Implementing Positive Behavior Support in Preschools: An Exploratory Study of CW-FIT Tier 1

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Abstract

Challenging behavior in preschool is a serious concern for teachers. Positive behavior

interventions and supports (PBIS) has been shown to be effective in reducing such behaviors.

Class-Wide Function-Related Intervention Teams (CW-FIT) is a specific multi-tiered

intervention for implementing effective classroom management strategies using PBIS practices.

CW-FIT has been shown to be effective in elementary classrooms but has not yet been evaluated

with younger age groups. CW-FIT Tier 1 is a group contingency utilizing social skills training,

teacher praise, and positive reinforcement to improve student behavior. The present study

examined the effects of CW-FIT Tier 1 implementation on student group on-task behavior and

on teacher praise and reprimand rates in four preschool classrooms. A single-subject delayed

multiple-baseline design with embedded reversals was used to evaluate impact. Results indicated

the intervention increased student group on-task behavior and teacher praise to reprimand ratios.

Both teachers and children found CW-FIT Tier 1 to be socially valid. Limitations and

implications of this study for researchers and practitioners are discussed.

Keywords: preschool, positive behavior support, praise, social skills, group contingency

Implementing Positive Behavior Support in Preschools: An Exploratory Study of CW-FIT Tier 1

An estimated 33% of preschool-age children in the United States exhibit challenging behaviors (Rescorla et al., 2011), defined as "any repeated pattern of behavior. . ., that interferes with or is at risk of interfering with optimal learning or engagement in prosocial interactions with peers and adults" (Smith & Fox, 2003, p. 6). Many troublesome behaviors are common among young children, but it is the intensity, frequency, and co-occurrence with other behaviors which distinguish challenging from normal behavior (Campbell, 2002). Without early intervention, challenging behavior in preschool children can evolve into more substantial concerns later in life (Dunlap et al., 2006) and can have a negative effect on the safety and productivity of the learning environment (Carter & Pool, 2012). Teachers need resources to prevent and to extinguish such behaviors (Gilliam, 2005) as well as effective interventions for teaching young children social skills and benefit whole classes and individuals (Dunlap et al., 2006).

Positive Behavior Interventions and Supports

Positive behavior interventions and supports (PBIS) is a framework emphasizing the use of praise and reinforcement to support the needs of all students (Sugai et al., 2000). PBIS stresses teaching as the main tool to create comprehensive, durable, and relevant behavior change. Instead of using coercion to modify behavior, PBIS seeks to restructure the learning environment, including teacher behavior. Studies have shown PBIS to be effective in improving individual student behavior as well as the behavior of whole classes (Blair, Fox, & Lentini, 2010; Duda, Dunlap, Fox, Lentini, & Clarke, 2004).

Several considerations make implementation of PBIS strategies in early childhood settings uniquely challenging (Frey, Lingo, & Nelson, 2008). Preschools differ from K-12 classrooms in organizational structure, sometimes being part of a larger school environment and

sometimes functioning independently. Early childhood educators often receive less training in managing behavior and are less receptive to ideas about rewards and punishments (Frey, Park, Browne-Ferrigno, & Korfhage, 2010). Increased training and continual support are critical in improving implementation efforts (Frey et al., 2010). Despite these challenges, PBIS strategies can be successfully implemented in early childhood settings (Hemmeter, Fox, Jack, & Broyles, 2007; Stormont, Smith, & Lewis, 2007). Successful interventions are developmentally appropriate and focus on proactively teaching social skills rather than simply eliminating problem behaviors (Frey et al., 2008). The use of these PBIS practices can increase engagement and improve young children's relationships with teachers and peers (Blair et al., 2010).

Social skills training, an important aspect of PBIS, is essential for preschool children to learn what behavior is expected. Particularly in early childhood settings, social skills should be taught by explicitly defining and modeling specific steps for expected behaviors before contrary behaviors occur (Carter & Pool, 2012; Hemmeter, Ostrosky, & Fox, 2006; Hughett, Kohler, & Raschke, 2013; LeGray, Dufrene, Mercer, Olmi, & Sterling, 2013). Children learn social skills best when the skills are taught in context and practiced daily (Merrell & Gimpel, 1998).

Group contingencies, in which a child's reinforcement depends on the behavior of group members, often accompany PBIS and provide a way for children to practice social skills (Wright, 2008). Interdependent group contingencies, in which each group is rewarded if every individual in the group reaches a desired goal, are efficient, promote teamwork, and allow teachers to focus on improving the behavior of disruptive students without isolating them from their peers (Wright, 2008). Group contingencies remove reinforcing peer behaviors, such as attention and laughter, when children engage in inappropriate behavior. Such interventions are effective in decreasing disruptive behavior and increasing compliant behavior in children of all ages,

including early childhood (Swiezy, Matson, & Box, 1992). Group contingency interventions help children become more aware of their own behavior and its effect on others, thus supporting social skills development (Poduska et al., 2007). Utilizing group contingencies appropriately with preschool-age children may help this skill develop and improve at a pivotal age.

Positive reinforcement can also improve the motivation of young learners when aligned with their needs and development, although some debate surrounds the use of rewards in preschool (Shiller, O'Flynn, Reineke, Sonsteng, & Gartrell, 2008). Positive reinforcement can lead to intrinsic motivation and improved performance (Cameron & Pierce, 1994; Lemos & Verissimo, 2014). The use of verbal reinforcement (teacher praise) has proven particularly effective (Fullerton, Conroy, & Correa, 2009; Hemmeter et al., 2006), especially when it is behavior specific and combined with teaching desired behavior (Stormont et al., 2007). Building positive relationships between teachers and young children is part of managing challenging behavior (Pianta, 2006). Such relationships can be fostered and improved through teacher praise of appropriate student behavior (Hemmeter et al., 2006). Stormont et al. (2007) found preschool teacher praise and pre-corrections decreased disruptive behavior in young children.

