<td>64.00</td>
</tr>
<tr>
<td>Accepting Feedback</td>
<td>50.00</td>
<td>0-100</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Accepting No</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Teacher prompted attention</td>
<td>75.00</td>
<td>0-100</td>
<td>N/A</td>
<td>N/A</td>
<td>0.00</td>
</tr>
<tr>
<td>Free Attention</td>
<td>81.00</td>
<td>25-100</td>
<td>100.00</td>
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<td>67.00</td>
</tr>
<tr>
<td>Range</td>
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<td>N/A</td>
<td>N/A</td>
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</tr>
<tr>
<td></td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
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<td>Overall</td>
<td>Range</td>
<td>Overall</td>
<td>Range</td>
</tr>
<tr>
<td>99.00</td>
<td>90-100</td>
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<td>100.00</td>
<td>96.00</td>
<td>85-100</td>
</tr>
<tr>
<td>80.00</td>
<td>0-100</td>
<td>60.00</td>
<td>20-90</td>
<td>78.00</td>
<td>0-100</td>
</tr>
<tr>
<td>40.00</td>
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<td>N/A</td>
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</tr>
<tr>
<td>N/A</td>
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<td>N/A</td>
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</tr>
<tr>
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</tr>
<tr>
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<td>50.00</td>
<td>0-100</td>
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</tr>
<tr>
<td>95.00</td>
<td>83-100</td>
<td>89.00</td>
<td>81-97</td>
<td>92.00</td>
<td>75-100</td>
</tr>
</tbody>
</table>
Treatment Integrity

Integrity was determined by identifying whether or not a student was provided with the necessary self-monitoring form, during relevant phases. This was measured by comparing whether or not a student had a filled in, with a minimum of their name signed on the top of the sheet and at least one rating, self-monitoring form for each day in which data was collected by the trained observers. Results indicate that students were provided with their self-monitoring form during the appropriate phase 100% of the time across sessions. Prior to each observation, the observers would confirm the student to be monitored as well as the official start time of the interval. Review of the data collection sheets did not yield any inconsistencies in student, date, or time for recording. In addition, the intervals were signaled utilizing an identical 15-second interval recording message and started simultaneously. No additional measures of treatment integrity were implemented.

Social Acceptability

Following the completion of the study each student and instructor was provided with a survey aimed at assessing perceptions towards the program (see appendix E and F). Each survey asked for information regarding the degree to which the individual perceived each component of the program as feasible, enjoyable, and if they would be likely to use the program again if given the opportunity. All questions on the student form, appendix E, utilized a five-point Likert scale. Although the teacher’s form also utilized the five-point Likert scale for a total of five questions, it also included two open ended questions. The scaled questions inquired the degree to which the participants enjoyed the program as well as a rating of the degree to which each of the independent variables were effective in producing a change in performance. Each scale was
plotted from one through five with a score of one indicating no/not at all, a score of three indicating somewhat and a score of five indicating yes/completely. The open-ended questions (instructor form only, appendix F) asked for suggestions to make the program more effective or compatible with the classroom as well as general feedback on how well the program worked for them.

While a total of 10 students were involved in the study only six were in attendance the day the survey was administered. Students’ response regarding the extent to which students enjoyed tracking their behavior was mixed with an average score of 2.5 (range, 1-5). Students indicated that they enjoyed interacting with their peers, with this item receiving an average score of 3.5 (range, 1-5). Students did however also endorse that the activity was moderately difficult with an average score of 3.3 (range, 1-5). Finally, half the students indicated that they would continue the program with the average rating of 2.8 (range, 1-5).

Staff, reflecting three of the four staff present throughout the course of the study, results suggest staff were unsure as to which intervention was responsible for the change but, that they enjoyed the program overall with an average score of 4 (range, 3-4), and each indicating that they would be somewhat likely with an average score of 3 (range, 3-4), to continue the program. However, as indicated within the open text feedback portion of the survey multiple staff reported that they enjoyed the self-monitoring aspect of the program as well as the use of peer praise. They also indicated that it would be beneficial to continue with the program for their current students. Overall results for the social acceptability feedback survey can be found in Appendix G.
RESULTS

Results for the study, as outlined below, are reported in an initial section, outlining the overall results of the study for participants across the dependent variables as well as a description of the formatting for each of the graphic representations of the data. Subsequently, individual performance for each of the participants is summarized. Individual participant results are divided into an overall summary of performance as well as an individual description of each participant’s performance across the dependent variables.

Overall Results

The current study began with a total of 10 participants. Of the 10 participants three (i.e., Participants 2, 3, & 7) left the study as a result of being placed in an alternative classroom setting. Of the remaining seven participants, only Participant 1 demonstrated no change in performance for any of the dependent variables across each condition of the study. Of the remaining six participants, two (Participants 8 & 9) demonstrated clear increases in performance in at least one of the dependent variables following the implementation of the social skills training. Of those same six, five demonstrated changes in performance in at least one of the dependent variables following the implementation of the self-management 3-min or 10-min programming (i.e., Participants 3, 4, 6, 8, & 9). Finally, of those same six remaining participants four demonstrated performance changes in at least one of the dependent variables following the inclusion of the peer praise component (i.e. Participants 4, 5, 6, & 10). Specific changes in performance for each of the dependent variables are outlined below for each participant. Additionally, each individual’s performance is depicted visually for each of the dependent variables. For all of the graphs the x-axis depicts the session number, primary y-axis depicts the percentage of correct trials for each of the following dependent variables on-task, accepting
feedback, accepting “no”, and teacher prompted attention. On-task is represented as an open square. Following Instructions is represented as an open triangle. Accepting feedback is represented as an open circle. Accepting “No” is represented by a dashed line. Teacher prompted attention is represented by an open diamond. Frequency of free operant teacher attention is depicted as a bar graph utilizing the secondary y-axis.

Participant 1

Overall Performance

Data for Participant 1 is depicted in figure 3. Overall, Participant 1 was identified as having high and stable performance across all dependent variables prior to the implementation of the independent variables. Following the implementation of the interventions no change in performance, for any of the dependent variables, was noted.

On-task

On-task behavior for Participant 1 was high and stable around 100 percent throughout baseline. Following the social skills training Participant 1 maintained high rates of on-task behavior. During the self-monitoring 3-min and 10-min phases Participant 1 continued to have high stable on-task behavior. Following the transition to the self-monitoring and peer praise condition Participant 1 continued high stable on-task behavior. Upon the return to baseline phase Participant 1 continued to maintain high and stable on-task behavior. With the final condition, self-monitoring with peer praise, Participant 1 continued to exhibit high and stable on-task behavior.

Following Instructions

Performance for Participant 1 for following instructions was high and stable around 100% throughout baseline, with exception to the last two data points which showed a declining
trend in performance. Following the social skills training Participant 1 returned to previous levels and stability, as seen in the initial sessions of baseline. During the self-monitoring 3-min and 10-min phases Participant 1 maintained high stable performance in the percentage of sessions in which they followed instructions however, on two occasions during the self-monitoring 3-min phase there were drastic drops in the level of his following instruction with scores dropping to 60% and 0% during those sessions. Following the transition to the self-monitoring and peer praise condition Participant 1 continued their high stable level and trend in following instructions and maintained this throughout the condition. Upon the return to baseline phase Participant 1 continued to maintain high and stable levels of following instructions with all sessions at 100%.

With the final condition, self-monitoring with peer praise, Participant 1 continued to exhibit high and stable levels for following instruction with exception to one data point in which their performance dropped to 0%.

Accepting Feedback

Performance for Participant 1 for accepting feedback was high during baseline but only had one occurrence during observation throughout the phase. Following social skills training Participant 1 maintained high levels of accepting feedback with all sessions being above 95%. During the self-monitoring 3-min and 10-min phases Participant 1 continued to demonstrate high levels and stable performance on accepting feedback, however, only two instances of the target occurred during these phases, one per each phase. Following the transition to the self-monitoring and peer praise condition Participant 1 only had one instance of accepting feedback which was 0% for incorrectly accepting feedback. Upon the return to baseline phase Participant 1 had no instances of the target behavior occurring. With the final condition, self-monitoring with peer praise, Participant 1 had one occurrence of accepting feedback at 100%.
Accepting “No”

Throughout observation there were no opportunities for this target to occur and as such no data for accepting “no” is reflected in figure 3 for Participant 1.

Teacher Prompted Attention

Participant 1’s performance for teacher prompted attention occurred at a low frequency throughout all phases of the study. Instances of this target behavior were only observed during the self-monitoring, 3-min and 10-min phases, as well as during the initial self-monitoring with peer praise phase and the return to baseline phase. Teacher direction attention for Participant 1 was high and stable throughout each of these phases.

Free Operant Teacher Attention

Participant 1’s performance for free operant teacher attention remained variable throughout the course of the study. There were no changes in variability or overall rates of free operant teacher attention throughout the study.
Figure 3. Participant 1’s performance for each of the dependent variables.

Participant 2

Participant 2 only completed a total of six sessions. Following the sixth session, the participant was moved to another classroom. Programming was not transferrable to that
environment. Therefore, data beyond social skills training were not collected.

**Figure 4.** Participant 2’s performance for each of the dependent variables.

**Participant 3**

**Overall Participant Performance**

Data for Participant 3 is depicted in figure 5. Participant 3’s graph only presents data for the first four phases of the study. This is the result of the fact that this individual left the classroom prior to the completion of the program and it was not deemed feasible to continue the study in their new academic setting. As such, this participant was not able to complete the peer-praise component of the study nor were they able to have a demonstration of the reversal.
On-task

Participant 3’s performance for on-task was high and stable, around 100%, throughout baseline. Following the social skills training Participant 3 maintained levels of on-task behavior. High stable levels of on-task behavior were also observed during the self-monitoring 3-min and 10-min phases.

