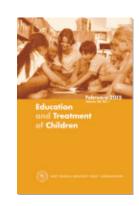


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Use of Self-Management with the CW-FIT Group Contingency Program

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Abstract

The purpose of the study was to determine the effects of self-management as a tier two enhancement to the group contingency intervention, Class-Wide Function-related Intervention Teams Program (CW-FIT). Two classrooms, first and fourth grade, and two students in each of the classrooms participated in the intervention. The group contingency included teaching appropriate classroom behaviors, use of class teams, and differential attention and points for use of the skills. Self-management included booster sessions for individual students, use of an individual point chart, and self-evaluation of skill use. Group on task data showed improved class-wide behaviors with implementation of the CW-FIT program. Individual observations for the at risk students showed some improvements with the group contingency but more increases in on task behavior and decreases in disruptive behaviors with the addition of self-management. Implications for teachers are discussed.

Self-management Interventions

M any studies have shown self-management (e.g., self-evaluation, self-monitoring, and rewards) to be a very powerful and effective intervention to address students' classroom performance (Babyak, Luze, & Kamps, 2000; Briesch & Chafouleas, 2009; Fantuzzo & Polite, 1990; Kern, Ringdahl, Hilt, & Sterling-Turner, 2001). The most common forms of self-management interventions include self-monitoring and self-evaluation (Shinn & Walker, 2010). Self-evaluation is the process of the student determining if his/her behavior was appropriate based on a defined criteria for a given interval or time period (Gureasko-Moore, DuPaul, & White, 2006). Self-monitoring involves students recogniz-

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ing, recording, and reporting whether they have engaged in a specific behavior during an identified time period (Cooper, Heron, & Heward, 2007; Shinn & Walker, 2010). Self-monitoring is often a key component combined within treatment packages that include setting goals, feedback, and rewards for improved behaviors. Rewards as a component to self-management are provided for meeting a predetermined goal for a set number of intervals with appropriate behavior recorded (McDougall, 1998) with a gradual shift from external to self-reinforcement.

Results have included (a) reduced disruptive behaviors for students with Learning Disabilities (LD), Emotional or Behavioral Disorders (EBD), and severe challenging behavior (Hoff & DuPaul, 1998; Ingram, Lewis-Palmer, & Sugai, 2005; Kern, Dunlap, Childs, & Clarke, 1994; Stahr, Cushing, Lane, & Fox, 2006); (b) increased on task behaviors (Babyak et al., 2000; Carpenter & McKee-Higgins, 1996; Kamps, Wendland, & Culpepper, 2006); and (c) improved social and peer behaviors (Kern et al., 1995; Peterson, Young, Salzberg, West, & Hill, 2006). A recent review by Briesch and Chafouleas (2009) suggests that "self-management is an effective intervention strategy with utility noted across setting and populations" (p. 115). The researchers recommend several limitations and areas of further study to determine effective components within self-management, with more stringent experimental design, and measures of procedural fidelity and improved student behaviors over time.

Self-management and Group Contingencies

Effects have also been shown for individual students using selfmanagement interventions within a group (Grandy & Peck, 1997; Kamps et al., 2011) and as a tier two component for group contingencies (Babyak et al., 2000; Coogan, Kehle, Bray, & Chafouleas, 2007; Mitchem, Young, West, & Benyo, 2001). Group contingencies are commonly used in school settings and known to be a more efficient way to evaluate and reinforce appropriate behaviors (Cashwell, Skinner, & Smith, 2001; Theodore, Bray, Kehle, & Jenson, 2001; Thorne & Kamps, 2008). Litow and Pumroy (1975) originally defined three types of group contingencies as independent, interdependent, or dependent. When implementing independent group contingencies, each individual earns a reward if he meets the criteria set for the group. With interdependent group contingencies, students earn the reward if all members of the group meet the criteria. The dependent group contingency is defined as the performance of a selected group member or members determining access to the reinforcer for all members of the group. A long history of group contingency literature exists demonstrating effects to (a) reduce disruptive behaviors in classrooms and other school

settings (Barrish, Saunders, & Wolf, 1969; Embry, 2002; Fabiano et al., 2008; Greenwood, Hops, Delquadri, & Guild, 1974; Lannie, & McCurdy, 2007; Stage & Quiroz, 1997); (b) increase students' reports of their peers' prosocial behaviors (Cashwell et al., 2001; Skinner, Cashwell, & Skinner, 2000); and (c) teach and reinforce prosocial and on task behaviors (Kamps et al., 2011; Lloyd, Eberhardt, & Drake, 1996; Ling, Hawkins, & Weber, 2011).

A recent systematic review of group contingencies using What Works Clearinghouse procedures (WWC) included twenty-seven single case design studies (Maggin, Johnson, Chafouleas, Ruberto, & Berggren, 2012). Their findings indicated "sufficient rigor, evidence and replication to label the intervention as evidence-based" (p. 625). The authors also cited weaknesses in the studies and recommended additional research to provide clearer descriptions of students and specific contingency procedures, in order to determine which students are best suited for the intervention, with measures of fidelity and social validity. An additional limitation is that only three of the 27 studies included the use of a tier two level component for individual students not responsive to the larger group contingencies, and these studies reported the use of reprimand systems such as moving dots or getting checks for inappropriate behaviors (Coogan et al., 2007; Crouch, Gresham, & Wright, 1985; Davies & Witte, 2000).

Class-wide Function-related Intervention Teams "CW-FIT"

A recently developed intervention, "CW-FIT" (Kamps et al., 2011; Wills et al., 2010), combines the use of group contingency and self-management interventions. The CW-FIT program applies a class-wide group contingency program to teach classroom rules and appropriate behaviors; and contingent on the use of the behaviors, teachers provide praise and award team points (see Wills et al., 2010 for a description of procedures). The three skills taught in CW-FIT include (1) how to gain the teacher's attention, (2) following directions, and (3) ignoring inappropriate behaviors. These skills were selected from prior social skills curricula and effective interventions that demonstrated that teaching behavioral skills improved students' on task behavior (e.g., McGinnis & Golstein, 1997; Mitchem et al., 2001; Young, West, Smith, Morgan, 1997). The CW-FIT program combines four components of evidence-based practices including skill teaching, differential reinforcement, use of a group contingency, and self-management. The program was initially implemented as part of a multitiered approach to intervention, focusing on school-wide intervention as tier one or core level of "instruction" or "intervention" with CW-FIT as additional tier two classroom level intervention. Wills et al.