Class-Wide Function-Related Intervention Teams

While schools may implement school-wide PBIS, consistent implementation at the classroom level is often low (Reinke, Herman, & Stormont, 2013). An intervention integrating PBIS practices (social skills training, group contingencies, and praise) at the classroom level is Class-Wide Function-Related Intervention Teams (CW-FIT; Wills et al., 2010). CW-FIT is a multi-tiered intervention designed to help teachers train students in social skills and includes group contingencies to minimize reinforcement of disruptive behaviors and increase reinforcement of appropriate behaviors. CW-FIT Tier 1 includes social skills found in prior

curricula and studies (e.g., McGinnis & Goldstein, 2010; Sheridan, 2010) and promoted in school-wide PBIS (Sugai & Horner, 2006; Simonsen, Sugai, & Negron, 2008).

In CW-FIT Tier 1, teachers explicitly teach social skills (through repetition, discussion, and role plays) to serve as replacement behaviors for inappropriate student behaviors which function to (a) obtain attention (adult or peer); (b) escape from tasks; and (c) gain access to materials and activities. Students are then grouped into teams and at periodic timer beeps are given points and praise for following these social skills. If teams reach a predetermined point goal by the end of the lesson, teachers provide praise again and deliver a reward as a group contingency (Wills et al., 2010). A second tier, consisting of self-management charts and help cards, can be implemented with individual target students. A third tier, utilizing a functional assessment for students who still do not respond favorably to the intervention, can also be adopted. For the present study, neither Tier 2 nor Tier 3 interventions were used.

Implementation of CW-FIT has been shown to lead to greater student engagement, higher teacher praise rates, and fewer disruptions. Kamps et al. (2011) studied CW-FIT in six elementary classrooms in three different schools. On-task behavior and teacher praise increased during the intervention, while disruptive behavior and teacher reprimands significantly decreased. Although teachers reported the intervention took time to implement, they also reported spending less time dealing with disruptive behavior. Similar on-task and praise results were found in a four-year study by Kamps et al. (2015). Wills, Iwaszuk, Kamps, and Shumate (2014) studied CW-FIT implementation one period at a time across different times of day by the same first grade teacher. Results indicated on-task rates similarly increased across all class periods. Caldarella, Williams, Hansen, and Wills (2015) studied CW-FIT implementation in five kindergarten through second-grade classrooms and found results similar to those of previous

studies. Not only has CW-FIT been shown effective in improving student behavior, but teachers and students have reported it to be socially valid (Caldarella et al., 2015; Kamps et al., 2011).

To date, no published CW-FIT studies have involved preschools. Favorable results in elementary schools suggest this intervention may be helpful in other grades. CW-FIT's strong emphasis on social skills and proactive behavior principles suggest its implementation may be beneficial for the unique challenges of preschool classrooms. The purpose of the present study was to implement Tier 1 of CW-FIT in preschool classrooms and examine the effects on teacher and child behavior. The following questions were addressed: (1) Are preschool teachers able to implement CW-FIT Tier 1 with fidelity? (2) Does the implementation of CW-FIT Tier 1 in preschool classrooms result in increased teacher praise to reprimand ratios? (3) Does the implementation of CW-FIT Tier 1 in preschool classrooms result in increased levels of group on-task behavior?

Method

Setting and Participants

This study was conducted in two Title I elementary schools in suburban Utah. The purpose of the preschool classrooms was to serve children at risk for school failure by providing academic support before they entered kindergarten. Children were assessed using a district designed instrument measuring oral language abilities, motor skills, and basic knowledge of numbers and letters. For each school, the 28 children (14 for morning and 14 for afternoon) with the lowest scores within their school boundary were admitted. The district provided separate special education classes for preschoolers, so none of the children in participating classrooms were identified as having a disability. English language learning services were not provided to any of the children.

Three preschool teachers participated in the study. One teacher taught a morning class (Classroom 1) and an afternoon class (Classroom 2) at the same school. At a second school, two independent preschool teachers participated, one in the morning (Classroom 3) and one in the afternoon (Classroom 4). All were White females and had bachelor's degrees with endorsements in early childhood education. The teacher for Classrooms 1 and 2 was 55 years old and had 16 years of teaching experience. The teacher for Classroom 3 was 54 years old and was in her first year teaching at the participating preschool, having taught six years previously. Classroom 4's teacher was 26 years old, with five years of experience; she was working on an ELL endorsement. Each classroom had a full-time aide who worked with the children but who was not actively involved in the study.

There were 13 or 14 children in each classroom, for a total of 55 preschoolers (see Table 1). Per the preschools' requirements, all children were 4 years old on or before September 1 of the school year. The mean age of children at the beginning of the study was 4 years 6 months (Classroom 1 = 4 years 3 months, Classroom 2 = 4 years 6 months, Classroom 3 = 4 years 9 months, Classroom 4 = 4 years 4 months). All were from low SES backgrounds.

Context

The context for all experimental phases was consistent across each classroom (i.e., same academic routines, same time of day, same teacher). Each teacher identified the most problematic time of day in terms of disruptive student behavior. For Classrooms 1 and 2, this was a 20 min instructional period called circle time, when all children sat together on the floor and were instructed by the teacher on topics such as letters, numbers, and weather. During circle time, children assisted with jobs, sang songs, danced, and answered simple questions. For Classrooms 3 and 4, teachers designated a 60 min instructional period called center time as the

most problematic time. Center time involved children moving as groups among four different centers, spending equal time at each. The teacher directed one of these centers, usually focusing on the alphabet or numbers. The classroom aide led another, also typically focusing on letters and numbers. The other centers, involving artwork or writing, were sometimes led by parent volunteers; at other times children monitored themselves.