Following Instructions

Participant 3’s performance for following instructions was high and stable around 100% throughout baseline. Following the social skills training Participant 3 maintained a high and stable level of following instructions, with the exception of one session in which following instruction dropped to 0%, session 19. During the self-monitoring 3-min and 10-min phases Participant 3 initially presented with high levels of variability on following instructions but stabilized and this behavior returned to a similar level and stability as what occurred following the social skills training.

Accepting Feedback

Participant 3’s performance for accepting feedback for demonstrated an increasing trend throughout baseline. Following the social skills training Participant 3’s accepting feedback became variable and low with scores ranging from 0 to 70%. During the self-monitoring 3-min and 10-min phases Participant 3 maintained highly variable levels.

Accepting “No”

Throughout the study there were only three observed instances of accepting “no” (sessions 2, 31, and 38). All occurrences were at 100%. 
**Teacher Prompted Attention**

Participant 3 only had one instance, during session 20, of prompted teacher prompted attention throughout the study. This instance was 100% accurate.

**Free Operant Teacher Attention**

Participant 3’s performance for free operant teacher attention remained variable throughout the course of the study. There were no changes in variability or overall rate of free operant teacher attention throughout all phases.

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**Figure 5.** Participant 3’s performance for each of the dependent variables.
Participant 4

Overall Participant Performance

Data for Participant 4 is depicted in figure 6. Overall, Participant 4 demonstrated highly variable performance across all dependent variables during the initial and second baseline as well as during the social skills training phase of the study. Following the implementation of the self-monitoring phases Participant 4’s performance across the dependent variables became much more stable and high. This was also observed during the self-monitoring and peer praise condition.

On-task

Participant 4’s performance for on-task was highly variable throughout baseline with values ranging from 0 to 100%. Following the social skills training Participant 4’s on-task behavior became slightly less variable with values ranging from 45 to 100%. During the self-monitoring 3-min and 10-min phases on-task behavior continued to follow the same level and trend. However, it was noted that during the initial sessions of the self-monitoring 10-min phase on-task behavior was beginning to stabilize at 100% but, performance deteriorated and became more variable during the last six sessions. Following the transition to the self-monitoring and peer praise condition Participant 4 had an initial session of 0% for on-task behavior but, followed this with high stable performance with all sessions being at or above 90%. Upon the return to baseline phase Participant 4’s on-task behavior became highly variable with performance ranging from 40 to 100%. Within the final condition, self-monitoring with peer praise, Participant 4’s on-task behavior returned to similar levels as seen in the prior peer praise condition, demonstrating high stable performance ranging from 80 to 100%.
**Following Instructions**

Participant 4’s performance for following instructions was highly variable throughout baseline with ranges in performance from 0 to 100% with no consistent trend. No changes in following instructions were noted following the implementation of the social skills training. During the self-monitoring 3-min and 10-min phases Participant 4’s following instructions behavior became high and stable with all sessions being at 100% with exception to one session, session 29, in which his performance was 0%. Following the transition to the self-monitoring and peer praise condition Participant 4 continued to demonstrate high and stable performance in following instructions and maintained throughout the remainder of the condition. Upon the return to baseline phase Participant 4’s performance for following instructions again became highly variable with no trend. With the final condition, self-monitoring with peer praise, Participant 4’s following instructions remained variable, but with less overall variation as well as an apparent trend towards high stable performance with only the initial two sessions, 58 and 59, occurring at less than 80%.

**Accepting Feedback**

Participant 4’s performance on accepting feedback was highly variable throughout the phases of the study. With exception to the second self-monitoring and peer praise conditions his performance with accepting feedback never exceeded 50%. However, during the second self-monitoring and peer praise condition it was noted that the one occurrence of accepting feedback was at 100%.

**Accepting “No”**

Throughout observation there were only two opportunities for this target to occur, session 31 and 44. Each instance resulted in performance at 100%.
Teacher Prompted Attention

Participant 4’s performance for prompted teacher prompted attention occurred at a low frequency throughout all phases of the study. Instances of this target behavior were only observed during the self-monitoring 3-min phase as well as during the initial self-monitoring with peer praise phase. Performance for accepting “no” for Participant 4 was variable with accepting “no” being 50% during the self-monitoring 3-min phase and accepting “no” being 100% during the self-monitoring with peer praise condition.

Free Operant Teacher Attention

Participant 4’s performance for free operant teacher attention remained variable throughout the course of the study. It was noted that the overall frequencies of this behavior were trending downward throughout the course of the study independent of phase changes.
Figure 6. Participant 4’s performance for each of the dependent variables.

Participant 5

Overall Participant Performance

Data for Participant 5 is depicted in figure 7. Overall, Participant 5 demonstrated high performance for each of the dependent variables throughout the study with some variation that did not result in consistent change in trend or level.

On-task

Participant 5’s performance for on-task was high and stable throughout all phases of the study with values ranging from 95 to 100%.
Following Instructions

Participant 5’s performance for following instructions was high and stable throughout all phases of the study. While there were several instances in which performance for following instructions dropped, these instances were sporadic and did not appear as part of a consistent change in trend or performance.

Accepting Feedback

Participant 5 maintained highly variable performance on accepting feedback throughout all phases of the study.

Accepting “No”

Participant 5’s performance for accepting “no” was low throughout the initial baseline, social skills training, self-monitoring 3-min and 10-min phases of the study. During the initial self-monitoring and peer praise phase as well as the second baseline phase performance for accepting “no” reached 100%. However, only two opportunities for this behavior were recorded during these two phases of the study.

Teacher Prompted Attention

There were no recorded instances of teacher prompted attention during course of this study for Participant 5.

Free Operant Teacher Attention

Participant 5’s performance for free operant teacher attention remained variable throughout the course of the study showing no impact as a result of the implementation of the various phases of the study.
Participant 6

Overall Participant Performance

Data for participant six is depicted in figure 8. Overall, Participant 6 demonstrated relatively high performance across dependent variables during baseline with exception to following instructions. However, this performance was slightly variable and became more stable during the implementation of the self-monitoring phases including self-monitoring alone and self-monitoring and peer praise. Deterioration was noted in performance following the return to baseline, specifically in free operant teacher attention and on-task performance, and returned to high stable performance following the return to the self-monitoring and peer praise condition.
On-task

Participant 6’s performance for on-task was high with some variation near the end of the baseline phase however, performance remained in the 90 to 100% range. This level of on-task behavior was maintained throughout all other phases of the study.

Following Instructions

Participant 6’s performance for following instructions was initially highly variable with performance ranging from 50 to 100%. Following instructions remained variable during the social skills training phase. Following the implementation of the self-monitoring 3-min phase Participant 6’s following instructions was high and stable with nearly all sessions maintaining at 100%. This was maintained throughout the remaining phases of the study including peer praise and the return to baseline.

Accepting Feedback

Participant 6 maintained highly variable performance on accepting feedback throughout all phases of the study. There were no observed trends in level or changes in accepting feedback in relation to phase changes.

Accepting “No”

There were no recorded instances of accepting “no” during the duration of the study.

Teacher Prompted Attention

There were two opportunities for teacher prompted attention observed during the study, sessions 44 and 58. All observed instances, occurring during the self-monitoring 10-min, self-monitoring with peer praise, and second baseline, were at 100% correct for participant 6.

Free Operant Teacher Attention
Participant 6’s performance for free operant teacher attention remained variable throughout the course of the study with over half of the sessions having a rate of 0. However, it was noted that there was an increase in overall instances of free operant teacher attention during the self-monitoring phases as compared to other phases. Specifically, while self-management was implemented the average rate of free operant teacher attention was .6 per session while during the phases of the study in which no self-management was in place the average rate of free operant teacher attention was only .16 per session.

Figure 8. Participant 6’s performance for each of the dependent variables.
Participant 7

Participant 7 only participated in a total of three observations, as outlined in figure 9. This was due to the fact that participant 7 was increasing participation in mainstream academic work and was out of the classroom during the majority of observation periods.

![Diagram](image)

**Figure 9.** Participant 7’s performance for each of the dependent variables.

Participant 8

**Overall Participant Performance**

Data for Participant 8 is depicted in figure 10. Overall, Participant 8 demonstrated highly variable performance across each of the dependent variables during the baseline and social skills training phases of the study. Following the implementation of the self-monitoring phases including 3-min, 10-min, and peer praise phases, Participant 8’s performance was less variable.
and maintained at an overall higher level than in previous phases. This was maintained following the return to baseline phase with exception to the accepting feedback which demonstrated a precipitous drop following the return to baseline condition.

**On-task**

Participant 8’s performance for on-task was variable, with performance ranging from 60 to 100% during baseline and the social skills training phases. Following the implementation of the self-monitoring 3-min phases on-task became high and stable with performance ranging from 85 to 100%. With exception to two data points, at 68 and 72%, this performance was maintained during the self-monitoring 10-min condition. On-task was noted to become more stable during the self-monitoring with peer praise phase with ranges in performance from 95 to 100%. This level of performance for on-task was maintained throughout the remainder of the study with exception to one data point during the second self-monitoring and peer praise condition in which on-task fell to 80%.

**Following Instructions**

Participant 8’s performance for following instruction was variable throughout the study with performance ranging from 0 to 100% with no consistent trend or increase in stability within individual conditions.

**Accepting Feedback**

During baseline Participant 8 demonstrated only one instance of accepting feedback which was at 100%. During the social skills training phase, accepting feedback performance was much more variable with performance ranging from 0 to 100%. After the implementation of the self-monitoring phases, including the self-monitoring 10-min and the initial self-monitoring and peer praise condition accepting feedback was high and stable, at 100%. Following the return to
baseline condition Participant 8’s accepting feedback dropped to a low stable level with both instances occurring at 0%.