(2010) described results from implementation of CW-FIT in 16 urban classrooms in three elementary schools. These schools were not implementing a school-wide behavior program. Positive findings were reported, as students' on task behavior improved over baseline level averages of 52–67% to averages of 78–83% during CW-FIT. In spite of positive findings, some students did not show sufficient improvement with the use of the CW-FIT group contingency component alone, but did show improvement by adding self-management. In the Kamps et al. (2011) study, CW-FIT was implemented in three schools using School-wide Positive Behavior Support - SWPBS (Abbott et al., 2008; Cheney, Flower, & Templeton, 2008; Hawken, Vincent, & Schumann, 2008; Sugai et al., 2000). Six classes participated with improvements in on task behavior following implementation of CW-FIT. In three of the classes, eight fourth and fifth grade students with behavioral risks needed additional supports. For these students, self-management was implemented as an additional tier to the CW-FIT program. This additional component resulted in higher rates of on task behavior and lower frequencies of disruptive behavior for these students than with use of CW-FIT alone.

In the Kamps et al. (2011) study and the Wills et al. (2010) study, the use of CW-FIT + self-management was demonstrated as an effective intervention, however a limitation in both studies is that no clear demonstration of experimental control was provided for individual student outcomes using the self-management component. The CW-FIT + self-management in the Kamps et al. study was implemented in only one of the three schools, a charter school with small class sizes, and effects were noted from baseline to intervention (one phase change only). The addition of self-management as a tier two level component to group contingency interventions is viewed as a useful area of research, and studies are needed to experimentally demonstrate the effects of tier two enhancements (Kamps et al., 2011; Maggin et al., 2012).

Purpose

The purpose of the current study was to determine the effects of the self-management component as an enhancement or tier two feature to the CW-FIT group contingency intervention. The current study was thus designed to evaluate the self-management component, specifically to show the value added of self-management to the group contingency for students experiencing less than optimal outcomes with CW-FIT alone. Two first grade and two fourth grade students, their teachers, and classmates served as participants in the study in a high risk urban public school. A withdrawal, single case design was used to demonstrate experimental control. The following primary research

questions were addressed: (1) What are the effects of CW-FIT + self-management for on task behavior for individual students nominated as having risk for EBD? (2) What are the effects of CW-FIT + self-management on disruptive behaviors for individual students nominated as having risk for EBD? (3) What are the effects of CW-FIT for on task behavior and teacher behaviors including praise and reprimands?

Method

Participants and Settings

Participants in the CW-FIT group contingency study included all students in one first grade and one fourth grade general education classrooms, with two high-risk students in each class. The classrooms were located in an urban school in the Midwest, serving approximately 240 students with 76% receiving free/reduced lunch and 89% of minority background. This school was part of a larger study of the CW-FIT implementation including five other schools and 22 classrooms in that school year. Six classrooms and 19 high risk students participated in the intervention. Fifteen of the students in four classrooms were responsive to the CW-FIT alone and did not need additional supports. The two classrooms in this school were selected for the current study because the classes had the highest number of students (n=4) using self-management as a tier two component to CW-FIT, thus students were participating in and available to experimentally validate the self-management enhancement.

Students who participated in the self-management enhancement of the intervention included two first graders (one female and one male) and two fourth graders, both males (see table 1 for a description of participants). One fourth grader and the two first graders were African American and one fourth grader was Caucasian. Parents provided written consent for the students to participate in the intervention and allow for data collection on individual behaviors. Criteria for inclusion as "target students to monitor progress" were (a) teacher report of frequent disruptive behavior, (b) teacher nomination as one of the top three students in the class with chronic behavior problems using the ranking procedures outlined in the Systematic Screening for Behavior Disorders (Walker & Severson, 1992), and (c) teacher scores in the above average range for behavior problems on the Social Skills Rating System-SSRS (Gresham & Elliott, 1990). The SSRS was also conducted as a posttest measure. The primary criteria for determining which individual target students also participated in the self-management component was limited improvement for on task (number of sessions < 80%) or disruptive behaviors (sessions with 10 or more, or limited decrease from baseline) during initial implementation of

Participant	Gender	Age	Race	SSRS* Problem Behavior Pre	SSRS* Problem Behavior Post
Tamara	Female	6-3	African-American	130	110
Paul	Male	6-6	African-American	112	104
Jerome	Male	9-2	African-American	115	108
Zachery	Male	9-4	Caucasian	122	112

Table 1
Participant Description

Note. This assessment has a standard deviation of 15, with decreasing standard scores representing a decrease in problem behaviors.

CW-FIT. Brief interviews were also conducted with the teachers using a modified form to hypothesize function (O'Neill, Horner, Albin, Sprague, Storey, & Newton, 1997). The first grade teacher indicated that Tamara and Paul engaged in disruptive behavior to gain attention and sometimes escape from difficult work. Paul was likely to engage in the behaviors to escape difficult work and sometimes to gain attention. The fourth grade teacher also reported that Jerome and Zachery engaged in behaviors to gain attention and escape from work. Baseline observations confirmed that the students exhibited high rates of disruptive behaviors (at least 1–2 per minute, see measures and results section for a description of these procedures).

The teachers were volunteers for the study based on their interest in improving classroom management. Neither teacher had prior experience using CW-FIT or self-management. Both teachers selected math as the content area for using the CW-FIT intervention, based on their judgment that additional management strategies were needed during this class period to improve student learning. The CW-FIT portion of the lessons lasted from 30–40 min. It was the first year of teaching for the female first grade teacher and the second year for the male fourth grade teacher.

A 50% time building coach provided support to teachers implementing the CW-FIT program. This person was a school counselor with approximately 20 years' experience in elementary schools. She attended training, shadowed the research staff as they provided initial consultation to teachers, provided coaching to the teachers in CW-FIT procedures, and assisted with data collection. Two researchers also served as consultants and data collectors for the study. Each had over ten years' experience consulting in elementary school settings. One

^{*}Social Skills Rating System Problem Behavior subtest standard scores.

had a master's degree in counseling, the second was a graduate research assistant in psychology.

Measures and Classroom Observations

Multiple measures were collected in the study to show effects at the class level, teacher level, and individual student level to note changes across conditions. Group on task data were collected to show that the CW-FIT group contingency was having the desired effect for the classes overall, thus ensuring that the tier one level component was in place prior to implementing the tier two self-management for non-responders. Teacher behavior data were collected as teacher attention to appropriate behavior is a key component to the CW-FIT intervention and thus data showing praises (points) and reprimands reflect this element of the independent variable. Individual student data were collected both to determine responsiveness to CW-FIT (tier one) and as a tier two measure to record changes across conditions for participants using CW-FIT + self-management. All data were coded live in classrooms.