Procedures

      Baseline. Baseline data were collected during the times previously specified with the teachers using their normal classroom routines. During baseline, none of the participating teachers used a reward system and the amount of praise given to children was variable (see Results section below). The teacher for Classrooms 1 and 2 had routines set up with children assigned to specific jobs during circle time. The teacher of Classroom 3 had specific procedures for transitioning between centers, with children standing in a line at a signal and waiting to rotate. The teacher of Classroom 4 used transitions informally, calling for children to rotate when she felt it was time.

      Training. Teachers were individually trained after baseline data were collected and just before CW-FIT Tier 1 was implemented in the classroom. Each teacher attended a two-hour training session directed by the researchers during which the rationale and logistics of the intervention were explained and opportunities to practice the intervention components were provided. During training, teachers were given scripted lessons they used to introduce the skills and were provided feedback as they practiced. Trainers strongly emphasized the value of using praise. Training also included videos of other teachers modeling the intervention in their classrooms. To help embed the intervention into the classroom, teachers were instructed to use it as part of their regular academic instruction where they taught as usual and to supplement with

CW-FIT Tier 1 to manage behavior. Classroom aides were not present at the training, though

they were in the classroom when the intervention was explained to the children.

As part of training, research staff also coached teachers on intervention implementation

for one to two weeks, until teachers were able to independently implement with fidelity as

indicated by start-up fidelity observations (i.e., social skill steps taught, rationale for skill

explained, modeling, and role plays). In-class coaching length varied based on how quickly

teachers were able to implement the program independently. This coaching consisted of

answering questions and providing feedback on how well teachers were implementing key

components (e.g. praising, operating the timer, awarding points). Intervention phase data were

collected after the training was completed. Research staff were also available to answer questions

if needed before and after observation sessions throughout intervention phases.

Intervention. The intervention was the Tier 1 portion of CW-FIT (Wills et al., 2010),

which consisted of teaching social skills to all children and utilizing a group contingency

whereby children earned points as teams to earn rewards.

Social skills lessons. Teachers taught three to four social skills to the children through 10

min scripted lessons using direct instruction with definitions, modeling examples and non-

examples, role plays, and feedback. Skills were introduced one day at a time; some teachers

chose to practice one skill for an additional 1 to 2 days before introducing the next. Three main

lessons formed the basis of the social skills instruction: "how to get the teacher's attention,"

"ignore inappropriate behavior," and "follow directions the first time." Three of the four teachers

choose to include a fourth skill. The teacher for Classrooms 1 and 2 chose to add "keep hands,

feet and objects to self," and the teacher for Classroom 3 chose "talk in a quiet voice." The

teacher for Classroom 4 chose not to implement a fourth skill. The social skills were posted in

the classrooms with accompanying visuals and specific steps listed. In order to make the

typically used social skill scripts age appropriate, each preschool teacher adapted them by

incorporating hand gestures for children to use when repeating the specific steps. For example, if

one of the steps was "Look at the teacher and listen," the teacher and children would point to

eyes and then ears as they repeated the step. Once all social skills were taught, teachers were

instructed to pre-correct (i.e., briefly review) these skills at the beginning of each subsequent

session.

Teams. Children were grouped by teachers into four teams of three to four children each

based on seating arrangement during the academic time: teams in Classrooms 1 and 2 according

to rows on the carpet, teams in Classrooms 3 and 4 according to tables where children were

sitting. While children rotated to other tables throughout the session, teams remained intact.

Timer. The teachers set an audible timer at intervals typically between 1.5 and 3 minutes,

which is shorter than CW-FIT studies conducted with older students. This adaptation, made prior

to intervention implementation, was because teachers believed the shorter intervals would be

more effective at maintaining children's attention.

Goals, points, and praise. Each day a point goal was set by the teachers. Goals were

determined by 75-85% of possible timer beeps during the session. When the timer sounded, the

teacher scanned each team and awarded points on a chart and praised the teams if every child on

the team was displaying the social skills previously taught. Specific, corrective feedback was

given to teams which did not earn a point. The teacher of Classrooms 1 and 2 adapted the team

point chart to help children more easily visualize the goals and the points earned by coloring in

squares each time a point was awarded. The other teachers used the tallies used in other CW-FIT

studies because their children had previously learned about tally marks, while those in

Classrooms 1 and 2 had not. Teachers also praised teams throughout each session when they saw children displaying social skills and ignored minor problem behaviors.

 Reward. At the end of the instructional period, teachers tallied team points and gave a previously determined reward to all teams reaching the point goal. They also praised children again for following the social skills. Overall, teams earned their goal 92.56% of the time (Classroom 1 = 88.29%, Classroom 2 = 95.65%, Classroom 3 = 95.43%, Classroom 4 = 93.94%). Common rewards used included extra recess time, stickers, games, dancing, and candy. Teams not meeting the goal were not punished; they simply did not participate in the reward.

 Withdrawal. During the withdrawal phase teachers removed the social skill posters, point charts, and timers from their classrooms and children were no longer identified as members of a team. Teachers stopped reviewing the CW-FIT social skills taught to students and returned to their baseline classroom management procedures. Teachers also informed students the intervention was not occurring, if they were asked by students.

 Intervention. After the withdrawal phase, teachers resumed using CW-FIT Tier 1; though they did not repeat the 10 min social skill lessons, they relied on daily pre-corrects as a reminder of the expected skills. Teachers continued to use the intervention for the remainder of the study.

 Post-intervention. After all data were collected, researchers met with teachers individually to debrief them on their classroom results, show them the graphs of on-task behavior and praise rates, and offer suggestions for improved future implementation. Teachers completed a social validity survey. The researchers also arranged a convenient time to administer a social validity survey to the children in a brief interview format.

