Hammill Institute on Disabilities

Journal of Positive Behavior Interventions
13(3) 154–167

DOI: 10.1177/1098300711398935
http://jpbi.sagepub.com
SAGE

Class-Wide Function-Related Intervention Teams: Effects of Group Contingency Programs in Urban Classrooms

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Abstract

The purpose of the study was to determine the effectiveness of the *C*lass-*W*ide *F*unction-related *I*ntervention *T*eams (CW-FIT) program, a group contingency intervention for whole classes, and for students with disruptive behaviors who are at risk for emotional/behavioral disorders (EBD). The CW-FIT program includes four elements designed from empirical studies on the assessment and treatment of problem behavior: (a) teaching socially appropriate communicative skills to access attention or brief escape; (b) extinction of or eliminating potential reinforcement (attention, escape) for problem behavior; (c) strengthening alternative or replacement behaviors, that is, differential reinforcement at individual levels within the context of peer groups with shared group contingencies; and (d) self-management for program maintenance. Procedures were designed to fit within a School-wide Positive Behavior Support framework as Tier II interventions. The CW-FIT implementation was completed in six classes drawn from three schools with 107 students and 8 target students with EBD risks. Results showed clinically important improvements. Group on-task data improved during CW-FIT over baseline levels. For target EBD risk students, results included decreased disruptive behaviors and increased on-task behavior during CW-FIT. Implications for teachers and practitioners are discussed; improved student behavior translates to important levels of increased instruction time in urban classrooms.

Keywords

classroom management, group contingency, behavior disorders

Students with disabilities and at risk for emotional/behavioral disorders (EBDs) have an alarming risk of failure in school. National trends indicate a distressing upward trend in prevalence (Epstein et al., 2005). For example, the Surgeon General's 2000 report on children's mental health estimates that 14 million children and adolescents have mental illness equivalent to 20% of the general population. It is further recognized that children with EBD and those at risk exhibit learning and behavioral problems at an early age. Longitudinal studies have shown serious antisocial behaviors as early as 4 years of age (S. Campbell, 1994; Kamps, Ellis, Mancina, Wyble, & Greene, 1995; Kamps, Kravits, Rauch, Kamps, & Chung, 2000; Patterson, Reid, & Dishion, 1992; Webster-Stratton, Reid, & Hammond, 2001). Estimates from research are that between 3% and 6% of school-age children have EBD (Kauffman & Landrum, 2008), qualifying for special education services, with more males than females meeting criteria (Walker, Severson, Feil, Stiller, & Golly, 1998). Students with EBD are oftentimes not identified until they have exhibited serious problems over multiple school years (Kauffman & Landrum, 2008). Thus, the need for evidence-based interventions that improve classroom management, and ameliorate and prevent severe problem behavior for school-age children, is of the utmost urgency.

Fortunately, there is a growing body of evidence supporting intervention procedures that are highly effective and practical for schoolwide and classroom-level implementation (e.g., Kamps, Kravits, et al., 2000; Rutherford, Quinn, & Mathur, 2004; Stage & Quiroz, 1997). A meta-analysis of

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Action Editor: Timothy Lewis

interventions for decreasing disruptive behaviors in classroom settings reported that the most effective outcomes resulted from use of (a) group contingencies, (b) self-management, (c) differential reinforcement, and (d) functional assessment (Stage & Quiroz, 1997). Other highly effective interventions for reducing risks of EBD include direct instruction for functional communication and social skills and consultant-based one-to-one interventions (Golly, Stiller, & Walker, 1998; Nelson, Crabtree, Marchand-Martella, & Martella, 1998; Lien-Thorne & Kamps, 2005). Research has shown that teaching communication/prosocial skills and provision of differential reinforcement of skill use promote desired behavioral outcomes (Kamps, Tankersley, & Ellis, 2000). In a recent review of 207 published studies that included evaluations of functional assessment and function-based interventions, 95 (45.9%) of the studies included a differential reinforcement (DRA) component (Hanley, Iwata, & McCord, 2003).