**Accepting “No”**

There were no recorded instances of accepting no during the course of the study for participant 8.

**Teacher Prompted Attention**

There were no recorded instances of teacher prompted attention during course of this study for Participant 8.

**Free Operant Teacher Attention**

Participant 8 only exhibited free operant teacher attention during two sessions of this study, session 7 and 25. These include one session during the social skills training phase and one during the self-monitoring and peer praise condition.
Figure 10. Participant 8’s performance for each of the dependent variables.

Participant 9

Overall Participant Performance

Data for Participant 9 is depicted in figure 11. Overall, Participant 9 demonstrated variable performance, across each of the dependent variables, throughout the duration of the study. However, there were several conditions in which performance for the dependent variables was observed to be stable included self-monitoring 10-min and the second application of the self-monitoring and peer praise. Despite this, it is not clear that the change in this participant’s performance was due to the change in conditions of the study.
On-task

Participant 9’s performance for on-task was highly variable but with an overall upward trend during baseline. During the social skills training phase on-task remained variable but with much less overall variation, with values ranging from 35 to 100%. Following the implementation of the self-monitoring 3-min phase on-task was high and stable with most values occurring within the 93 to 100% range. There were two instances of this value being lower but were not part of an overall pattern of change in trend or level. This performance for on-task behavior was maintained during the self-monitoring 10-min condition. However, following the implementation of the self-monitoring and peer praise condition on-task became notably less stable with values ranging from 40 to 100% with no consistent level. Upon the return to baseline on-task behavior was high and stable, similar to that of the self-monitoring 10-min condition and remained high following the return to the self-monitoring and peer praise condition.

Following Instructions

Participant 9 maintained high levels of following instructions throughout all phases of the study. While some outliers were noted they did not represent an overall change in trend or level throughout the various conditions of the study.

Accepting Feedback

Participant 9 maintained highly variable performance on accepting feedback throughout the phases of the study with the percentage of accepting feedback ranging from 0 to 100% during each session of the study.

Accepting “No”

There were no recorded instances of accepting no observed for Participant 9 during the study.
Teacher Prompted Attention

There were five sessions in which teacher prompted attention was recorded. These instances occurred in the following phases: social skills training, self-monitoring 3-min, and self-monitoring and peer praise. Each observed session demonstrated 100% performance for teacher prompted attention.

Free Operant Teacher Attention

Participant 9’s performance for free operant teacher attention remained variable throughout the course of the study. There were only eight session in which this free operant teacher attention occurred with a range in frequency between one and three. These instances of free operant teacher attention did not occur consistently during any particular phase of the study.

Figure 11. Participant 9’s performance for each of the dependent variables.
Participant 10

Overall Participant Performance

Data for Participant 10 is depicted in figure 12. Overall Participant 10 demonstrated high stability in performance with exception to three groups of sessions in which performance across target behaviors were noted to decline and become highly variable. These reductions were not noted to be in relation to changes in conditions of the study and represent the likely influence of an extraneous variable impacting the participant’s performance.

On-task

Participant 10’s performance for on-task was high and stable throughout all phases of the study. However, there were two notable groupings of sessions in which there was a clear decline in on-task performance. This occurred during the self-monitoring 10-min phase and the second baseline. The high level of variability, ranges 80 to 100%, were observed during the entire duration of the self-monitoring 10-min condition, and the second half of the second baseline condition.

Following Instructions

Participant 10’s performance for following instructions was similar to that of on-task performance for this participant. Overall high and stable levels of following instructions with several notable declines in performance that did not appear to occur in relation to a change in condition.

Accepting Feedback

Participant 10 only had two sessions, session 36 and session 56, in which occurrences of accepting feedback occurred. For these sessions accepting feedback was observed to be 0% each time.
Accepting “No”

There were no recorded instances of accepting no during the course of this study for Participant 10.

Teacher Prompted Attention

There was only one session in which teacher prompted attention occurred, session. During this session teacher direction attention was 100%.

Free Operant Teacher Attention

Participant 10’s performance for free operant teacher attention remained low and stable, with a frequency of one during each session in which it was observed.

Figure 12. Participant 10’s performance for each of the dependent variables.
DISCUSSION

The goal of this study was to evaluate possible additive effects of a peer-praise procedure to an established classwide self-monitoring program. The study attempted to determine the effects of the self-monitoring program and the self-monitoring with the peer-praise procedure on several target behaviors including on-task and off-task behavior as well as accepting feedback, accepting “no” for an answer, following teacher instructions, and gaining teacher attention. Four participants were responsive to the inclusion of a peer praise procedure (Participants 4, 5, 6, & 10). For two students, the target behaviors did not need improvement (Participant 1 & 9), and other students may have in fact been reactive to the intervention in such a manner that it had a negative effect in the class (Participant 4). This reactivity was based on subjective feedback from the student and teacher as opposed to the participant’s session data, which suggested the inclusion of peer praise to be effective in increasing and stabilizing performance but, may fail to be a social acceptable intervention for some individuals.

Despite the limited impact of the peer-praise, the self-management program produced improvement for five of the seven students. One of the other students was already performing so well he had little room for improvement, likely due to the self-monitoring component.

Of the six other participants, four improved following the implementation of the peer praise procedure beyond that of the self-monitoring procedure alone. As such, it is apparent that the impact of these procedures is likely to be idiosyncratic across participants. Several factors may have produced these mixed results. Throughout training each participant was observed in real time during regularly scheduled classroom programming. This may have resulted in observer reactivity for the students in response to the data collectors’ presence during the study. However, this is unlikely for two reasons. One is due to the fact that the researchers were located
in the room each day of class providing the students with a consistent presence, which was unlikely to impact performance each day and was consistent throughout baseline as well as intervention. Additionally, there were no reports from the teacher of differential performance in the classroom following the researchers leaving the room or on days in which the researchers were not present. However, it is important to note that this information was taken informally as opposed to measured or evaluated directly.

In addition to the independent variables evaluated in the current study participants were already actively engaged in a self-monitoring and classwide reinforcement program. This was a program in which students would monitor their performance for multiple class behaviors every two hours and in turn would allow them to participate in the classroom token system. This token system allowed for students to gain access to preferred items and activities including breaks from homework and drinks or snacks. Despite the existence of this system being in place throughout the duration of the current study there remained sufficient variation in the dependent variables to allow for the observation of treatment effects. Additionally, the existing classroom programs, self-monitoring and token system, had been in place for a long period of time yet, there remained a consistent need for the teachers and staff to provide additional supports and prompts to manage behavior. As such, any change in behavior is likely attributable to the conditions of the study as opposed to the long-standing and static features of the class-wide reinforcement program.

While no consistent negative effects were observed as a result of the peer praise intervention, Participant 9 did demonstrate a decline in performance during the first implementation of the peer-praise phase. But, this decline was not observed during the second implementation of the peer-praise phase for this participant. In addition, and despite the absence of negative change following the implementation of the peer-praise intervention, several
participants did report verbally that they did not like reporting their performance to their peers and that they did not like speaking to specific peers located in the room. These reports may explain the low ratings half of the students gave when completing their social acceptability feedback surveys.

An evaluation to which participants accurately monitored their performance or provided appropriate praise was not directly measured or manipulated. While research has shown that accurate recording of behavior within a self-management program is an effective means to achieve behavioral change (Ganz, 2008), including academic success as well as reductions in problem behavior, the extent to which interventions such as self-monitoring actually require accurate recording to produce changes in behavior may be less clear (Ardoin & Martens, 2004). As such, it is not clear to what extent the failure of the current research to monitor or manipulate self-monitoring accuracy may have impacted the implementation of the independent variable. It is possible self-monitoring without accuracy in reporting may successfully achieve behavioral change as the intervention itself serves as an instruction or prompt independent of a reinforcement. Thus, suggesting that self-monitoring could potentially have functional independence between the accuracy of self-monitoring as a controlling response and any number of impacted controlled responses. Specifically, the act of self-management programming would not need to be implemented with any particular degree of integrity to achieve an impact on the controlled responses. However, it is critical to say that, should the controlling responses occur, monitoring, without contingencies in place for the controlled response (e.g. on-task behavior, positive social interactions, task completion) it is not likely any changes will occur or maintain.

No measure of treatment integrity with regard to the degree to which students provided accurate or appropriate feedback was utilized. The absence of this measure results in a variety of
concerns. First, it is possible students were provided with inaccurate or generalized feedback during these interactions, which could result in the failure of reinforcement of the targeted behaviors. This may be of importance as the use of performance specific praise has been shown to be an appropriate tool to augment peer performance (Kern, Wacker, Mace, Falk, Dunlap & Kromery, 1995). Specifically, it is not clear the degree to which generalized or non-specific feedback impacts performance for students. Additionally, inaccurate feedback may actually result in providing the students with inappropriate instruction resulting in change in performance regardless of the quality of the existing behavior change, thereby altering performance in unintended behaviors, those not targeted by the self-management program. Beyond generalized or inaccurate feedback, it is also possible that peers may have provided students with criticism in response to either their performance or the interaction itself. This may have resulted in a punitive effect for requesting peer feedback as well as the target behaviors. Future research should seek to investigate the degree to which the accuracy of feedback may impact performance as well as the extent to which those interactions may be impacted including an increase or reduction in requests for the individual receiving feedback.

Finally, within the current study there was no specific procedure implemented for when a student requested peer praise and feedback. That is to say a student may not have been successful (i.e. failed to achieve the goal of four out of five intervals with successful demonstration of the target behaviors) but still be capable of accessing peer attention. As a result, peers may have inadvertently provided praise to the student when in fact they were not supposed to provide praise. This may have resulted in students’ performance remaining stable or even falling as it was no longer contingent upon being able to access peer interactions or praise. However, it is also possible that these interactions in which students were expected to share their data may have
been aversive resulting in negative effects including a reduction in interactions, false reporting, or avoiding social environments in which one is expected to share their performance. Thus, it may have been the case that effect of the peer feedback component was not a function of the peer’s praise serving a positive reinforcing function, but rather, the avoidance of interactions that would serve to negatively reinforce better performance across the various dependent variables.