Dependent Variables and Measures

Group on-task behavior. The primary dependent variable was student group on-task behavior. On-task behavior was defined as students appropriately working on the assigned/approved class activity. This included (a) attending to the material/task, (b) making appropriate responses (e.g., writing, looking at the teacher), (c) asking for assistance in an acceptable manner (e.g., raising hand), and (d) waiting appropriately for the teacher to begin or continue with instruction (e.g., staying quiet, remaining in seat). Conversely, off-task behavior was defined as any behavior indicating the student was not participating appropriately (e.g., talking to a peer, looking away from teacher). Trained observers (undergraduate and graduate students) recorded children's on-task behavior under the supervision of a licensed school psychologist employed full time as the research coordinator. Observations took place for the first 20 min of each observation session, as soon as teachers started the timer for the intervention. The observers remained in the classroom for the duration of the session. Researchers were cognizant of pre-school students' developmental levels; thus, slight movements while seated or talking in centers while still accomplishing the task were marked as on-task. However, the disruptive behavior of overt inappropriate motor movements (e.g., arm flailing) would trump the appearance of on task (e.g., looking at the teacher).

Observers, positioned unobtrusively at the side of the classroom, recorded children's on-task behavior using a momentary time sampling method (observer records whether the target behavior is occurring at the moment each interval ends). During each 20 min observation, they recorded each group (CW-FIT teams) as either on task or off task (+ or ─) in 30 s intervals. At every 30 s mark, observers looked at all children in the first team and marked them as on task or off task, then looked at all the children in the second team and marked them as on task or off task and so forth (count/look/mark). This was done quickly and unobtrusively, so children would be

unaware of the pattern of observation. For a group to be marked on task, all children in the group had to be adhering to the behaviors mentioned above at the exact time they were observed. To obtain an on-task percentage for the whole class, observers added the total number of on-task marks and divided this total by the number of observed intervals for each group, then combined totals for groups.

Teacher praise and reprimands. Collateral dependent variables consisted of teacher praise and reprimand rates. Praise was defined as any verbal statement indicating approval of behavior beyond a simple acknowledgement of a correct response. For example, "Nice work raising your hand, Kim!" and "Great job, Team 2!" would be scored as praise, while "That's correct, Tony," and "Thank you, Jill," would not be. Reprimands were defined as any punitive statement or indication of displeasure regarding behavior. Examples included "Stop talking, Juan," and "Because you're not listening, we will go late to recess." Non-examples include, "I need all eyes on me," and "That's incorrect, Susan." Observers tallied each praise statement directed toward an individual or group as well as each reprimand to an individual or group and any points earned. Observers collected these data at the same time as group on-task behavior.

Treatment fidelity. At the conclusion of each intervention session observed, while still in the classroom, observers completed a 13-item procedural fidelity checklist to record whether the teachers had implemented the intervention as intended. They noted, for example, if posters and daily point goals were posted, if teachers reviewed skills at the beginning of the lesson, and whether teachers had given praise. Specific definitions for treatment fidelity and quality ratings were given to observers during training and available during observations. Observers marked "yes" or "no" on each item per observation. Fidelity was calculated by dividing the number of "yeses" the teacher achieved by the number of "yeses" possible. Additionally, observers gave a

quality rating of 1 (*partial*), 2 (*good*), or 3 (*full*) for the execution of components marked "yes."

For example, the item *Daily point goal posted* indicated the point goal should be announced and

written on a chart visible to students before instruction began. Only if the component was

marked "yes" would a quality rating be assigned (1 = *Point goal was posted but visible to less*

than 50% of students, 2 = *Point goal was posted but visible to 50-90% of students*, 3 = *Point goal*

was posted and visible to 90-100% students). Overall quality ratings were calculated by adding

the quality ratings given for each item and dividing by the total possible for items marked "yes."

      Social validity. At the completion of the intervention, teachers responded to an 18-item

social validity questionnaire to indicate whether they found the intervention useful and whether it

was easy to implement. The questionnaire consisted of 15 Likert-type items rated on a four-point

scale (1 = *very true* to 4 = *not true*) and three open-ended qualitative items asking what was most

helpful, what could be improved, and what teachers would change. With the help of researchers,

preschool children responded to a five-item questionnaire regarding their perceptions of the

intervention. The questionnaire included two dichotomous items rated *yes* or *no*, asking whether

they enjoyed the intervention and whether they thought other children should get it in their

classrooms. Three open-ended questions asked what children did and did not like about the

intervention and why other children should or should not get it in their classrooms.

Interobserver Agreement

      Before entering classrooms, observers received training for identifying group on-task

behavior, praise statements, and reprimands. They studied definitions and watched videos of

classrooms, marking groups of children as either on or off task and recording praise and

reprimands. Each observation sheet was matched against a key. Researchers could not undertake

classroom observations until they consistently achieved 90% accuracy in this training. To further

ensure accuracy of the observational data, two observers collected data simultaneously on

28.13% of the observation sessions (23.81% of baseline and 28.99% of intervention phases) and

calculated interobserver agreement (IOA). To obtain IOA, researchers noted the number of

intervals in which the two observers were in agreement for group on task/off task and divided the

number by the total number of on task/off task intervals. IOA averaged 98.29% (ranged 92.80 to

100). IOA was also calculated for treatment fidelity observations, both for counts of occurrence

and for quality ratings, by dividing the number of agreements between observers by the total

number of items on the fidelity sheet. IOA averaged 98.72% (range of 69 to 100) for treatment

fidelity and 98.23% (range of 75 to 100) for quality. To calculate IOA for praise statements,

researchers divided the total number of praise statements marked by one observer by the total

number of praise statements made by a second observer. Researchers calculated IOA for

reprimands using the same method. This method was chosen because of the low frequency count,

often zero, during some sessions. IOA for praise statements and reprimands averaged 84.33%

(range 33.33 to 100) and 78.22% (range 20 to 100), respectively.