Group on task data. Group on task data were collected using a 30-s momentary time sample procedure and a digital timer showing minutes and seconds. Scoring sheets provided a grid with six rows (one for each team) and 40 cells for scoring on/off task. Students were seated in rows and these served as designated teams. Every 30 s, the observer would record a plus for each team (row or small group) of students if ALL students in the group were on task. If any one member of the team was off task, the observer would score a minus. At each 30-s interval, the observer would rotate from team 1 (look/score), to team 2 (look/score), to team 3 (look/score), etc., using the same sequence until each team was scored, then begin the sequence again at the next 30 s block. All groups were scored during each 30-s time sample. Group on task data were coded for 20 min during the beginning portion of the math lesson designated to be the CW-FIT time (usually for a 30–40 min block of the math period determined by the teacher to be appropriate time for the program). Twenty minute samples of on task behavior have been found to be a reliable estimate of general classroom behaviors in prior studies (Kamps et al., 2011). Thus for each team, on task was scored 40 times per sessions (every 30 s). On task behavior was operationally defined as engaging in the assigned activity as directed by the teacher (e.g., looking at the materials or teacher, asking or answering questions, reading). Off task behaviors or non-examples included not following directions, playing with materials, leaving work area, talking to peers during work time, or any activities not approved by the teacher. Group on task data were collected for 2–3 sessions per week during baseline and intervention conditions, CW-FIT occurred 3-4 times per week.

Teacher behavior. Teacher praise statements were operationally defined as social attention to appropriate behaviors and rule following (e.g., "Nice work following directions!," "You raised your hand to get my attention, perfect!," "Team 1, I really like the way you are doing your math problems so quietly."). Reprimands were operationally defined as requests to stop engaging in inappropriate behavior, a corrective statement about behavior, and typically delivered in a harsh manner (e.g., "Everyone needs to get quiet!," "We will not line up until people are following directions to put books in their desks."). Praise and reprimands to individual students and to the group were recorded on a frequency basis throughout the 20-min group on task data collection session. Delivery of points on the CW-FIT game chart was also counted as they indicated attention to appropriate behavior. A point and praise delivered simultaneously were counted in both the verbal praise and the point totals (see table 3, results). Separate boxes on the score sheet were provided to code praise, points, and reprimands. (See teacher behaviors coded during target student observations in the next section.)

Target student on task and disruptive behavior. A version of the Multiple Option Observation System for Experimental Studies (MOOSES) (Tapp, Wehby, & Ellis, 1995) was used to record additional measures for the four target students at risk for EBD. These data allowed for monitoring of individual students' behaviors. The MOOSES code is a computerized data collection system designed to collect duration codes and frequency data. Researchers selected and built the coding file based on target behaviors and definitions. Observations were 15 min in length and used to collect duration for on task data and frequency of disruptive behaviors for each target student. The 15-min observation length was determined because this has been shown to reliably sample students' behaviors in prior studies (Kamps et al., 2011). On task behavior was defined using the group on task definition and recorded using a duration toggle key. The "on task" code enabled automatic duration recording of number of seconds of on task behavior. If the student became off task for 5 s, the toggle key was touched, which then enabled automatic duration recording for "off task behavior." The durations were then calculated to provide a percent of observation with on task behavior. Frequencies were recorded for disruptive behaviors (e.g., talking to peer or teacher without permission, arguing, name-calling, throwing materials). In addition, praise and reprimands were coded as frequency counts using MOOSES. The MOOSES observations occurred during 2–3 baseline sessions and 1–2 times per week during intervention. The same observers who coded group on task and teacher behavior data collected MOOSES data for individual students, but at a different time.

Procedural fidelity. The observers completed two checklists. A 13-item procedural fidelity checklist (see appendix) was used to determine the use of CW-FIT intervention components during sessions (e.g., skills are prominently displayed on posters, pre-corrects on skills occur at beginning of session, point goal is determined, points are awarded to individuals/teams for use of the skills at set intervals). The ratings were scored as yes or no. An 8-item general classroom management checklist was also completed by the observers at the same time as procedural fidelity (see appendix). Items were related to general classroom management (e.g., directions for class assignments are provided and clear, materials for use are available, transitions are smooth with only minor disruptions, teacher ignores minor inappropriate behaviors). These items were related but not specific to CW-FIT procedures and scored from 1-4 with one being the lowest level of performance to the stated item and four being the highest performance (see criteria in appendix). Fidelity probes were conducted in the two classes during all data sessions in baseline and intervention phases. These were completed by the same observer who had collected group on task data or *MOOSES* data following the data session. Fidelity on the 13-item CW-FIT procedural checklist during intervention averaged 87.9% for the first grade teacher (range of 33-100%) and 93.8% for the fourth grade teacher (range 75–100%). No fidelity data were collected for self-management procedures (accuracy or consistency of awarding points). No CW-FIT procedures (0%) were in place during the baseline conditions. Fidelity of the intervention at levels of 80% or higher are considered acceptable (McIntyre, Gresham, DiGennaro & Reed, 2007; Peterson, Homer, & Wonderlich, 1982). Ratings on the 8-item general classroom management checklist averaged 73% and 74.2%, respectively, for the two classrooms during the CW-FIT conditions for the teachers, over baseline means of 43% and 39%. Items related to compliance, following class rules, students being focused and on task, frequent behavior specific praise and praise ratio of at least 4:1 all increased by ratings of 1.5 points or more for both teachers. Ratings of smooth transitions and teacher ignoring inappropriate behaviors also improved for the fourth grade teacher.

Data Collection and Reliability

Group on task. All three observers were trained to criteria of 85% reliability across two sessions prior to the study. Observers were two research staff (each with over 10 years' experience as consultants in elementary schools) and the building coach (a school counselor). Training of observers occurred over approximately three weeks

(approximately three observation sessions per week) and consisted of memorizing the definitions of behaviors (on task, praise, reprimands, points), observation of a trained coder collecting on task data, practice coding with a trained observer giving feedback, and coding with the trained observer until reaching criteria. Reliability for the study was collected for class-wide on task data, praise, and reprimands. Reliability was collected by a second observer recording during the same 20-min observation, with a low verbal cue by the primary observer to look and record each groups' on task score (+ or -) at each 30-s interval (i.e., "team 1" . . . "team 2" . . . "team 3" . . .). Reliability was computed by scoring agreements on a point by point basis. The percent was calculated by dividing the number of agreements by the number of agreements plus disagreements. Reliability for the praise and reprimand data was calculated by dividing the lowest frequency by highest frequency. Reliability data were collected only 2 of the 39 class-wide on task observations (5%) in this study during the intervention condition, with agreement at 95.8% and 87.5%—and for 5% of additional CW-FIT classes in the school (overall mean = 88%).