Another potential limitation included the duration of the current study resulting in there being limited opportunities to implement a sufficient number of condition reversals. Specifically, only two reversals were implemented in which participants transitioned from the self-monitoring and peer praise to baseline conditions and the second in which they transitioned from that baseline back to the self-monitoring and peer praise condition. It is possible that additional reversals between baseline, self-monitoring, and self-monitoring and peer praise may have assisted in further determining the effects of the programming on participant performance. However, the duration of the current study was limited by the academic calendar of the classroom and as such limited the ability of the researchers to implement these additional reversals. Additionally, due to the fact the interventions were applied on a class-wide basis it was not possible to fully evaluate through individualized phase changes, except post-hoc, stability and trend within individual performance. As such, the current design prevented the researcher from implementing the independent variable within a true single subject approach as performance for each participant did not guide the application or removal of the independent variable. This limitation could have resulted in the researchers being unable to fully demonstrate control of the independent variables as such failing to demonstrate and effect of the intervention. Future research should seek to evaluate this program within a research design that may allow for greater experimental control. This would suggest, among others, smaller groups with single
subject designs such as a multiple baseline across participants (e.g., Kern, Dunlap, Childs, & Clarke, 1994). However, these approaches may not be ideal given the complexities of implementing a class-wide program for individuals across classroom settings. An alternative approach may include an independent groups design in which comparisons are drawn based on the performance of groups or classes with those that have not had similar programming. While this approach would allow for the implementation and evaluation of a class-wide program it may limit the ability to identify or evaluate individual or idiosyncratic effects of the intervention as noted within the current study.

Finally, it is possible the dependent variables accepting feedback, accepting “no” for an answer, following instructions, and gaining teacher attention may have not been sensitive enough as a measure to determine the effects of the programming. This can be largely attributed to the fact that, unlike the other targeted behavior (on-task and free operant teacher attention) these behaviors were opportunity bound, meaning, the only way a student would be eligible to engage in these behaviors would be if the opportunity was provided by the teacher. As such, most of the participants had a significantly decreased number of observations of these target behaviors as compared to on-task. It might have been possible for the researchers to provide the students with structured probe opportunities in which teachers would have provided fixed opportunities to engage in these behaviors throughout observations. Providing these structured opportunities may also have assisted in increasing the overall agreement in recording the dependent variables as it would have allowed for greater clarity in identifying opportunities, as they would be controlled. Despite the benefits of utilizing structured opportunities, the use of contrived opportunities like these would likely have resulted in additional feedback from the teachers to the students through the opportunity to practice the skills. It would also have presented with an environment in which
the reinforcement rates or interactions would be inconsistent with that of the natural environment. However, the use of contrived opportunities may pose a risk to social acceptability in the form of the teacher having greater demand and expectations than typical.

Future research should look to address the limitations and questions outlined above. These include evaluating the degree to which the intervention may be impacted through the use of differential reinforcement as well as peer interaction. The current study allowed for attention from peers to occur but failed to control the quality or accuracy of the request or provision of that attention. Future research might instead examine the impact of allowing for peer attention to be contingent on completing or achievement of behavioral performance goals as this may further increase performance and result in greater improvement in the behaviors tied to the contingency. However, it is important to note that while future researchers may look to increase performance through the use of a differential peer praise procedure, it is possible this could result in an increased likelihood that inaccurate recording could occur as a result of the demand on performance. That is to say, students may be placed in a position in which the report of their performance may not match actual performance, as reporting of positive performance is what would result in peer interactions. Potential solutions to this would be to include within the program some form of agreement through teacher or peer ratings to assure accuracy in monitoring. Related, would be an evaluation of the degree to which the target behaviors are accurately monitored by participants and its impact on performance. While controlling for accuracy to gain access to peer praise may increase performance, researchers could evaluate the degree to which tracking needs to be accurate. It is possible that a student could achieve low levels of accuracy in reporting while still obtaining objective and reliable increases in performance. Allowing researchers to better understand the controlling variables impacting
performance within a self-monitoring program would greatly influence the design and implementation of these programs. An additional factor that future research should evaluate is the extent to which individual preference in peers and the interactions with preferred versus less preferred peers may impact performance. Research has suggested that the inclusion of function-based reinforcement procedures have aided in the success of self-monitoring programming (Hansen, Wills, Kamps, & Greenwood, 2014). The inclusion of a peer in an intervention such as self-monitoring may not be identical to the inclusion of a function-based stimuli, unless the behavioral deficits are maintained by peer attention. Allowing the student to identify the peer with whom the interaction would occur may better assist in determining which peer interactions may serve to reinforce specific performance. Additionally, working with the students to identify preferred interactions may be important as it is possible that positive feedback on behaviors related to good classroom performance may not be reinforcing with all peers or all interactions with peers. Within the current study, it was noted on several occasions that the students did not want to interact with the designated peer for the peer component of the study but, would rather have interacted with other peers or staff in the room. Specifically, multiple peers identified one student as being “gross” and expressed that they did not want to meet with him. The inclusion of a preferred peer may assist in assuring the reinforcing nature of the controlling responses within the self-management program. It is possible that programming such as this could be modified to prevent negative interactions as those describe above as well as to provide increased positive interactions with peers identified as non-preferred. However, the selection of peers by the participant is not necessary or outlined in similar research, such as that of Wolford, Heward, and Alber (2001). Further investigations should seek to evaluate these variables. Finally, future research should look to evaluate this program within the scope of an individual, single subject,
research approach. Given the application of the current program in a class-wide format it was not feasible to implement sufficient reversals, make individual performance decisions for phase changes, or to control the various aspects of the procures such as accuracy in requesting peer interactions or in the quality of feedback provided by peers. As such, the current study may not provide sufficient experimental control to demonstrate adequately the effects of the peer praise component of the program. An individual approach may allow for further clarification of the effects of the intervention and the modifications as outlined above.

Despite the various limitations of the current study, of those participants who remained in the program, 67% had increased performance for at least one of the targeted behaviors following the implementation of the peer-praise component. Additionally, these effects were shown to be sensitive to the reversals with a reduction in performance across the dependent variables following the return to baseline condition and a subsequent increase with the reversal back to the peer-praise phase. Two participants in particular (Participant 4 & 10) demonstrated clear declines in performance upon the return to baseline condition and a reoccurrence of high stable performance following the second implementation of the peer praise and self-monitoring component. As such, it appears as though a self-monitoring with peer praise component may have been an effective intervention in assisting some students in maintaining pro-social and beneficial classroom behaviors including remaining on-task, accepting feedback and no from the teacher, following instructions, and gaining the teachers attention.
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Effects of problem behavior, academic engagement, and work completion in a

learning disabilities to recruit peer assistance during cooperative learning group
### APPENDIX A:

Data Collection Sheet

<table>
<thead>
<tr>
<th>Behavior</th>
<th>Interval</th>
<th>Notes:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1  2  3  4  5  6  7  8  9  10  11  12</td>
<td></td>
</tr>
<tr>
<td>On/Off (-)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Instruction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feedback</td>
<td></td>
<td></td>
</tr>
<tr>
<td>“No”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T.Attention</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Free Attn</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Mark with (-) for opportunity
Mark with (+) for event of behavior

<table>
<thead>
<tr>
<th>Behavior</th>
<th>Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>13 14 15 16 17 18 19 20</td>
</tr>
<tr>
<td>On/Off (-)</td>
<td></td>
</tr>
<tr>
<td>Instruction</td>
<td></td>
</tr>
<tr>
<td>Feedback</td>
<td></td>
</tr>
<tr>
<td>“No”</td>
<td></td>
</tr>
<tr>
<td>T.Attention</td>
<td></td>
</tr>
<tr>
<td>Free Attn</td>
<td></td>
</tr>
</tbody>
</table>

### Notes:

<table>
<thead>
<tr>
<th>Behavior</th>
<th># of Int/Opp</th>
<th># of intervals with occurrence</th>
<th>Percentage of Int/Opp</th>
</tr>
</thead>
<tbody>
<tr>
<td>On-Task</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Follow Instruction</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accepting Feedback</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accepting “No”</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gaining Attention</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Mark cell with an * if child completes sheet during the interval
APPENDIX B:

Lesson Plan for Establishing Classwide Social Skills

**Objective:** Given an opportunity to demonstrate appropriate classroom social skills students will be able to accurately state the skill they are implementing and the necessary steps, while providing a model of the steps as they state each step. Students will be able to do demonstrate this skill, across each skill, once at 100% accuracy as demonstrated during the lesson.

**Materials Needed:** For this training students will be provided with a list of the skills being trained (as identified below) and a selection of candy and edible rewards (identified as appropriate by the classroom teacher).

**Steps of the Lesson**

1. **Framing and Warm-up:** Students will be provided with a welcome activity, in which they will be introduced to the trainers (the researcher and his research assistants) and the goal of the activity. The goal of the activity will be stated as an opportunity for students to have more success in the classroom and gain access to additional rewards as outlined by their classroom level and token system. Additionally, the goal of the training will be to assist students in building peer relationships and working together as a team.