Design and Analysis

This study used a delayed multiple baseline across classrooms design with embedded

withdrawals to confirm the controlling effects of the intervention. Classes began the intervention

at different times and withdrew from the intervention after obtaining consistent group on-task

data points. Decisions regarding when to implement the intervention in each classroom and when

to withdraw it were based on group on-task data: Once one classroom's intervention phase had

three fairly steady group on-task points, training (and then intervention) began with the next

classroom. Withdrawal phases lasted one to two weeks, after which the intervention was

reintroduced.

Researchers used visual methods to analyze the graphical data for teacher praise rates and group on-task behavior. They analyzed information from the fidelity checklist to determine how well teachers implemented CW-FIT Tier 1, calculating an average fidelity score and a quality score, as well as analyzing aspects of the intervention often omitted. For computing differences between baseline and intervention phases, the researchers chose Tau-U, an effect size measure used for single-subject data. Tau-U is a nonparametric technique for analyzing non-overlapping data points between two phases, which is particularly appropriate for small datasets (Parker, Vannest, Davis, & Sauber, 2010). An effect size calculator was used to compute effect size and statistical significance (www.singlecaseresearch.org/calculators/tau-u). With the Tau-U calculator, each classroom's baseline data were contrasted with the first intervention phase data, and withdrawal data were contrasted with the second intervention phase data. Researchers combined results of these two contrasts to find an effect size for each classroom. They also summarized the results of the teacher and student social validity questionnaires, using descriptive statistics and qualitative coding of participants' open-ended responses.

Results

Treatment Fidelity

Preschool teachers implemented CW-FIT Tier 1 with 92.94% (SD = 5.96) fidelity. Teachers showed the highest fidelity (100%) with displaying the posters and the point chart, using the timer at appropriate intervals, awarding points to teams for the use of skills, and giving frequent praise and points. Giving an immediate reward was the aspect implemented with the lowest fidelity, 40.63% of the time. However, if a reward was not given immediately, it was announced and given later in the day 98.25% of the time. Pre-correcting, or briefly reviewing skills, the second least implemented item, was still implemented at a high level, 86.46% of the

time. Classroom 4, which had a lower fidelity average than the other classrooms, showed the lowest fidelity on pre-correcting on the skills (28.57%), referring to the skills when correcting children's behavior (54.55%), and rewarding winners immediately (57.14%). All other fidelity items appeared over 85% of the time.

Preschool teachers not only implemented most components consistently, they implemented them well. Quality ratings for the intervention components implemented averaged 92.35% ($SD = 9.85$). The teachers of Classroom 3 and Classroom 4 both received lower ratings for giving corrective instructions referring to the skills and for referencing skills when awarding points. Classroom 3 also had lower quality for tallying points for teams (77.78%) and for announcing when and where the reward would be given if not given immediately (77.78%). Classroom 4 received lower ratings for setting and using the timer at appropriate intervals (78.57%) and for giving behavior-specific praise (63.87%).

Teacher Praise and Reprimands

Although somewhat variable, praise to reprimand ratios increased with the use of the intervention (see Figure 1). Variability contributed to significant amounts of overlapping data points between the phases in both praise and reprimands. Overall praise to reprimand ratios during baseline were 2.64 and increased 3.77 times to 9.95 during the first intervention phase. Rates during the withdrawal phase averaged 4.81 and increased 2.29 times to 11.05 during the second intervention phase. Tau-U results revealed statistically significant differences in baseline and intervention praise rates for Classroom 1 (*Tau u* = 0.755, *p* = 0.003) and Classroom 2 (*Tau u* = 0.558, *p* = 0.006), but not for praise rate changes in Classrooms 3 (*Tau u* = 0.400, *p* = 0.121) or 4 (*Tau u* = 0.408, *p* = 0.130) or for reprimand rate changes in any of the classes (*Tau u* = -0.026, *p* = 0.917; *Tau u* = -0.277, *p* = 0.172; *Tau u* = -0.320, *p* = 0.215; *Tau u* = -0.143, *p* = 0.595).

Group On-Task Behavior

Visual analysis was conducted on level, trend, and variability within phases and overlap and consistency between phases. Baseline levels were fairly stable with slight increasing trends. During intervention phases, each classroom showed increases in level and stable trends. Overall baseline group on-task behavior levels averaged 63.14% (SD = 10.34) and increased by 17.25% to 80.39% (SD = 6.81) during the first intervention phase. On-task behavior returned almost to baseline levels during the withdrawal period (68.18%, SD = 7.17) and increased by 13.16% to 81.34% (SD = 5.04) when the intervention was reintroduced. Classroom 1 showed less overlap between phases than the others, and each classroom's baseline and withdrawal phases were consistent, as were the intervention phases.

The Tau-U analyses revealed statistically significant differences in on-task rates between baseline and intervention phases for all classrooms combined (*Tau u* = 0.95, *p* < .001) and for each of the four classrooms as follows: Classroom 1 (*Tau u* = 0.98, *p* < .001), Classroom 2 (*Tau u* = 0.90, *p* < .001), Classroom 3 (*Tau u* = 0.95, *p* < .001), and Classroom 4 (*Tau u* = 1.00, *p* < .001). The variability of on-task behavior decreased during intervention phases (see Figure 2).

Social Validity

All items on the teacher social validity questionnaire were rated as *very true* or *mostly true*, indicating they believed CW-FIT Tier 1 was both useful and feasible to implement. One teacher reported children "get more done" and the intervention provided "more chances for [the teacher] to praise and remind." Another teacher stated there was "less talking out" when the intervention was implemented. The teacher of Classroom 4 gave the lowest ratings, which still were *mostly true*. The item with the lowest ratings was "The timer was manageable for use during instruction."