MOOSES. All observers were trained to criteria of 80% reliability across two sessions prior to the study. Training procedures consisted of the same steps as outlined for training group on task data collection. Reliability for the individual data using MOOSES was collected for 7 sessions in this study (9%), one baseline, one intervention and 5 in self-management conditions. Reliability for on task was computed by dividing the lowest number of seconds on task recorded by the highest number of seconds recorded between the two observers. Reliability for the disruptive behaviors was computed by dividing the lowest by the highest frequency (disruptive behaviors collected for each event occurrence). Mean reliability for on task for the four participants was 91% (range 75–100%), and 95% for all students in the school. Reliability for disruptive behaviors for participants averaged 71%, range 57–86%, and 81.5% for all students.

Experimental Design

A reversal single subject design ABAB was used to demonstrate experimental control across both classes; and an ABCAC reversal was used for participants who received the self-management condition (Baer, Wolf, & Risley, 1968; Kennedy, 2005). Conditions consisted of baseline (A), CW-FIT intervention (B), CW-FIT + self-management (C), return to baseline (A2), and return to CW-FIT + self-management (C2). During CW-FIT conditions, all students in the class participated. During CW-FIT + self-management all students participated in the CW-FIT and the target students also used self-management. The return to baseline was implemented for all students including the target students.

Procedures

Baseline. Baseline consisted of instruction using the SRA Math Explorations and Applications Curriculum (Willoughby, Bereiter, Hilton, & Rubinstein, 2005), with large group instruction, use of manipulative items in small groups or pairs to complete worksheet problems, and periodic tests to assess the progress of students. Teachers conducted "business as usual" for managing the classroom behaviors, which consisted of posted classroom rules and teachers referring to the rules occasionally. Each teacher used a colored card system as typically used in the district classes. This system consisted of a class chart with student pocket folders containing colored cards. Teachers gave a warning and changed the card (e.g., from green card to yellow card to red card) when students misbehaved. Each change incurred a consequence (e.g., reprimand, loss of 5-min of recess, call to parents). No other specific management program or point/token system was observed during baseline conditions in either class. Baseline data were collected over a two week period (2–3 times per week). The same conditions were in place during the two week reversal condition.

CW-FIT. The CW-FIT intervention is a behavioral intervention designed to teach appropriate skills and to reinforce students' use of the skills by using a game format (group contingency) (see Wills et al., 2010, for an extensive description of the CW-FIT procedures). The group contingency was designed to address attention as a commonly reported function of problem behavior (Ervin et al., 2001), in that (a) the procedures require frequent social attention (and points) for appropriate behavior, and (b) teachers are encouraged to minimize reprimands for inappropriate behavior. CW-FIT procedures are "manualized" in part to assist with implementation and include: (a) overview and instructional lessons to teach skills, (b) scripts for student lessons, reinforcer assessment and use of the group contingency program, (c) posters, team point chart, self-management charts, and (d) use of self-management or help cards procedures. The three skills taught in CW-FIT included (1) how to gain the teacher's attention, (2) following directions, and (3) ignoring inappropriate behaviors. Teaching of skills followed a direct instruction model: defining the skill, modeling the skill, teacherstudent and student-student role-playing of the skill, feedback from the teacher, and practice. CW-FIT skill lessons were taught during five class periods in each classroom (during the selected math period). The researcher taught two sessions, the teacher taught additional skill lessons. In subsequent sessions, the teacher would (a) review skills briefly at the start of all CW-FIT lessons referring to the posters, and (b) provide incidental teaching of the skills. The brief reviews of skills (i.e., pre-corrects) were implemented throughout all intervention sessions.

The group contingency component of CW-FIT consisted of a game format with class teams of 2–5 students (typically rows of students) and the use of a token economy. During the CW-FIT intervention period, the teacher would set the timer to ring every 2–3 min. At the beep, the teacher would award a point on the team chart to each team with ALL members engaged in appropriate behaviors. Thus, delivery of the point at the beep was the mechanism for increasing students' use of the skills. This was a teacher decision, based on her/his observation of the students on the teams. Accuracy was not confirmed with the observer when present in the class during the CW-FIT session. Teachers were encouraged to provide frequent, specific praise for appropriate behaviors and use of skills when awarding team points and to individuals and groups throughout the lesson. At the end of the class period, rewards were given to each team (all students on the team) that met the stated goal. A reinforcer assessment was done in each class as a group lesson and rewards were typically chosen from the menu (e.g., extra minutes at recess, two minute dance party, group game such as 7-up). If a team did not meet the goal, then none of the students on the team received access to the reward. CW-FIT conditions and data collection were in place for approximately 4 months with a 4 week break with no data collection during the winter break and a two week break for the reversal condition. Though data collection stopped in mid-March both teachers continued CW-FIT until the end of the school year.

CW-FIT + Self-management. The self-management enhancement was designed for students who continued to have some difficulty during the initial sessions of CW-FIT intervention (e.g., a student who continued to talk out frequently and thus their team was denied points during the CW-FIT contingency game). The four students selected for self-management in the study continued to have behavior problems during the CW-FIT implementation (as measured using MOOSES) and met the nomination criteria using the SSBD and the problem behavior cut-off scores on the SSRS (see participant descriptions). Self-management consisted of (a) two small group booster sessions for individual students and peers (two target students from each class and two peers from the same class), and (b) use of a mini-chart on the students' desk that matched the team goal chart posted for the class. Booster sessions for the first graders focused on staying in their seats and engaging with the task (e.g., not talking to peers, not playing with things in the desks) and raising their hands during group lessons. These matched to the CW-FIT lessons of following directions and raising hands to get the teacher's attention. Booster sessions for the fourth graders focused on staying engaged in the lesson, not talking with peers during seatwork, and asking for additional work if

assignments were completed. These also matched to CW-FIT lessons, with directions specific to assignments (see table 2 for description of skills reviewed in booster sessions, self-management chart). Booster sessions lasted 30 min and were conducted by the building coaches. During the session, the coach reviewed the CW-FIT rules, students role-played specific skills targeted through observations (see description above), and the coach gave feedback on the appropriate use of the behavior/skill. The coach then modeled use of the self-management chart, which was a mini-chart of the class team chart. The timer was set and when it beeped, students were told to "evaluate their behavior as following the CW-FIT rules," and if so, to mark a point.