2. **Present New Material:** The session will follow the following process of instruction
   - Verbal review of each skill in a group setting
   - Skill by skill review with a verbal description of each skill and its’ steps. Followed by an opportunity to respond in a choral responding format. Followed by a behavioral model of the skill provided by the research assistant. Again, students will be provided with an opportunity to demonstrate the skill in a group practice format.
   - Students will be broken up into their typical small group format (three student groups) and each group will be assigned one of the three instructors in the room. The instructors will provide each student with an opportunity to demonstrate each skill individually. Any errors in responding will be provided with a corrective rehearsal trial in an “I do”, “We do”, “You do” format. If students demonstrate the skill correctly on the “you do” trial they will be checked off as having demonstrated the skill. If a student does not then demonstrate the skill the instructor will move to the next skill, if available, and return the improperly demonstrated skill later. Students will be expected to demonstrate each skill without error to conclude the training session.

   - **Wrap-up:** Students will return to the whole group setting and will be provided with praise for participating in the training. They will be provided with an activity in which the group, for correctly demonstrating the skills when called on, will earn rewards. If a student is unable
to demonstrate a skill during this test additional training will not take place and peers will be allowed to provide prompting to assist them with demonstrating the skill.

Skills for Students to Be Effective Members of the Classroom

Following Instructions:
1. Look at the teacher
2. Say, “ok”
3. Begin the new task immediately
4. Check back when necessary

How to Get Teacher’s Attention:
1. Look at the teacher
2. Raise your hand (if teacher’s back if to you, say name of teach once using pleasant voice).
3. Wait for acknowledgement by the teacher
4. Say your statement using a pleasant voice tone.

How to Accept Feedback or No for an Answer:
1. Look at the person
2. Say “OK”
3. No arguing, whining, pouting, and so on.
4. If you do not understand why, ask calmly for a reason.
5. If you disagree of have a complaint, make arrangements to talk about it later.

How to Provide Descriptive Feedback
1. Acknowledge the request for feedback
2. Determine the behavior for which feedback is being provided
3. Provide statement of praise which includes a description of the behaviors for which praise is being delivered
4. Do not discuss instances of problem behavior or discuss their future occurrence.
5. Restate the goal or standard for providing their next praise statement.
APPENDIX C:

Skills for Students to be Effective Members of the Classroom

Following Instructions:
5. Look at the teacher
6. Say, “ok”
7. Begin the new task immediately
8. Check back when necessary

How to Get Teacher’s Attention:
5. Look at the teacher
6. Raise your hand (if teacher’s back if to you, say name of teach once using pleasant voice).
7. Wait for acknowledgement by the teacher
8. Say your statement using a pleasant voice tone.

How to Accept Feedback or No for an Answer:
6. Look at the person
7. Say “OK”
8. No arguing, whining, pouting, and so on.
9. If you do not understand why, ask calmly for a reason.
10. If you disagree of have a complaint, make arrangements to talk about it later.

How to Provide Descriptive Feedback
6. Acknowledge the request for feedback
7. Determine the behavior for which feedback is being provided
8. Provide statement of praise which includes a description of the behaviors for which praise is being delivered
9. Do not discuss instances of problem behavior or discuss their future occurrence.
10. Restate the goal or standard for providing their next praise statement.
APPENDIX D:

Feedback for Self-Monitoring and Peer Praise Procedure

1. Did you enjoy tracking how well you followed class rules?

<table>
<thead>
<tr>
<th>No</th>
<th>A Little</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

2. Did you like when you were able to talk with your peers about how well you did?

<table>
<thead>
<tr>
<th>No</th>
<th>A Little</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

3. Did you find it difficult to keep track of your performance?

<table>
<thead>
<tr>
<th>No</th>
<th>A Little</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

4. Would you like to continue to track following class rules and interact with your peers?

<table>
<thead>
<tr>
<th>No</th>
<th>A Little</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX E:

Feedback Form for Teachers for Peer Praise Program

1. Did you enjoy having the program in the classroom?

<table>
<thead>
<tr>
<th>Not at all</th>
<th>Somewhat</th>
<th>Completely</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

2. How much do you think the social skills training program helped?

<table>
<thead>
<tr>
<th>Not at all</th>
<th>Somewhat</th>
<th>Substantially</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

3. How much do you think the self-monitoring alone helped?

<table>
<thead>
<tr>
<th>Not at all</th>
<th>Somewhat</th>
<th>Substantially</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

4. How much do you think the self-monitoring with peer praise helped?

<table>
<thead>
<tr>
<th>Not at all</th>
<th>Somewhat</th>
<th>Substantially</th>
</tr>
</thead>
<tbody>
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<td>1</td>
<td>2</td>
<td>3</td>
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<tr>
<td>4</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

5. Would you like to continue this program?

<table>
<thead>
<tr>
<th>Not at all</th>
<th>Somewhat</th>
<th>Definitely</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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<td>3</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

6. If you would not like to continue the whole program are there components of the program you would like to keep?

7. Do you have any other comments or suggestions?
APPENDIX F:

Social Acceptability Survey Results

<table>
<thead>
<tr>
<th>Students</th>
<th>Question 1</th>
<th>Question 2</th>
<th>Question 3</th>
<th>Question 4</th>
</tr>
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<tbody>
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<td>6</td>
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<tr>
<td>Overall</td>
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<td>3.5</td>
<td>3.3</td>
<td>2.8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Teachers</th>
<th>Question 1</th>
<th>Question 2</th>
<th>Question 3</th>
<th>Question 4</th>
<th>Question 5</th>
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<tbody>
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<td>4</td>
<td>3</td>
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<td>Overall</td>
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<td>3.3</td>
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APPENDIX G:

Literature Review

Review of Self-Management and Self-Monitoring as an Embedded Secondary Intervention for the Management of Classroom Behavior

Sean P. Field

Western Michigan University
Abstract

The effects of self-management as an intervention for individuals presenting with poor academic performance, aberrant behavior, or deficient social skills (e.g. Keel, Dangel, & Owens, 1999 and McLaughlin, Williams, & Howard, 1998) are well documented and established. However, much of the research supporting self-management is used on an individual or targeted basis, often placing demands on instructors and teachers, which result in limited time for other students. While peer-tutoring (Moran and Malott, 2004) as well as class-wide interventions such as Class-Wide Function-related Intervention Teams (Kamps, et al., 2011) have demonstrated to be effective interventions for groups of children, it is possible self-management may be a beneficial component which, may replace or supplement these interventions. Thus, the current review sought to evaluate the literature with respect to self-management and class-wide or peer-mediated models of intervention. Discussion of the current literature is provided as well as directions for future research.

Keywords: Self-Management, Peer-Tutoring, Class-Wide, Positive Behavior Supports
Educational settings represent a diverse environment in which teachers are expected to teach and students are expected to learn. However, there are a variety of barriers that can impact this exchange from occurring. These barriers include limited teacher preparation time, increased class sizes, increased demands for testing, and aberrant behaviors exhibited by students (e.g. American Federation of Teachers, 2013; Emmer & Stough, 2001; Lago-Delello, 1998; Organisation for Economic Co-operation and Development, 2014). Of these barriers, aberrant behavior is an indicator of increased risk of being excluded from typical educational programming and can result in students being removed from a least restrictive educational setting (George & George, 2005). Not only can the loss of academic instruction occur when students are removed from the classroom, but this can also lead to diminished social and emotional development (Greenbaum & Dedrick, 1996) and even result in an increased risk for engaging in delinquent and criminal behavior (Katsiyannis, Zhang, Barrett, & Flaska, 2004). This concern is even greater for students that engage in aberrant behaviors such as those with Emotional Behavioral Disorders (EBD) (Lago-Delello, 1998) and those with Developmental Disabilities (DD) as these individuals already present with a higher risk in engaging in these behaviors that may result removal from a least restrictive educational (LRE) setting (Landrum, Tankersley, & Kauffman, 2003). In recent years, efforts have been made to assure that children, regardless of need be provided with a LRE setting. As the push continues to have students with developmental and emotional behavioral disorders to participate in typical or inclusionary classroom settings (National Center for Educational Statistics, 2015) the need for children to gain the skills necessary to participate in independent class routines has increased. Achieving these outcomes while successfully addressing problem behavior and maintaining an appropriate
demand on teachers can be complex and involves the use of evidence-based interventions that are carefully implemented and monitored.

To address some of these issues, particularly the reduction of problem behavior and increasing student engagement, schools must call upon relevant and evidence-based literature focused in the assessment and remediation of these problems. Common themes in evidence-based approaches are determining environmental variables responsible for behavioral issues, the use of least restrictive interventions to address problem behavior, and the use of data to determine the effectiveness of these programs. While there are a wide number of interventions attributable to each approach, one procedure for addressing problem behavior that has garnered attention in the past two decades is that of self-management (Ganz, 2008). Self-management has been demonstrated to be an effective procedure for addressing problems in a variety of populations including Autism (National Autism Center, 2015), Attention Deficit Hyperactivity Disorder (ADHD; DuPaul, Eckert, & Vilardo, 2012), and Emotional Behavioral Disorder (EBD; Hansen, Wills, Kamps, & Greenwood, 2014). In addition to various populations self-management programs have been effective for a wide array of age groups including pre-school children (Reinecke, 1999), adolescents (Wolford, Heward, & Alber, 2001), and adults (Ganz & Sigafoos, 2005). Within these populations self-management has been demonstrated to be a robust intervention for developing on-task performance and work completion (Todd, Horner, & Sugai, 1999) increasing social skills (Peterson, Young, Salzberg, West, & Hill, 2006), homework completion (Cancio, West, & Young, 2004), and peer mediated learning (Wolford et al., 2001).