Regarding the three qualitative open-ended items, the teacher of Classrooms 1 and 2 stated "learning to praise more and ignore inappropriate behavior" was most helpful. This teacher reported she would use "more of a variety of rewards" in the future. The Classroom 3 teacher noted practice was most useful in learning to implement the intervention. Like the teacher of Classrooms 1 and 2, she wished to be "more creative" with the rewards used. The teacher of Classroom 4 stated "seeing it in action" on training videos was the most helpful aspect of learning CW-FIT Tier 1 and "more ongoing updates and reminders" about what was expected would have been helpful in the implementation process. For future modifications, she would "use it during different times of the day" and increase the time between the timer beeps.

Of the 53 children surveyed, 50 (94.34%) said they liked the intervention. When asked what they liked about it, most children either said it was fun or they enjoyed getting points and prizes. Twenty-three children (43.40%) indicated there was something they did not like. Many said they did not like when their team did not earn a point. One child did not like when children were put on their own teams (because of inappropriate behavior). Two others mentioned other children were "mean" or would "get mad" when one child's behavior cost their team points. Nearly all of the children (98.11%) said they thought children in other classrooms should get the intervention. Of the 53 surveys, 16 provided coherent responses regarding why other children should get it. The common theme was other children would also like the intervention and think it was fun.

Discussion

The purpose of this study was to explore the effectiveness of CW-FIT Tier 1, a group contingency program based on PBIS practices, when implemented in preschool classrooms. Previous studies have shown CW-FIT to be effective at increasing on-task behavior and

improving praise to reprimand ratios in older grades (Caldarella et al., 2015; Kamps et al., 2011, 2015; Wills et al., 2014). This is the first study to date to examine CW-FIT Tier 1 implementation in preschool classrooms. General findings suggest CW-FIT Tier 1 was effective for improving behaviors of preschool teachers and children.

First, results indicated preschool teachers were able to implement CW-FIT Tier 1 with a high level of fidelity. This is consistent with fidelity levels in previously cited CW-FIT studies. The items on which teachers showed the lowest fidelity were pre-correcting on skills and immediately distributing rewards. However, when children were not rewarded immediately, teachers showed high fidelity with announcing the specifics of the reward. Since the teachers often had recess or other activities immediately following the intervention time, they might have found giving the reward at the time inconvenient, thus explaining the low fidelity in this area. High quality ratings indicated teachers not only implemented intervention procedures, but they implemented them well, suggesting preschool teachers can successfully utilize the intervention as intended. This is important given past literature indicating preschool teachers struggle to implement PBIS interventions with fidelity (Frey et al., 2010).

Second, praise statements generally increased, though the number of reprimands remained fairly constant across study phases: All preschool teachers gave very few reprimands even during baseline. Past CW-FIT studies have also shown increases in praise to reprimand ratios, though these earlier studies showed greater consistency in the increase than the present study (Caldarella et al., 2014; Kamps et al., 2011, 2015). As an explanation for the initial low reprimand rates, one teacher mentioned early childhood education programs tend to emphasize praising often and reprimanding rarely. Additionally, the periodic timer beeps, which signaled

teachers to award points, might have reminded teachers to praise, thus leading to increased praise

rates.

However, some differences in praise rates were apparent across classes. Praise to

reprimand ratios actually decreased from the withdrawal phase to the reimplementation of the

intervention for Classrooms 3 and 4. This decrease might have been due to the nature of

classroom instruction during intervention (20 min of large-group instruction in Classrooms 1 and

2, and small groups for close to an hour in Classrooms 3 and 4). Perhaps it was easier for the

teacher to remember to praise during a shorter time or when all children were continuously

present in front of her. The teachers of Classrooms 3 and 4 might have found it more difficult to

remember to praise children while circulating around the room and attempting to run small

instructional groups. Despite low levels of praise statements at times, on-task rates increased in

all classrooms whenever CW-FIT Tier 1 was implemented. These data suggest on-task behavior

was not related to teacher praise alone. Other intervention components, such as the social skills

training, rewards, and points, seem to have helped on-task behavior remain high despite

somewhat lower praise rates.

Third, on-task classroom behavior increased when CW-FIT Tier 1 was implemented.

These results are fairly consistent with findings in previous CW-FIT studies (Caldarella et al.,

2015; Kamps et al., 2011, 2015; Wills et al., 2014). High on-task behavior is critical to early

childhood educators since off-task behaviors can lead to an unsafe learning environment as well

as loss of instruction time (Carter & Pool, 2012).

Finally, teachers and children found the intervention to be socially valid. All teachers'

ratings and comments regarding the intervention were positive. Teachers in previously cited

CW-FIT studies have also viewed it positively. Measuring teacher perceptions of classroom

management practices is critical in closing the "research-to-practice gap," when teachers do not understand or are unsure how to apply the results of studies (Carnine, 1997). Since preschool teachers gave CW-FIT Tier 1 favorable ratings regarding ease of implementation and usefulness, their belief in its practicality and applicability were suggested. Most children indicated they enjoyed participating and believed other children should participate as well.

Limitations and Areas for Future Research

Despite the positive results of this study, some limitations exist. Because one of the participating teachers taught both Classroom 1 and Classroom 2, some aspects of the intervention were used in Classroom 2 while it was still in baseline. As soon as she began to implement the intervention in her morning class, observers noticed this teacher began to praise more and use some of the social skills training language with her afternoon classroom. However, on-task behavior and praise rates further increased after CW-FIT Tier 1 was fully implemented in Classroom 2.

Another limitation was the small number of preschool classrooms and teachers included in the study. Replications of the current study are recommended in order to determine if the same effects occur in other preschool classrooms. The diversity of both teachers and children was also limited. While this study involved only four-year-olds, many preschools include three-year-old students. Since developmental levels are different between the ages of three and four (The Society for Research in Child Development, 2014), replications involving younger age groups would be beneficial to determine whether CW-FIT Tier 1 is appropriate at younger ages. Future studies might examine the extent to which the results of CW-FIT Tier 1 generalize to other classroom activities and whether effects maintain after the intervention is permanently removed.