In the classroom (following the booster sessions), the teacher initially prompted the self-management behaviors during the CW-FIT sessions until students were able to record their points on the charts independently. Students were not checked for accuracy in their use of self-monitoring although this was informally done at random by the teachers. Teachers were only required to make sure students had their self-management charts and were scoring at the beep of the timer. At the sound of the beep, the teacher marked team points on the goal chart and then verbally directed self-management students to award themselves a point if they were also engaged appropriately (e.g., following directions, ignoring inappropriate peer behaviors). For example, teacher statements at the beep might be "Team 1, nice job following directions. Teams 2 and 3, excellent, you remembered to raise your hands for questions. Team 4 also followed directions copying the problems. Self-managers check yourself and give a point if you were following directions." Using the verbal prompts, frequently at first and less after, students scored on their own, teachers served as the cuing mechanism for students to self-monitor (evaluate and record) their behaviors. The fidelity checklist (item #6, appendix) verified this component of implementation, with a "yes" consistently marked during the self-management sessions for both teachers. Students using self-management had the same goal for required number of points as the class teams, and they earned the same rewards for meeting the goal as their classmates. If the students' team met the goal, the student had access to the reward.

Implementation. Training in use of CW-FIT was provided in a three hour workshop. During training researchers modeled the scripts, guided teachers through practice, modeled use of the timers and delivery of points for teams on the team chart, and again guided teachers' practice. During the implementation phase in the classroom, the researchers provided initial demonstrations and modeling for 2–4 sessions including (a) how to teach the skills using the scripts, and (b) how to use the CW-FIT game chart to award group points based on

Table 2

Self-Management Procedures: Booster Session Target Skills, Student Chart

Skill Reviews for First Grade Students

Following Directions: doing your work—doing what the teacher says to do

Model: using manipulative items appropriately, writing answers on your paper Non-examples based on observations: playing with things in desk, chatting with

peer

Staying in Seat: sit in your chair, stay in the small group

Model: sitting in chair, asking the teacher for permission to leave your seat

Non-examples based on observations: sitting under desk & playing with things, going over to back pack, fidgeting; going to shelf to get more paper/pencil

Ignoring inappropriate behavior: look away from peers, look at your work

Model: Doing individual work, not looking at peers; talking to peers about the lesson, talking politely

Non-examples: Complaining to peer about 'getting in his space'; tossing dice at peer, putting paper in front of face; laughing w/peer

Getting the teacher's attention: Raising your hand

Model: hand-raising and waiting for the adult to call on student

Non-examples: Shout out answer, ask to go to the bathroom; telling teacher to give point, pouting noise or crying for not getting point

Skill Reviews for Fourth Grade Target Students

Following Directions: doing your work—the lesson

Model: doing the problems on a worksheet without talking to peers; looking at the board/overhead; using measuring tools to do the problems

Non-examples: fidgeting with paper, passing notes to peers, talking to peers

Getting the teacher's attention: raising your hand, waiting for the teacher to call on you

Model: Hand raising, waiting to be called upon to talk

Non-examples: talking out, chatting with peers, calling out answer without waiting for your name to be called, having non-academic conversations

Self-Management Chart								
Name:								
Date: Goal:								
CW-FIT Rules:								
Follow directions the 1st time								
Ignore others' inappropriate behavior								
Raise your hand to get the teacher's attention								
Stay in your seat								
Points:								
1.	2.	3.	4.	5.				
6	7	8	9	10				

Point = Yes! I was following the

CW-FIT Rules!

the targeted skill. The classroom teachers then assumed management of lessons, pre-corrects, and the game (including awarding points). Both teachers assumed full teaching and management of the CW-FIT intervention within 2 weeks (4–5 sessions with coaching) and used the game on a daily basis during designated time periods. During CW-FIT and CW-FIT + self-management intervention, a building coach trained by the researchers monitored the intervention two times each week. Feedback was provided based on observation and completion of the fidelity checklist by the coach. After approximately six weeks of CW-FIT intervention (condition B), a second training meeting occurred lasting one hour, during which time procedures were reviewed and problems resolved. Individual students' progress was also discussed and teachers selected students who they felt could benefit from a selfmanagement component. Procedures for the self-management were modeled for the teachers (booster session refresher of skills, use of the self-management charts). Coaches who monitored the CW-FIT class sessions also provided the booster sessions for self-management for the target students (and two peers), and researchers again modeled the first two sessions when self-management was implemented during the CW-FIT sessions.

Results

Use of the CW-FIT group contingency intervention demonstrated improvements for the first and fourth grade class overall, with increased on task behaviors and teacher praise. While the improvements in class-wide on task behavior were noteworthy, effects for the high risk students were not as dramatic, and thus the self-management tier two procedures were implemented for all four students. The addition of the self-management showed immediate and stable improvements for individual students' behaviors. The CW-FIT group contingency plus self-management improved on task behavior and decreased disruptive behaviors for all four participants. Class-wide and student level results are described as follows.

Class-wide Effects

Results were determined by visual inspection of the graphed data across conditions. Class-wide effects are presented first as these indicated that CW-FIT was improving overall class behavior, and thus changes for individual students could be planned based on their responsiveness to a well-implemented group contingency. As depicted in figure 1, both classes showed improvements in on task behavior during the CW-FIT intervention. In first grade, panel 1, baseline on task averaged 47% (range 35–58%, standard deviation 12), with an increase to 85% during

CW-FIT (range 78–92%, standard deviation 7), a decrease to 58% during the reversal condition, and again an increase to 81.3% (range 69–89%, standard deviation 7) during the final CW-FIT condition. Similar effects were noted in the fourth grade class with baseline on task averaging 55.3% (range 51–59%, standard deviation 4), and an average of 83.3% (range 68–92%, standard deviation 8) during CW-FIT, 31.2% (range 18–51%, standard deviation 17) during reversal and 78% (range 48–97%, standard deviation 19) during the final CW-FIT condition.

Changes were also noted in the teachers' behaviors across conditions. Table 3 depicts the average levels of praise/points (attention to appropriate behaviors) and reprimands to students across conditions. Both teachers increased their levels of praise and points delivered for students following the CW-FIT rules and generally engaging in appropriate behavior. Praise for both teachers averaged 39-40 during the first intervention condition and 19-28 during the second CW-FIT intervention phase. Points increased during intervention, as expected, with a range of 18.9–58 during CW-FIT for the two teachers. Though nonverbal gestures of attention to appropriate behaviors were included in the definition/counts for points, observers indicated that these occurred very infrequently and the majority of the frequency counts were points. The frequency of reprimands was not noticeably different during CW-FIT compared to baseline for either teacher. Reprimands decreased for the fourth grade teacher during intervention (range, 5–7), compared to baseline (range, 11–13). Reprimands (verbal and nonverbal) increased for the first grade teacher from the baseline level of 7, to 15 during CW-FIT and occurred at a similar level (13–14) throughout the last two conditions.