While the application of self-management as an intervention has been shown to be effective it is critical to acknowledge that self-management is an intervention package as
opposed to a unitary skill development program. Self-management can be described as a set of behaviors related to the identification, monitoring, and managing of consequences for specified target behaviors and often includes components related to self-monitoring, self-evaluation, self-instruction, goal setting, and strategy instruction (Mooney, Ryan, Uhing, Reid, & Epstein, 2005). As outlined in Mooney et al., (2005), self-monitoring is a process by which students are expected to determine when a behavior has or has not occurred and accurately record the respective performance. Self-evaluation requires students to compare their performance, as recorded during self-monitoring, to a pre-determined goal. Self-instruction includes students managing the presentation of cues to produce or direct their own behavior. Goal setting is the process by which a student identifies a performance level at which he/she would like to perform. Finally, strategy instruction is when a student is provided with a rote skill that will allow him/her to problem solve new problems without the need for additional instruction. Self-management can be conceptualized as a combination of any number of these procedures to address a target behavior, which can include aberrant or socially acceptable behaviors. As such, when self-management is being used as an intervention careful attention must be paid to which components are being implemented.

One of the most commonly researched and implemented components of self-management is self-monitoring target behavior(s) (McDougall, 1998; Mooney, Ryan, Uhing, Reid, & Epstein, 2005). While self-monitoring programs have been demonstrated to be independently effective (Mooney et. al, 2005) researchers have attempted to increase its utility by including additional components. Components that have been studied include the use of performance specific feedback (Kern, Wacker, Mace, Falk, Dunlap & Kromery, 1995), the inclusion of function-based
reinforcement (Hansen et al., 2014), instruction for students recruiting praise for their performance (Alber & Heward, 2000), and the inclusion of peers in providing feedback and support in program implementation (Wolford et al., 2001). The goal of including these additional components to a self-monitoring program is to increase the durability and generalization of the skill, as self-monitoring alone is often unable to, individually, produce long-term generalized behavioral change.

For example, Hansen and colleagues (2014) examined the effects of using a reinforcement program based on the outcomes of a functional assessment procedure on students’ on-task and disruptive behavior. Following baseline and assessments three conditions were evaluated including, self-management (SM), function based self-management (FBSM), and a function-based consequence condition. The difference in the SM and FBSM conditions was the presence of a function-based reinforcer provided contingently on the performance during the FBSM condition. After evaluation of the SM and FBSM conditions, the researchers evaluated the effects of a function based reinforcement procedure alone. This reinforcer was the same as that used in the FBSM condition but was not tied to any self-management response on the part of the participant. While the study utilized a reversal design, no counterbalancing was utilized to control for ordering effects. Results suggested that the use of a function-based reinforcer in addition to a self-monitoring program as compared to a self-monitoring program alone was more effective, increasing on-task behavior and decreasing classroom disruptions. Additionally, the research indicated that the use of a function based reward system for good performance was less effective than the function based reward and self-monitoring condition. While promising, the use of this procedure required additional teacher involvement in the management of problem
behavior through the use of the self-management forms and tracking of the behavior to determine access to the function-based consequence as well as the delivery of the function-based reinforcer.

In another study Todd, Horner, and Sugai, (1999) evaluated the effects of a self-monitoring program that included a self-recruited praise component. In this study researchers worked with children in grades three and four, all of whom were on Individualized Education Programs (IEPs) and were selected for inclusion due to rates of problem behavior in the classroom which included talking to peers, touching peers, making noises, being out of seat, and playing with non-work related materials. Participants were exposed to a self-monitoring and self-recording program which included a schedule for students to request feedback for their performance from their teachers. This intervention was successful in increasing academic engagement and work completion. While this intervention was successful in addressing the problem behavior it was also the case that the teacher would have additional demands placed on her throughout the program if she were to maintain programming. These included providing additional function-based praise, management of the program, and time dedicated to evaluating performance. While the praise and management was identified as a demand the continued monitoring of the performance was placed on the student and thus was less demanding than programs that require continuous monitoring and evaluation by the teacher. Additionally, as reported in the Todd et al., (1999) paper, teacher acceptability was initially low but increased as programming continued and the teacher requested at the completion of the study that they would continue the programming and would likely expand it to other academic settings. This would support the argument that inclusion of other components designed to increase independence of
self-management programs, such as self-recruited praise, may impact positively, acceptability and maintenance of programming following research-focused evaluations.

Research conducted by Wolford, Heward, and Alber (2001) evaluated the effects of providing middle school students with instruction to gain attention from not only their teachers but also their peers. Specifically, each student was individually trained to recruit assistance from peers during work activities by one of three methods including, tapping a peer on the shoulder or back, a verbal request, “Is this correct?”, or by waiting for the peer to look towards them to then engage in the verbal request. The results of this study indicate that peer attention, even in the form of assistance as opposed to praise, resulted in increasing on-task behavior. Additionally, the intervention resulted in an increase of positive praise provided by those peers, and an increase in positive teacher opinion of the procedure despite the fact that neither of these was directly targeted for intervention in the study. In addition to positive teacher opinion, this study demonstrated that peers enjoyed the intervention, as determined by interviews completed following the conclusion of the program. Furthermore, increases in students’ overall use of praise outside of confines of the study itself were also demonstrated. Although this study demonstrates the power of peer attention and feedback as an intervention there remain several issues. For example, the extent to which requests for assistance were actually necessary is unclear. As such, peers may have asked for additional feedback throughout the class session when feedback was not needed placing demands on the peers, resulting in potential declines in peers’ academic performance. Another limitation is the extent to which peer request for assistance resulted in increased work accuracy and completion. Meaning, students may have requested feedback and the resulting interaction may not have had any meaningful impact on the
quality or quantity of academic performance. Thus, the intervention may have been acceptable and enjoyed but did not provide a valid change in the target behaviors. Finally, it is not clear how an intervention such as the one investigated in this study effectively trained peers to differentiate between appropriate and inappropriate times to request assistance. As such, while the results indicated that they did not experience any concerns in the current study, peers may not have provided their fellow students with feedback that was productive. Or, more specifically, may have resulted in punitive interactions, which would further inhibit student interactions or reductions in the academic performance of both peers and students.

Despite the promising outcomes outlined in the Wolford et al. (2001) study and the number of investigations demonstrating the effectiveness of interventions that blend self-monitoring and self-recruited, teacher-mediated praise (Alder & Heward, 2000) there remains a near absence of research evaluating research utilizing peer-based supports or the use of self-management as an intervention applied in a broader setting than that of an individualized intervention plan. Research establishing self-management as an intervention is often employed as a standalone intervention utilized for individuals presenting with the greatest need, such as those represented by tier three within the Positive Behavior Supports (e.g., Luiselli & Diament, 2009) model. Self-recruited praise from peers combined with self-management is of particular interest due to the unique pressures facing teachers, including increased class sizes, increased instructional demands, and limited preparation time for instructional design. In addition, teachers have demonstrated appreciation for interventions that utilize peer involvement and reduce additional teacher demands that students with behavioral support needs may require (e.g., Mahoney et al., 2005; & Wolford et al., 2001). One application of self-management that can be
applied on a class-wide scale is that of the Self-Match system (Salter and Croce, 2102) in which students utilize a self-management program, including self-monitoring and self-evaluation, connected with some form of group contingency providing differential reinforcement for performance. Programs such as these would allow the use of an effective intervention at the class-wide level as opposed to an individualized intervention for targeted students within the classroom. Additionally, the application of such a robust intervention may allow for greater development of skills, deemed critical in the success of students, that might not be captured by an individualized plan, especially those identified as “at-risk” (e.g., Keel, Dangel, Owens, & Sherie, 1999; Mooney, Epstein, Reid, & Nelson, 2003).

Knowledge of and the ability to implement class-wide, evidence-based interventions may provide teachers with tools they can apply to garner meaningful outcomes for students (e.g., increasing desirable classroom behaviors) while simultaneously having benefits for their role as the teacher (e.g., limiting time and energy to managing and applying the intervention). Thus, the goal of the current review was to systematically review and evaluate the status of research on self-management and self-monitoring as both a universal, class-wide intervention or tier two strategy targeting students in an academic setting.

Methods

Search Procedures

Two observers conducted a systematic and independent search using the following terms across three databases; Self-Management AND Children AND Class-Wide; Self-Management AND Children AND Peer Tutoring; Self-Monitoring AND Children AND Class-Wide; and Self-Monitoring AND Children AND Peer Tutoring. The following databases were used to execute
the searches: Education Resources Information Center (ERIC), PsycINFO, and PsychARTICLES. There were no limits regarding date of publication or additional specific criteria (e.g., diagnosis, age, setting). However, only peer-reviewed articles were included in the search. Following the initial search, a list of all results was compiled, removing duplicate publications across databases. Only articles identified by these search criteria, were reviewed. That is to say, no additional articles were included in the review even if they may have been relevant (i.e. citations within the reference sections of the identified articles).

**Inclusion and Exclusion Criteria**

Following obtaining the list of articles that met the search standards, abstracts (and full articles if necessary) were reviewed to determine relevance. Given the question regarding self-management and self-monitoring as a class-wide or peer-based program for children as therapeutic practice, relevance was defined as any peer-reviewed publication that assessed the effects of those interventions on targeted behavior in an educational or classroom setting. As such any article included in this review would have been a self-management or self-monitoring program that identified children, specifically individuals’ pre-school through secondary education, as the primary population and included an intervention that intervened at a class-wide level or included a peer as part of the intervention. Literature reviews and discussion papers were excluded for further analysis. Following the completion of this review a comparison of each list was completed to remove duplicate listings and determine a final list of articles for the current review.

**Publication Review Process**
Each of the articles identified were evaluated using a descriptive analysis detailing the author’s/authors’ name(s) and date of publication, participants, targeted behaviors, research design, description of the intervention, treatment integrity, inter-observer agreement, and a description of the results. Population included participant ages, grades, and settings as described in the studies. Target behaviors included a description of the dependent measures of the study as well as the measurement procedure utilized by the study. Research design was evaluated and reported based on the design used as well as a description of the condition should the study have employed a modified design or more than a treatment and comparison condition (i.e. control group or baseline). The description of the intervention(s) included information regarding the condition variables that were manipulated as well as environmental conditions reported by the researchers that may have influenced performance (e.g. existing reinforcement programs utilized within the classroom). Description of IOA and treatment integrity included the percentage of session in for which either measure was collected as well as the reported performance for each of those measures. Finally, a summary of the results provides an overview of the outcomes of the study as reported by the researchers.