Phase changes were not always implemented at the requisite time. Ideally, the baseline of one classroom should continue during the intervention phase of another classroom, allowing researchers to compare data from the same period of time. As is often the case when conducting research in school settings, unforeseen circumstances (e.g. teacher absences, assemblies, classroom parties) affected opportunities to collect data. Such constraints impacted data collection, creating less than ideal, albeit realistic, conditions.

This study also did not specifically examine the impact of coaching on CW-FIT Tier 1 implementation. It is difficult to know how much coaching impacted fidelity. It is also unclear whether typical preschool teachers would be able to implement the intervention without regular coaching, though this is an area worthy of further study. Also, since research staff were coaches this may have biased the study results. It would be helpful in future studies to use coaches who are not members of the research team.

The design of this study, a delayed multiple baseline with embedded reversals, also had some associated limitations. As noted by Cooper, Heron, and Heward (2007), delayed multiple baseline designs may be used when limited resources or practical difficulties preclude a full multiple baseline design, as was the case in the present study. However, such designs have some weaknesses: Baseline data collected after the independent variable has been applied (to previous subjects) cannot be used to verify predictions based on earlier phases of the design (Cooper et al., 2007). There are thus fewer baseline data points to use for analysis. We did however strengthen this design, by the addition of reversals showing replications of intervention effects.

Finally, researchers chose not to measure changes in children's problem behaviors. Previous CW-FIT studies implemented Tier 2 and Tier 3 strategies for children with such behaviors. Initially the researchers had planned to use Tier 2 interventions, and teachers had

identified two target children per class who would benefit. However, four of these children

moved during baseline data collection or were frequently absent during data collection, and this

portion of the study was discontinued. It is also important to consider the developmental

appropriateness of the Tier 2 and Tier 3 components, particularly regarding self-management.

Since all three tiers are meant to be used in conjunction, future research could investigate the use

of the complete CW-FIT intervention package in early childhood settings.

Implications

Although replications are necessary to confirm effectiveness of CW-FIT Tier 1, this

study suggests promising results for preschool implementation. Many of the existing studies on

group contingencies in early childhood settings focus only on individual children or small groups

(Swiezy et al., 1992; Tanol, Johnson, McComas, & Cote, 2010). The present study involved

whole classrooms, expanding the proven effectiveness of this type of intervention. The

intervention can also be used flexibly to fit preschool teachers' needs. The amount of time

between timer beeps can be changed according to the abilities and needs of the classroom.

Visuals can be added to point charts, and hand motions can be combined with verbal cues if

necessary for greater efficacy.

Effective preschool interventions incorporate preventive measures, including pre-

teaching of expectations as well as consequences utilized not only with behavioral problems, but

with all children in the classroom (Dunlap et al., 2006). Results of the current study suggest CW-

FIT Tier 1, which uses such preventive measures, may foster improved relationships between

children and teachers and can be effective in improving the behavior of whole preschool classes.

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Table 1

Preschool Student Demographics

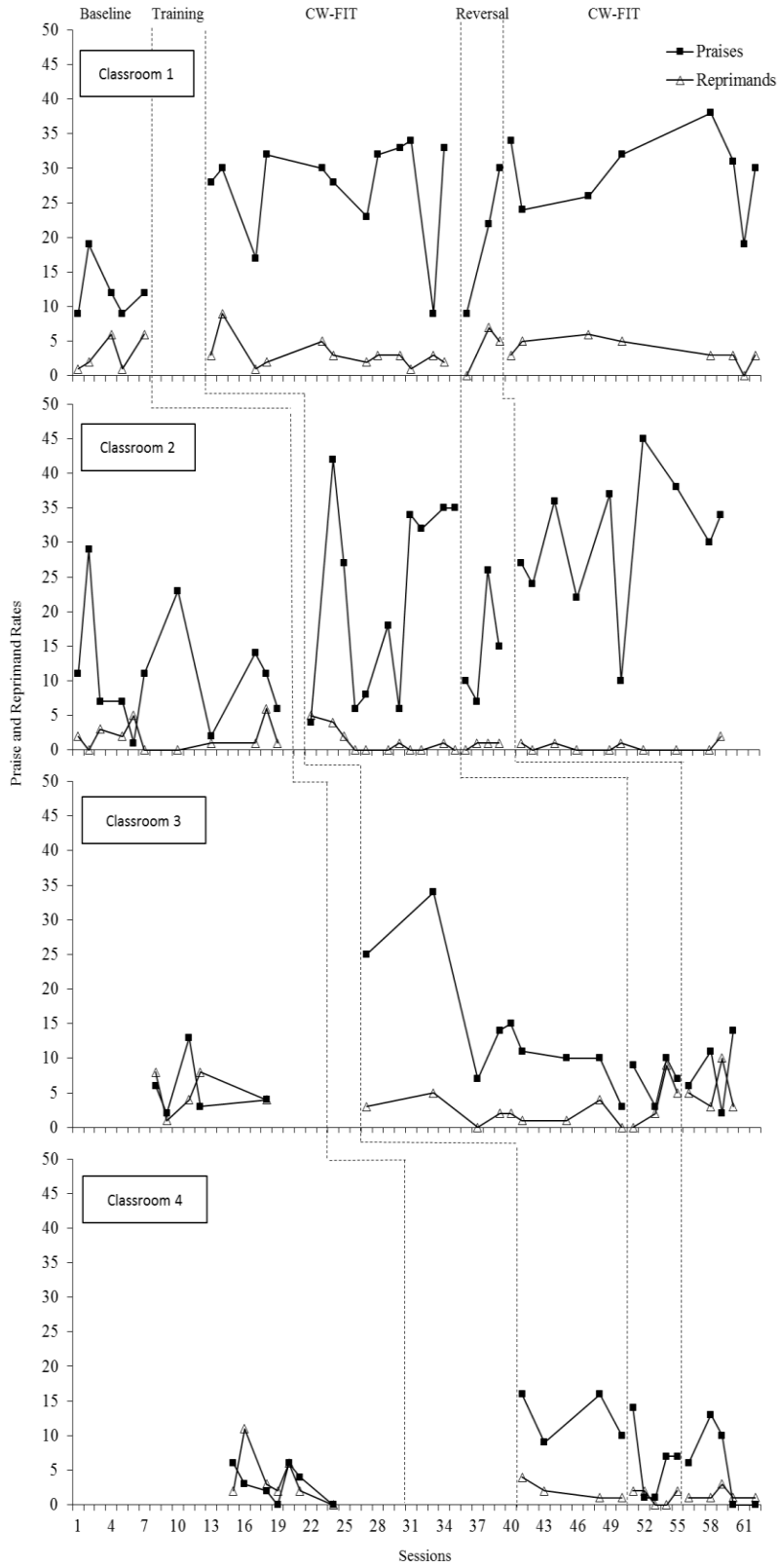|	Classroom 1		Classroom 2		Classroom 3		Classroom 4	
Variable	*n*	%	*n*	%	*n*	%	*n*	%
Gender								
Boys	9	69	8	57	7	50	10	71
Girls	4	31	6	43	7	50	4	29
Sample Total	13	100	14	100	14	100	14	100
Ethnicity								
White	4	31	2	14	6	43	7	50
Hispanic	8	62	12	86	8	57	6	43
Black	1	8	0	0	0	0	0	0
Pacific Islander	0	0	0	0	0	0	1	7
English Language Learners	7	54	10	71	6	43	5	36