Group contingencies are commonly used in school settings to (a) reinforce incidental occurrences of prosocial behavior within the students' natural environment (Cashwell, Skinner, & Smith, 2001) and (b) encourage educators to observe and reinforce appropriate student behavior (Skinner, Cashwell, & Skinner, 2000; Smith & Misra, 1992). When implemented on a day-to-day basis, a group contingency intervention may increase the probability of reinforcement delivered by the teacher, which in theory may then increase the natural occurrence of appropriate student behavior (Cashwell et al., 2001; Skinner, Skinner, Skinner, & Cashwell, 1999). Studies have shown group contingencies to decrease inappropriate classroom behaviors and increase prosocial behavior of groups of children. Positive results have occurred in regular education classrooms ranging from preschool to high school and for children with disabilities (Cashwell et al., 2001; Lea, Bray, Kehle, & DioGuardi, 2004). Group contingency programs (i.e., reinforcement for appropriate rule following and mild, consistent consequences for infractions) are especially effective with high-risk students in the context of peer groups in general education settings (Embry, 2002; Tankersley, 1995; Thorne & Kamps, 2008). In addition, the application of group self-management has been shown to be promising as a prevention intervention. Results have included reduced disruptive behaviors for students with LD/EBD (Kern, Dunlap, Childs, & Clarke, 1994; Salend, Reeder, Katz, & Russell, 1992) and increased on-task behaviors (Babyak, Luze, & Kamps, 2000; Carpenter & McKee-Higgins, 1996; McQuillan, DuPaul, Shapiro, & Cole, 1996). The advantages cited in the research literature of group contingencies include the following: (a) evaluating group criteria is more efficient than each student's individual criteria (Theodore et al., 2001); (b) distribution of reinforcement is quickened, and a wider variety of reinforcement (i.e., class outings and free time) can be used (Skinner et al., 1999); (c) teacher time for monitoring and reinforcing behaviors is less for a group of students than for implementing multiple individual contingency programs (Crouch, Gresham, & Wright, 1985); and (d) more students are exposed to the experience of being reinforced.

Of importance to implementation of effective intervention in school settings, is the development of tiered models of intervention. In particular, School-wide Positive Behavior Support (SwPBS) has emerged as an effective three-tiered model of prevention and intervention. In the SwPBS model, universal support includes the following core features: (a) school expectations are taught to all students, and acknowledged often with a schoolwide incentive system; (b) contacts between teachers and students are prosocial, positive, and preventive in nature rather than punishing; (c) schoolwide data such as office referrals are collected; and (d) an SwPBS team of persons guides the use of data-based decisions to improve academic and social performance of all students (Sugai & Horner, 2002). At the Tier II level, groups of students who are at risk and/or not responsive to the universal intervention receive an additional targeted intervention (e.g., a check-in/check-out monitoring system; social skills intervention). At the Tier III level, students receive an individualized behavior support plan with functional behavior assessment guiding the intervention (Sugai et al., 2000). Use of SwPBS has an emerging literature base for improving overall school performance and behaviors for at-risk students (see case studies; Greenwood, Kratochwill, & Clements, 2008).

In summary, findings from the literature suggest a need for the increased use of evidence based practices to support appropriate classroom behaviors in applied settings (Embry, 2002; Walker, Golly, Zolna McLane, & Kimmich, 2005). Research also suggests the use of tiered models such as SwPBS to prevent behavior problems for large numbers of students and to intervene in an efficient and effective manner for those with more challenging behaviors (Safran & Oswald, 2003). Research recommends continued experimental studies to refine and examine interventions that (a) include multilevel components for high-risk classrooms and students with challenging behaviors, (b) are acceptable to practitioners in real-world settings, and (c) are efficient in terms of implementation.

Purpose

The purpose of the study was to determine the effects of a multicomponent group contingency intervention, the *C*lass-*W*ide *F*unction-related *I*ntervention *T*eams (CW-FIT) program within elementary schools using SwPBS. 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 experiment was designed to provide a classroom-level Tier II intervention for classroom groups of children not responsive to the universal SwPBS implementation and to determine the effects based on the following research questions: (a) What are the

effects of CW-FIT for group on-task behaviors? (b) What are the effects of CW-FIT on teachers' use of praise and reprimands? (c) What are the effects of CW-FIT for on-task behavior for individual students nominated as having risk for EBD? (d) What are the effects of CW-FIT on disruptive behaviors for individual students nominated as having risk for EBD?

Method

Participants and Settings

Classroom participants. CW-FIT is a classwide group contingency intervention. Thus, all students in six classrooms participated in the intervention. Participants in the study included approximately 107 general education students from three elementary schools, and six classrooms. All teachers were volunteers for the study, based on their interest in improving classroom management. All teachers selected the content area (e.g., math) for use of the intervention, based on their judgment that additional management strategies were needed during this time block to improve student learning. Classes 1, 2, and 3 (School 1) were three math classes composed of fourth- and fifth-grade students (class groupings were based on their instructional level). The male teacher in Class 1 had 2 years' experience teaching; the female teachers in Classes 2 and 3 were 1st-year teachers. Sessions lasted from 30 to 40 min. School 1 was a charter school in an urban community serving approximately 420 students from low-income families; 94% of the students were eligible for free or reduced-price lunches. Students were also culturally diverse, with 90% minority status, many immigrant families, and 62% English Language Learners (ELLs). The score for universal PBS implementation for School 1 on the *Schoolwide Evaluation Tool* (*SET*, Horner et al., 2004) was 92%. The math curriculum used during the classes was *Math Connections* (SRA), a direct instruction program with highly structured scripted lessons. The teacher-directed lessons included short introductions and modeling of concepts (5–10 min) interspersed with brief independent workbook activities for practice.