Student On Task Behavior

On task behavior for the target students is depicted in figure 2. Tamara's initial baseline session of on task behavior was at 90% with a steady decrease to a baseline mean of 59.9% (range 24–90%, standard deviation 33). During CW-FIT implementation, on task behavior increased to a mean of 78.6%, however behavior was variable across sessions ranging from 47–100% (standard deviation 18). The self-management condition showed immediate improvements with on task behavior ranging from 92–100%. On task behavior decreased during the reversal condition to baseline levels and again increased during the final self-management condition. The range in on task behavior across both self-management conditions was 92–100% with a mean of 96.1%, standard deviation 2.6.

Paul's on task behavior showed more steady improvement during implementation of CW-FIT (mean of 80.4%, range 70–91% standard deviation 7.9) over low levels during baseline (range 5–76%,

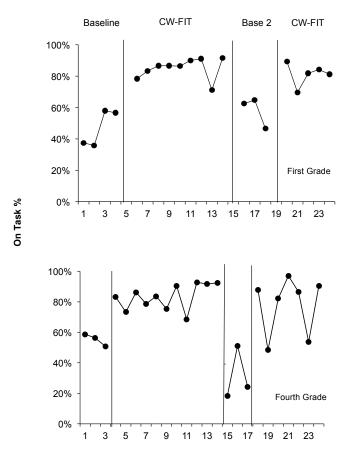


Figure 1. On Task Data for First and Fourth Grade Classsrooms

mean 41%, standard deviation 29.9) and the reversal condition (range, 26–81.8%). Similar to Tamara, the use of self-management improved on task to even higher levels averaging 93.8% across both self-management conditions (range 88–98%, standard deviation 3.8).

Jerome's baseline was low and fairly stable, ranging from 33–52.4% (mean 44.7%, standard deviation 10.3) during baseline. CW-FIT did not improve his on task levels (mean 58%, standard deviation 18.2), but the use of self-management had immediate positive effects for on task behavior averaging 96.1%. The reversal showed a decrease to baseline levels. In the final self-management condition, behaviors again improved with two sessions at 100% and a mean across both self-management conditions at 96% (range 90–100%, standard deviation 3.5).

Table 3.

Praise and Reprimands for the First and Fourth Grade Classrooms.

Praise								
	Baseline1		CWFIT		Baseline2		CWFIT	
	Verbal	Points/ NV*	Verbal	Points/ NV	Verbal	Points/ NV	Verbal	Points/ NV
1st grade Mean	3.5	0.25	40.11	53.67	7.67	0.00	43.6	49.4
Standard Dev.	3.7	0.5	21.9	20.6	5.0	0.0	15	10.1
Range:	0–8	0-1	8-85	24-84	3–13	0	27-59	40-63
4th grade Mean	2	0	39.91	18.91	2.33	0.00	18.86	58.29
Standard Dev.	2.0	0.0	21.1	29.3	0.6	0.0	13.6	30.9
Range:	0–4	0	2–69	0-81	2–3	0	6–41	36-117

Reprimands

	Baseline1		CWFIT		Baseline2		CWFIT	
	Verbal	Points/ NV	Verbal	Points/ NV	Verbal	Points/ NV	Verbal	Points/ NV
1st grade Mean	7	0.25	14.44	1.11	13	0	14.33	0.17
Standard Dev.	5.9	0.5	8.4	1.5	3.6	0.0	9.4	0.6
Range	0-15	0-1	1–14	0–3	0-14	0	0-19	0–1
4th grade Mean	13.33	0	9.8	1.82	15	3.67	7.7	1.57
Standard Dev.	7.6	0.0	8.5	3.3	12.1	4.0	7.6	2.1
Range	8–22	0	0-29	0–9	8-29	0–8	1–23	0-5

*NV = Nonverbal teacher behavior or gestures indicating attention to appropriate behavior or inappropriate behavior. These occurred at a very low rate across all conditions. During CW-FIT, the majority of the frequencies counted were points added to the team chart.

Zachary's on task behavior started high and decreased during baseline (range 22.8–100%, standard deviation 38.9) and reversal (27–44%) conditions. The CW-FIT intervention helped improve the on task behavior averaging 72% (range 48–77%, standard deviation 13.9), but the use of self-management showed more stable increases with

an average of 94.4% (range 79–100%, standard deviation 6.2) on task across both self-management conditions.

Disruptive Behavior

All four students displayed frequent and sometimes very high levels of disruptive behaviors during the baseline conditions (see figure 3). Tamara's disruptive behavior ranged from 25 to 96 incidents during the 15-min baseline probes, a mean frequency of 49.7 (standard deviation 40.2). The disruptive behavior decreased to a mean frequency of 23 (range 4–58, standard deviation, 18.7) during CW-FIT and showed further decreases with the addition of the self-management, ranging from 6–18. The reversal showed an increase with a mean of 46.5. With the return to the CW-FIT plus self-management, disruptive behavior again decreased. The mean across both self-management conditions was 7.8 (range 3–11, standard deviation 4.9).

Paul's disruptive behavior was also high and variable during baseline conditions with a mean frequency of 43.8 (range 15–80, standard deviation 27.7). The CW-FIT showed decreases in disruptive behaviors after the initial session, with an average of 20.4 (range 4–67, standard deviation 21.2). The use of self-management with the CW-FIT reduced disruptive behavior to a range of 4–6 per session. The reversal showed an increase to the baseline levels with a mean of 52 disruptive behaviors. The return to self-management again decreased the behaviors to a range of 2–6 per session. The mean across both self-management conditions was 5.4, with a range of 2–9 (standard deviation 2.3).

Jerome's frequency of disruptive behavior in baseline was 15.3 on average (range 11–18, standard deviation 3.8), with an increase during CW-FIT intervention to a mean of 37.7 (range 25–57, standard deviation 17). This was atypical to the improved effects for other participants, and thus the self-management procedures were added after three CW-FIT sessions. With the exception of one session (#10), CW-FIT + self-management reduced disruptive behaviors for Jerome, with a mean of 9.9 and a range of 0–47 (standard deviation 13.9) across both self-management conditions.