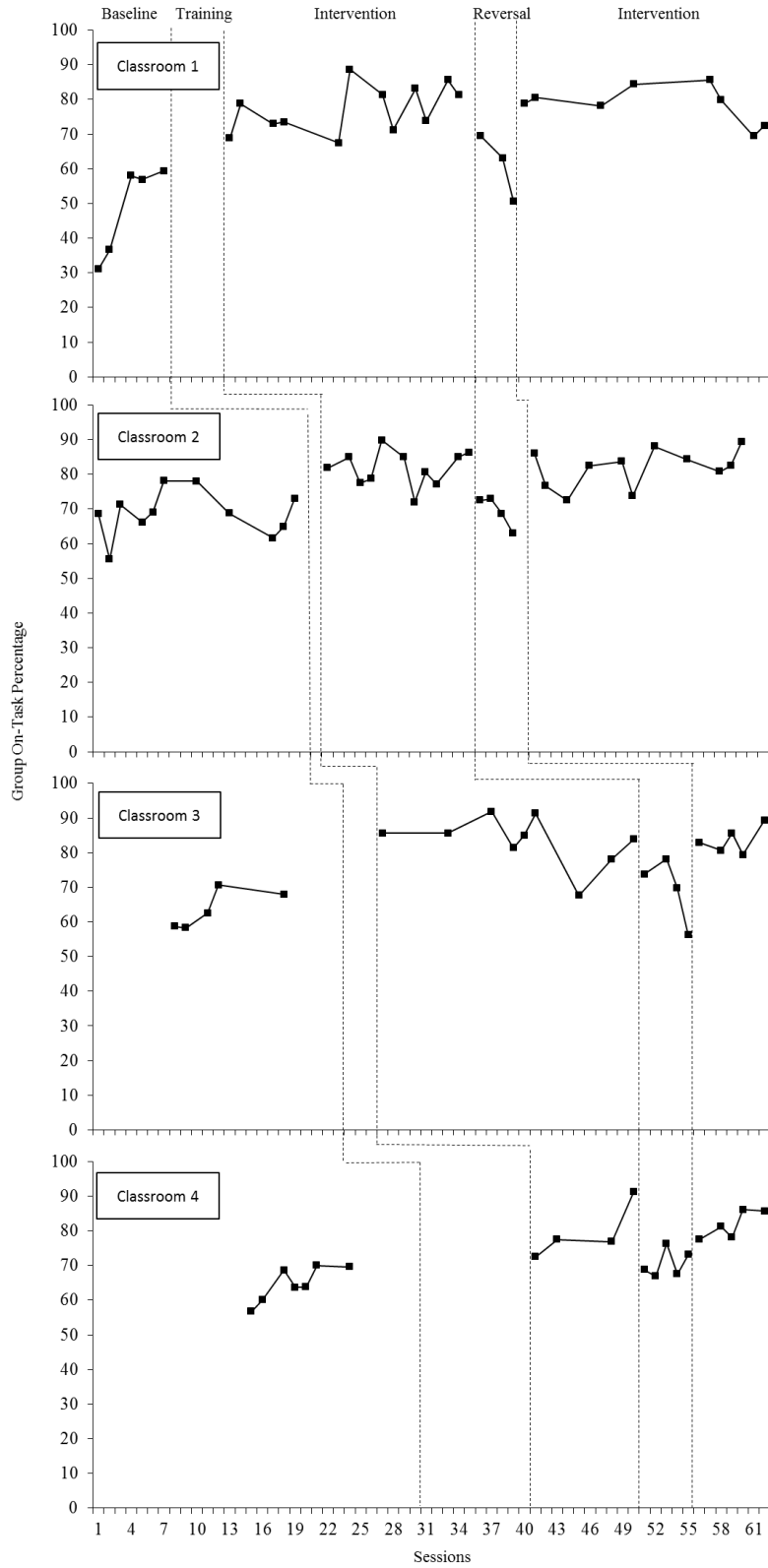*Figure 1:* Praise and reprimand rates across classrooms and phases.

Figure 2. Group on-task across classrooms and phases.