Reliability of Search Procedures and Inter-Coder Agreement

A comparison of identified articles for inclusion, as based on the review of abstracts or article if necessary, was completed for each article identified in the search to determine an overall agreement for publication inclusion agreement. Agreement was 100% for all articles that were eligible for inclusion in the study.

Reliability of Descriptive Analysis
Each article was evaluated across the seven dimensions outlined above by an independent evaluator. Results were then compared across raters to determine agreement between ratings for each of the dimensions across raters. Due to the fact that the ratings were descriptive agreement was determined if each of the critical components of information were present and included the same information. For example, if a rater reported that the research design was a single-subject design with a session order of ABABAC and the other rater reported that the design was a reversal design with order of ABABAC this would be counted as an agreement. This is due to the fact that the listing of the ordering was in agreement and the statement of the design being a reversal and on stating that it was a single-subject design are also in agreement, despite using different terms. Disagreement was scored for ratings in which the two raters had different values or stated aspects. If one rater reported additional information, not outlined in the description of the seven dimensions above, and another rater did not this was not counted as a disagreement. For the current study, inter-rater reliability for the descriptive analysis was recorded at 100% across each article and for each of the seven descriptive dimensions.

Results

Initial Review

The results of the initial review of the databases are broken down and outlined in Table 1.
Table 1. Initial results displayed by search terms across the research database utilized.

PsychARTICLES yielded a total of 12 hits across the search criteria. PsychINFO resulted in a total of nine articles, and ERIC yielded a total of eight articles utilizing the search terms described above. Following the initial search each article was cross-referenced across databases to remove any duplicate results. The total number of articles following this process was 12. Each of the 12 articles were reviewed for inclusion criteria, of the 12 articles initially included only six met the criterion for inclusion.

**Publication Review**

Table 2 displays information for the seven different aspects (i.e. author’s/authors’ name(s) and date of publication, participants, targeted behaviors, research design, intervention, treatment integrity and inter-observer agreement (IOA), and results) for each of the six articles included. Described below are summaries of the results of each of the seven dimensions evaluated and as summarized in Table 2.
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<thead>
<tr>
<th>Author(s)</th>
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<td>Bowman-Perrott, Greenwood, &amp; Tapia (2007)</td>
<td>19 students, grades 5-12 Study 1: 11 students, high school. Study 2: 8 students, middle school. Typical classroom setting.</td>
<td>Pretests and Posttests evaluations of content being taught in each class as well as on-task measures of performance. Permanent products for pretest and posttest. 30-second time sample for on-task measures.</td>
<td>Study 1: Reversal ABAB Study 2: Alternating treatments design</td>
<td>Classrooms utilized as point system and lottery. Study 1: Utilized Class-Wide Peer Tutoring (CWPT), structured time for interaction and feedback for peers on content. Study 2: CWPT and Class-Wide Self-Management (CWSM) with use of “citizenship points”</td>
<td>Treatment integrity was measured via checklist. Integrity was measured three times (twice in study one and once in study two), the measures resulted in 97% integrity with a range of 94-100%. IOA was calculated for 20% of session with 94% reliability during teacher led instruction as well as 86% IOA for on-task observations.</td>
<td>Study 1: CWPT increased performance on pretest and posttest assessments as well as increased on-task time. Study 2: CWPT and CWSM increased pretest and posttest performance as well as on-task behavior. The outcomes of study two were greater than in study 1.</td>
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<td>Caldarella, Williams, Hansen, &amp; Wills (2015)</td>
<td>76 students, grades one and two. Typical classroom</td>
<td>Teacher: Praise and reprimand, frequency measure.</td>
<td>Quasi-experimental non-equivalent control group</td>
<td>Class-Wide Function-Related Intervention (CW-FIT). Multi-tiered</td>
<td>Treatment integrity on implementation of CW-FIT</td>
<td>CW-FIT produced significant increase in ratio</td>
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<td>Kamps, Wills, Heitzman-Powell, Laylin, Szoke, Petrillo, &amp; Culey (2011)</td>
<td>Six classrooms across three elementary schools. Total of 107 students in grades K-5. Teacher selected content area time for intervention</td>
<td>Teacher: Praise statements and reprimands Student: On-Task and disruptive behaviors, dependent group assessment. Rotate between teams, 30-s momentary time sample.</td>
<td>Reversal design across classrooms. Classrooms 1, 2, and 5 used ABAB. Classroom 3 used ABCBAB, with C being a booster session. Classroom 4 and 6 utilized an ABA design.</td>
<td>Baseline utilized a School-wide Positive Behavior Support program. CW-FIT: - Teaching classroom and social skills - Group Contingency Program - Self-Management</td>
<td>Treatment integrity averaged an 88% for CW-FIT procedures and 73% for general classroom procedures. IOA was evaluated for an average of 12% of sessions, range of praise to reprimand. During CW-FIT programming significant increase in on-task behavior.</td>
<td>Results indicate in increase in on-task behavior following the implementation of the CW-FIT. Ratio of reprimands to praise increased as a result of the CW-FIT program being implemented.</td>
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<td>Kamps, Conklin, &amp; Wills (2015)</td>
<td>Two classrooms, one fourth-grade and one first-grade in the general education setting. Part of larger assessment but identified due to high rate of self-management intervention.</td>
<td>Students: Group on-task, 30-second momentary time sample across team performance. Teacher: praise statements and reprimands, frequency. Self-Management Students: On-task and disruptive behavior.</td>
<td>Class-wide and Teachers: Reversal design across classroom, ABAB. A representing baseline and B representing CW-FIT. Individual students: Reversal, ABCAC, in which C represented CW-FIT with self-management.</td>
<td>Baseline: SRA instructional materials with large and small group instruction. CW-FIT: • Teaching classroom and social skills • Group Contingency Program • Self-Management (individual basis)</td>
<td>Treatment integrity was measured twice during each phase and integrity was an average of 91% (range of 88-94). IOA was collected for a total of 9% of baseline sessions and five sessions during treatment. IOA on target behaviors were 93% (range of 91-95%) for on-task and 76% (range 71-81) for disruptive behaviors.</td>
<td>CW-FIT: increase in class-wide on-task behavior across classrooms. CW-FIT with Self-Management: increased further effects on on-task behavior for all four students. Teachers: Levels of praise increased with the implementation of the programs with an additional decrease in reprimands following the application of the intervention.</td>
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<td>Kartal and Ozkam (2015).</td>
<td>Four children. Ages 66-months, 70-months, 76-months, 69-months. All students were enrolled in a preschool program.</td>
<td>On-task behavior, 8-second whole interval with 2-second pause for recording. Self-monitoring task analysis (used as part of the intervention)</td>
<td>Multiple baseline design across participants and replicated across activities.</td>
<td>Baseline, included typical classroom routines and programming. Classroom-wide self-management (CWSM) was implemented following instruction on the use of the form targeting on-task behavior. Monitoring occurred every 7-10 minutes.</td>
<td>Treatment integrity was measured for all session in which children completed the task for self-management as well as explaining the benefits of self-management. Integrity was determined to be 100% for each. IOA was collected for a total of 30% of sessions with the average IOA being 94% with a range of 94-95%.</td>
<td>Results of the intervention demonstrated that CWSM increased on-task behavior for all of the children in the study but noted that self-reported performance was higher than actual performance.</td>
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<td>Shamir and Lazerovitz (2007)</td>
<td>162 students with 81 from grade 5 who acted as tutors and 81 from Analogies Subtest delivered as a pre-posttest assessment.</td>
<td>Between groups design with treatment and control groups.</td>
<td>Training on the use of structured peer feedback and support (peer-mediation) for tutors.</td>
<td>Treatment integrity was not reported for this study. IOA was</td>
<td>Results indicate that children that serve as tutors for their peers have an increased</td>
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Table 2. Descriptive analysis of class wide self-management programs.

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<td>grade two who acted as tutees.</td>
<td>Additionally, observations aimed at measuring mediation style.</td>
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<td>calculated for 15 of the participants (9%) with Pearson coefficients of .85-.95, both with significance.</td>
<td>ability to focus and feel more complete as compared to the control group peers. Additionally, individuals that were provided training had an increase rate of praise statements as compared to reprimands.</td>
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Participants and Setting

Of the studies included, the majority of participants were those from an elementary school setting (i.e., four studies). All of the studies targeted children that were considered typically developing. However, 67% of the studies (i.e., four of the six) reported that the children included in the study were identified as at-risk. All of the investigations implemented the intervention in the classroom setting with exception of the Kartal and Ozkam (2015) study that provided training in a separate environment from the classroom in which the intervention was measured.

Dependent Measures

Five of the six studies (i.e., 84%) utilized on-task as a primary dependent variable. Of these studies, all five utilized some form of a time sampling method. To gather data on this variable, one utilized a whole interval measure, while the remaining four used a momentary time sample procedure (30-s duration). The study that included a whole interval procedure utilized an eight second interval. Three of the six studies included a measure of teacher praise and teacher reprimands all of which used a frequency measure within an interval system. One study used a pretest and posttest analysis of work product during the class time. While another study utilized an indirect measure comprised of a test measuring several constructs related to the child’s self-perception.