Zachary's disruptive behaviors followed the same pattern as Tamara and Paul, with high baseline levels (mean 74, range 31–132, standard deviation 52.1), a decrease during CW-FIT intervention (mean 29.2, range 11–37, standard deviation 14.1), and a further decrease during CW-FIT + self-management with a mean across both conditions of 7.2 (range 0–17, standard deviation 6.3).

Social Skills Rating System. Post intervention ratings on the Problem Behavior subscale were collected for the participants following the last week of intervention. Table 1 shows the changes from screening ratings, with decreases for all the students on their standard

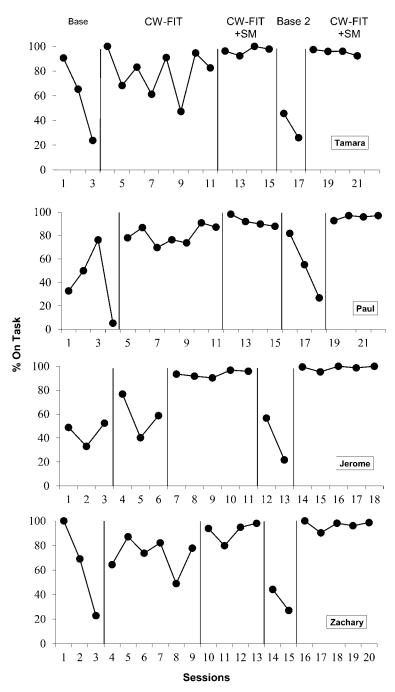


Figure 2. On Task Data for Participants.

scores. Tamara dropped from 130 to 110, Paul from 112 to 104, Jerome from 115 to 108, and Zachery from 122 to 112.

Discussion

The main purpose of the study was to evaluate the use of self-management procedures as an enhancement, tier two component, to the CW-FIT group contingency intervention. For the students with behavioral risk, the initial CW-FIT results were variable. The need for the self-management tier two component was thus justified in that improvements were not satisfactory for the individuals with EBD/risks, even though overall class-wide on task behavior was increasing. Three of the four students showed improved on task behavior, but improvements were more stable and higher during the CW-FIT + self-management condition. Disruptive behaviors were quite high in baseline for the first graders and for Zachary in fourth grade. Disruptive behaviors were lower for Jerome than the others during baseline and actually increased during CW-FIT. His behaviors, however, and the other students' behaviors reduced during CW-FIT + self-management.

The study contributes to prior literature supporting (a) the use of self-management as an enhancement to the CW-FIT group contingency intervention, and (b) monitoring of individual students' behaviors during both tier one (CW-FIT alone) and tier two (CW-FIT + self-management) intervention conditions. Findings also confirm other research indicating a need for more targeted interventions for students with challenging behaviors (Cheney et al., 2008; Hawken et al., 2008) and recent efforts recommending a multi-tiered approach to intervention, with group level intervention as a core level of "instruction" or "intervention" and additional tier two or tier three levels of intervention for students who need additional supports (Haager, Klingner, & Vaughn, 2007; Mitchell, Stormont, & Gage, 2011; Shinn & Walker, 2010). A variety of variables contributed to the positive outcomes. The self-management component included booster sessions for additional practice of CW-FIT skills matched to the behaviors of concern for the individual students (see table 2). The sessions were conducted in small groups with high levels of attention and praise for the students showing the appropriate skills. The students also monitored their behavior frequently with the timer sound, using individual desk charts. This self-management component provided more opportunities for self-reinforcement and attention from the teacher. The at risk students and 2-3 additional "good" peer models used the selfmanagement charts during each whole class CW-FIT session and the teacher would acknowledge them specifically when she/he gave team points, (e.g., "Nice work self-managers following directions!"). Being

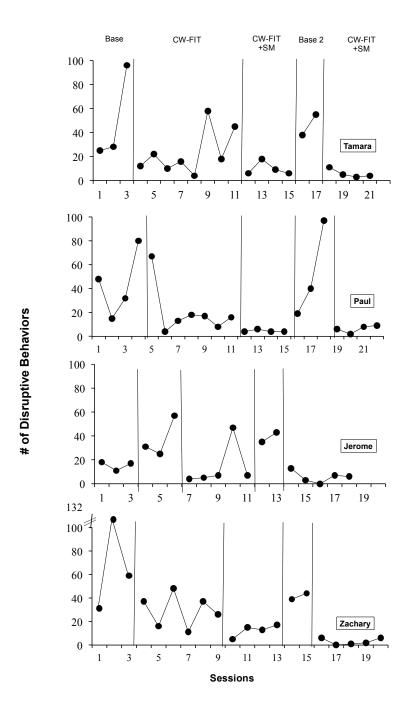


Figure 3. Disruptive Behaviors for Participants.

a self-manager was treated as a privilege in the classes. No special rewards were given to the self-managers, however they received the same rewards as other team members who met the goal. Although the self-managers were given additional attention, all students received higher levels of praise and access to the contingency (points, rewards) during the CW-FIT game. These additional self-management components and teacher behaviors (praise, points) appeared to be strong enough to replace attention seeking in inappropriate ways (shouting out, pouting, refusing to comply), or at least reduce the frequency of disruptive behaviors. Results support the Kamps et al. (2011) CW-FIT study showing effects of CW-FIT + self-management but with more rigorous experimental control using the withdrawal design. The use of the withdrawal design also allowed for analysis of the self-management component of the group contingency. Results also add to the self-management literature showing its effectiveness for improving on task behaviors (Babyak et al., 2000; Briesch & Chafouleas, 2009; Grandy & Peck, 1997; Kamps et al., 2006); and decreasing disruptive behaviors (Ingram et al., 2005; Kern et al., 1994). Findings also support the use of CW-FIT + self-management in particular as an effective program for urban classrooms (Kamps et al., 2011; Wills et al., 2010).

A secondary finding of the study is that the results concurred with prior studies showing the effectiveness of group contingencies as a means to improve on task behavior (Cashwell et al., 2001; Maggin et al., 2012; Skinner et al., 2000; Theodore et al., 2001; Thorne & Kamps, 2008); and to reduce disruptive behaviors (Fabiano et al., 2008). CW-FIT effects in this study add to the group contingency literature that uses attention to appropriate behaviors (points, praise) as the primary procedure (Ervin, Miller, & Friman, 1996; Thorne & Kamps, 2008; Wills et al., 2010) rather than response cost (attention) to inappropriate behaviors as commonly used in group contingency studies (Davies & Witte, 2000; Embry, 2002; Maggin et al., 2012). The findings support token economies as well with use of a rigorous design and fidelity measures as recommended by investigators in a recent review (Maggin, Chafouleas, Goddard, & Johnson, 2011). The token economy component of CW-FIT was well documented through data collection on teachers' recording of points (see table 3).

An addition to the literature is the measure of teacher behavior in the study. Teacher praise and attention to appropriate behaviors using points increased for the two classrooms, and both teachers anecdotally reported that the CW-FIT + self-management intervention helped improve their classroom climate to be more positive. Reprimands decreased slightly for the fourth grade teacher. It is unknown why the first grade teacher showed an increase during the first intervention condition and little change in subsequent conditions. It is

hypothesized that she was aware of the need to improve behaviors during intervention and assumed reprimands would result in students stopping the behaviors. The coach provided feedback to the teacher to ignore minor instances of inappropriate behaviors but reported that the teacher did not adhere to the suggestions.

Limitations

A limitation to the study is that the CW-FIT + self-management intervention contained many components and an analysis of each component was not conducted, so we are unable to specifically determine which parts of the treatment package (or if all combined) were necessary for the change in behaviors. For example, increased teacher praise and attention to appropriate behavior, improved classroom management procedures embedded in the intervention (see appendix), and booster sessions to teach self-management could each or together have improved student performance. In addition, the use of rewards was continued throughout the study, thus it is unknown if self-monitoring alone without external rewards would have maintained improved behaviors for individual students. Self-management implementation was not monitored in the study, which was a limitation. Data were not collected on the reliability of students' monitoring, nor were data collected on the level of teacher prompting of students to record points. The absence of reliability (fidelity) on the self-management component weakens the ability to attribute changes to specific procedures. Anecdotally observers reported that students recorded points fairly consistently when the timer beeped but accuracy was not determined. Self-management implementation was also not linked to functional behavior assessment as in several previous studies (e.g., Ingram et al., 2005), nor were functional analyses conducted. However, the design allowed for clear demonstration of the effects of the self-management condition as a viable enhancement to CW-FIT. Another limitation to the study was the small number of participants. Only four students used the CW-FIT + self-management procedures. Use of the withdrawal design for the students however provided two replications of the intervention effects for each student and for multiple behaviors.

An additional limitation is that there was variability in the class-wide on task data during intervention for some sessions. During the final intervention phase, on task behavior was more variable for the fourth grade class with two sessions nearing the baseline level (60%). Anecdotally, these class periods were noted to be less structured with students completing assignments and not choosing to select appropriate independent activities (reading, doing extra credit work). Both teachers expressed concerns that it was difficult to learn the math curriculum and accurately predict the length of time students needed to complete

assignments. In addition, they reported that it was difficult to find time to help several students in the class who needed additional assistance with the tasks. A consumer satisfaction survey was given regarding the CW-FIT in general, but no social validity was assessed for the selfmanagement component, a limitation. While all teachers at the school reported the highest rating for "CW-FIT was easy to learn and use in my classroom and that students were more focused and engaged when we played the game," questions about self-management and specific procedures were not asked. Anecdotally, teachers reported that they thought this enhancement was beneficial to the students. Teachers also reported that the lessons and posters were helpful in teaching appropriate behavior, and the intervention improved the positive climate in their class. They reported that the timer was initially disruptive to their lessons, but students got used to it quickly and so it became less so after a few weeks. They also noted that the reduction in time attending to disruptive student behavior outweighed the time spent in implementing the CW-FIT procedures. Observers also noted that the teachers became very efficient with use of the timer and point delivery over time.

Other limitations were noted regarding the changes in conditions and the data collection. Additional baseline data with five points for all dependent variables might have allowed for more stable trends for individual students (e.g., Paul's on task data was increasing until the last data point showing a marked decrease). On task data in the first grade class had increased in the last two of the four baseline conditions, however it was still much lower than desirable at 60%. Though disruptive behaviors (figure 3) were quite variable, frequencies of 20 or more per observation were noted during almost all sessions, indicating a need for additional enhancement to the intervention as provided with CW-FIT + self-management. The limited number of reliability points for the particular classes and students as well as some low reliability points were limitations as well, though data for the classes and students overall in the school indicated acceptable levels of reliability. The low number of reliability points hinders the strength of the findings and suggest more study is needed of the CW-FIT + self-management tier to confirm these results. In addition, adherence to 30% reliability for all students and across conditions is warranted for future replications.

Conclusion and Future Research

Suggestions for future research include the use of larger experimental-control group designs for CW-FIT intervention and larger numbers of students using the self-management component. Additional single case design studies for experimental analysis of the self-management component are warranted, particularly using functional assessment to assist in tailoring the tier two features and analysis of

components of self-management (e.g., adult and student management of procedures and attention to fidelity) (Briesch & Chafouleas, 2009). A further area of research would be documentation of the intervention effects for academic performance, particularly for the upper grades when students complete more written products as part of the math curriculum, and given the teachers' concerns about difficulty implementing the curriculum.

Implications for teachers suggest the use of the CW-FIT + self-management as a potentially effective intervention in urban classroom settings. Systematic use of the intervention with fidelity, including teaching relevant classroom skills, teacher praise and attention for appropriate behaviors, and a contingency program with rewards were found to be important components of the intervention. Improved class-wide on task, improved on task for students with challenging behaviors, and decreased disruptive behaviors were noted in the two classrooms in the study, suggesting these outcomes may be replicated in other elementary classrooms. Group contingencies and tier two enhancements such as self-management are recommended as a valuable classroom management strategy in high risk schools and suggested for those students not responding to the class-wide procedures.

Appendix

Class-wide Function-related Intervention Teams (CW-FIT) Procedural Fidelity Checklist

CW - FIT procedures

 Skills are prominently displayed on posters Precorrects on skills at beginning of session Corrections are instructive and refer to skills Team point chart displayed Daily point goal posted Self-management charts given to individuals Timer used & set at appropriate intervals Points awarded to teams for use of skills Points tallied for teams Winners immediately rewarded Winners reward announced if delayed Frequent & Specific praise (points) given Praise (points) to reprimand ratio is approx. 4:1 	☐ Yes ☐ No ☐ Yes ☐ No
Classroom management 1. Level of compliance during academic instruction 2. Students follow rules appropriate to setting 3. Transitions are short with only minor disruptions 4. Students are focused and on-task 5. Level of lesson structure 6. Teacher ignores minor inappropriate behaviors 7. Frequent & Specific praise (points) given 8. Praise (points) ratio to reprimands approx. 4:1	0

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