Research Designs

Four of the six studies included for review used a within subject design and two used a between groups design. Of the studies that utilized a within subject design, three used a reversal design, one implemented an alternating treatments design, and one utilized a multiple baseline
design across participants and settings. Of the two studies that used a between groups design, one employed a traditional design in which the treatment and control groups were matched while the other utilized a quasi-experimental non-equivalent control group design.

**Intervention**

Five of the six studies (84%) evaluated the impact of a multi-component program. Each of these studies implemented differential reinforcement, skill training, and structured time for feedback. Additionally, four of these five studies (80%) evaluated the impact of the Class-Wide Function Related Intervention (CW-FIT) as a primary intervention, as such the secondary intervention included self-management and was not applied for all students. The remaining study, of the five, utilized a class-wide management program but did not specify if it was a specific program. Of the three studies that implemented self-management, only one, reported results for individual students. Only one of the six studies used a single component intervention in which peers were provided a structured tool to use while delivering feedback. Each of the six studies utilized some form of an interdependent groups contingency in which the performance of the group determined access to reinforcement. Two of the six also included, following the initial phases of the intervention, a dependent groups contingency in which individual performance determined access to the reinforcement contingency.

**Treatment Integrity and Inter Observer Agreement (IOA)**

Treatment integrity was evaluated in five of the six articles reviewed. Of those articles only two indicated the percentage of sessions in which treatment integrity was calculated ranging from 12% to 100%. For the studies that reported treatment integrity the overall average integrity
score was 90% with a range of reported scores of 73% to 100%. Table 2 provides additional detail regarding integrity scores across specific phases within respective studies.

IOA was collected and reported for all six studies. Percentage of sessions with IOA was reported in five studies and one study reported a measure of a Parson coefficient. The average number of sessions for which IOA was conducted (across the five studies that reported percentage of sessions) was 14% across studies (range, 9% - 30%) with an average IOA score of 93.3% (range, 71%-100%). For the study that used the Parson coefficient, this was reported to be between .85 and .95 with both representing a significant correlation. For additional detail regarding each study please see the information outline in Table 2.

Results

Every study included in the current review reported increases in performance. Specifically, an increase in on-task performance for students was achieved during class time for four of the five studies that utilized a class-wide management intervention. For the remaining study, an increase in academic performance as measured by pre-test/post-test comparison was demonstrated. With respect to the sixth study in which a peer tutoring intervention was utilized (Shamir and Lazorovitz, 2007), there was an increase in students’ self-reports of being able to focus as well as a larger amount of praise than in control groups. Additionally, with respect to reprimands, individuals exposed to the treatment had significantly fewer reprimands than what was delivered to their peers. Additionally, for the studies which included and reported differential results for intervening with a class-wide program alone and then with self-management (i.e., Bowman-Perrott, Greenwood, & Tapia, 2007; Kamps, Conklin, & Wills,
all reported that the inclusion of the self-management program resulted in additional gains in dependent measures of the study.

**Discussion**

The outcomes of the studies included in this review which pertained the role of self-management as a class-wide intervention are consistent with the greater literature base in the application of self-management programs to assist in the development and maintenance of academic, social, and positive/replacement behaviors for children (e.g. Keel, Dangel, & Owens, 1999 and McLaughlin, Williams, & Howard, 1998; Mooney et al., 2003; & Mooney et al. 2005). Specifically, the current studies under review demonstrate that while differential reinforcement and skill training may be effective for a segment of the population it is also possible to implement self-management program within a class-wide or peer based intervention to supplement the effects of the intervention (e.g. Bowman-Perrott, Greenwood, & Tapia, 2007; Kamps, Conklin, & Wills, 2015). Additionally, the studies provide support for the utilization of self-management as a suitable intervention that can be integrated into the wider classroom programs. As such, they would not require the removal of a student from their classrooms or existing supports, such as the class-wide reinforcement programming or effective educational programming, such as Direct Instruction (e.g. Bowman-Perrott, Greenwood, & Tapia, 2007; Kamps, et al., 2011; and Kamps, Conklin, & Wills, 2015).

While the majority of the studies reviewed included some form of a self-management or self-monitoring component only three included a self-management component that was implemented universally across the class. Of these three studies, one did not report performance data for all of the individuals within the study with respect to the self-management program, one
did not utilize an objective or direct measure of the behavior which the program targeted, and the third only reported individual effects for a sub-set of the entire group for which the intervention was applied. As such, it is impossible to fully determine the effects of the intervention in its entirety for the entire class involved in the evaluation as data are often not reported for non-target students creating a serious limitation as to whether this is a suitable class-wide intervention or not. The last study which was conducted by Kamps, Wills, Heitzman-Powell, Laylin, Szoke, Petrillo, and Culey (2011), failed to report results for all of the individuals within the classroom despite all of the members of the class receiving the intervention. Another gap is that the majority of studies (five of the six) utilized a multi-component intervention often including interventions that are known, individually, to produce the behavioral effect. These included self-management, differential reinforcement, and behavioral skills training with feedback. As such, the results of these studies are unable to demonstrate the impact of any single intervention as applied within a peer-based or class-wide basis. However, of particular importance is that all of the studies in which self-management was evaluated as an additive component of the primary intervention (as outlined within the CW-FIT program) demonstrated that self-management was capable of supplementing less than desirable performance following the utilization of the primary interventions, such as differential reinforcement and skill training.

As outlined in the results, the majority (four of six) of studies included a differential reinforcement procedure, which included a group contingency. All of these studies utilized an interdependent groups contingency, in which the performance of the group as a whole determined the conditions in which reinforcement would be delivered. However, two of the studies (i.e. Bowman-Perrott, Greenwood, & Tapia, 2007; Kartal & Ozkam, 2015) switched
reinforcement to a dependent reinforcement design following the implementation of the self-management program. The other studies did not indicate if the group contingency was altered following the implementation of the self-management aspect of the program or if it was modified prior to the implementation of the program. Due to the fact that more than one variable may have changed or been modified, with respect to the use of self-management, it will be critical for future research to further evaluate the impact various schedules and contingencies (i.e. dependent, interdependent, and independent group contingencies) of reinforcement may impact the degree to which a self-management program may function within a peer-mediated or class-wide intervention.

Although the results of the current review provide evidence that it is possible to implement a self-management program as part of a class-wide intervention, it is likely that several limitations exist which limit the degree to which the results can be applied to the general population. First, the limited scope of terms utilized in the search may have resulted in a much narrower subset of research than is actually present in the literature. For example, the inclusion of terms such as self-regulation, peer-mediated, or group contingency may have resulted in additional research. However, the small set of terms was selected as it most broadly captured the nature of the research sought while also narrowing the topics to those that are most critical; the application of self-management with peers or in a class-wide setting. While not known at this time it is possible that the inclusion of additional, and narrower concepts, within the self-management framework would allow for the identification of additional research that may further address the goal of the current review. Relatedly, the inclusion of the three databases in the current review may have narrowed the overall findings thus yielding a smaller return.
However, it is important to note that despite the use of psychology oriented search engines the articles that were located were in fact published in educationally focused journals. However, the databases used in the present review do in fact include an array of educational journals and sources as part of their search and thus are thought by the authors to be accurately represented within this review. An additional limitation of the current review may be the exclusion of studies that did not evaluate the impact of the intervention beyond an individual level or in the absence of peer involvement. While it is possible that the exclusion of these studies may have limited the scope of the review, the exclusion only resulted in the removal of two studies. Each of these studies targeted self-management or peer feedback in isolation for a single individual and subsequently would not have been appropriate for this review as the current focus is on class-wide/tier 2/secondary intervention. In actuality, by including studies in which self-management was not actually applied in a true class-wide format, that is to say it was applied to individuals within the class wide program, it is likely that the results of this review may actually be skewed in a positive fashion, resulting in the impression that self-management is more effective as a tier two intervention than it actually is and may actually be more appropriate as an individualized intervention. While this may be the case, each of the studies, that included the use of self-management as a tier two intervention, demonstrated additive effects following the inclusion of the self-management program. This may support the fact that even if applied in a manner such that all students received the intervention it is unlikely that the use of the intervention would result in a reduction in academic performance or any other adverse effects. Additionally, given the skills established within a self-management program the use of the intervention may potentially serve as a proactive or preventative intervention.
Despite the limitations of the current review as well as the limitations identified within each of the studies there remains at least some evidence that self-management may be suitable as a class-wide intervention as opposed to its typical use as that of an individualized intervention. When self-management was applied, it was effective in producing and maintaining positive behavior change and that it is feasible for self-management programs to be implemented in a class-wide format. The limited research suggests the application of self-management as a class-wide intervention may be promising, but a substantial amount of additional research remains to be completed. Research should focus on class-wide effects of the intervention such as academic performance, socialization, and reductions in negative social interactions, the various components that often comprise a self-management intervention (i.e. self-monitoring, self-evaluation, goal setting, etc.) and their role with respect to the impact of the program, as well as independent evaluations of these interventions such that they are not evaluated within a multi-component treatment package. This last suggestion for future research may be one of the most critical as none of the studies included in the current review evaluated self-management as a stand-alone intervention. Instead researchers evaluated the effects of the program within a multi-component treatment package such as a class-wide reinforcement system in addition to a self-management program (e.g., Bowman-Perrott, Greenwood, & Tapia, 2007). As such, much more remains to be known with respect to the utility of self-management as a class-wide intervention.
References


Ganz, J. B. (2008). Self-monitoring across age and ability levels: Teaching students to


APPENDIX H:

HSIRB Approval letter

Date: January 11, 2016

To: Jessica Frieder, Principal Investigator
   Sean Field, Student Investigator for dissertation

From: Amy Naugle, Ph.D., Chair

Re: HSIRB Project Number 16-01-04

This letter will serve as confirmation that your research project titled “Evaluating the Effects of a Self-Management Program with a Peer-Praise Recruitment Procedure” 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: January 10, 2017