Class 4 was a kindergarten class in School 2, with a 1st-year female teacher. The class included more boys (10) than girls (6). The school was in a suburban community with 18% of students from minority groups and 20% eligible for free and reduced-price lunches. In general, the classroom environment was unstructured, with several students with challenging behaviors, including one child with a high rate of office referrals. As a whole, however, the school had few behavioral problems, with low rates of office referrals. The *SET* score for PBS implementation for School 2 was 95%. The CW-FIT intervention was conducted during group activities, including literacy instruction using *Open Court Reading Series* materials.

Classes 5 and 6 were two first-grade classes in School 3, taught by the same female teacher (a beginning teacher in Year 1), over two school years. School 3 was in a low-income community with 85% of students eligible for free or reduced-price lunches, 87% of the students from Hispanic backgrounds, and 45% ELL. The PBS *SET* scores for School 3 were 88% and 98% during the years of the study. The CW-FIT intervention was conducted during reading classes in both years with the *Open Court Reading Series*. Lessons included large group activities with some independent skill building lessons in workbooks or related activities.

Students at risk for EBD. Within Classes 1 to 3, eight fourth- and fifth-grade students, three girls and five boys, ages 9 to 11 years, served as individual target students in the study. Criteria for inclusion were (a) teacher nomination based on frequent disruptive behavior and (b) use of the ranking procedures outlined in the *Systematic Screening for Behavior Disorders* (Walker, Severson, & Feil, 1991). Baseline observations confirmed that the students exhibited high rates of disruptive behaviors (at least 1–2 per min, see Measures and Results section for a description of these procedures). The additional study of target students in three of the six classes allowed for study of CW-FIT intervention effects for individual students as well as classwide effects.

Measures and Classroom Observations

Group on-task data. Group on-task data were collected using a 30-s time sample procedure and a digital timer showing minutes and seconds. 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. 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. Group on-task data were coded for 20 min at the beginning of the lesson. On-task was defined as engaging in the assigned activity as directed by the teacher (e.g., looking at the materials or teacher, asking or answering questions, locating items as directed by the teacher, writing, reading). Group on-task data were collected for two to three sessions per week during baseline and intervention conditions.

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 eight target students at risk for EBD. Observations were used to collect duration (engagement/on-task) and frequency (disruptive behaviors) data for each target student. Engagement data was defined as on-task behavior (see group on-task definition) and recorded using a duration toggle key. The "engaged" code enabled automatic duration recording of engagement. If the student became disengaged for 5 s, the toggle key was touched, which then enabled automatic duration recording

for "disengagement." Frequencies were recorded for disruptive behaviors (e.g., talking to peer or teacher without permission, arguing, name-calling, throwing materials). MOOSES observations occurred during two to three baseline sessions, and one to two times per week during intervention.

Teacher behavior. Teacher praise statements (e.g., "Nice work following directions!" "Team 1 is doing a great job staying in their seats!") and reprimands (e.g., "Everyone needs to get quiet!") 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 recorded in the praise frequencies.

Procedural fidelity. A 16-item procedural fidelity checklist (available from the authors) 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). Ten additional 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). The ratings were scored as yes or no. Twenty-one fidelity probes were conducted in all (18% of the data sessions), Class 1 (three probes), Class 2 (one probe), Class 3 (four probes), Class 4 (one probe), Class 5 (five probes), and Class 6 (seven probes). Fidelity on the CW-FIT procedures averaged 88%, with a range of 64% to 100%. Fidelity of the intervention at levels of 80% or higher are considered acceptable (Kamps, Kravits, et al., 2000). Ratings on general classroom management averaged 73%, with a range of 30% to 100%.

Consumer satisfaction. Consumer satisfaction questionnaires were completed by four of the five teachers in the study. It included 11 questions regarding acceptability of the procedural components, ease of implementation, and perceptions regarding effectiveness. Questions were scored using a 5-point Likert-type scale, with 1 being a low score, and 5 the highest rating. Three open-ended questions (i.e., what he/she liked, did not like, suggestions for improvement).

Reliability

Reliability was collected for 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 group's on-task score (+ or –) at each 30-s interval (i.e., Team 1. . . . Team 2. . . . Team 3 . . .). Frequencies of praise and reprimands were recorded during the entire observation by each observer. Reliability was computed by dividing the lowest by the highest percentage or frequency. The number of reliability checks ranged from two to seven for each teacher, with totals of 24 for on-task (14% of data sessions), 21 for praise (12% of sessions), and 19 for reprimands (11%). Reliability for on-task averaged 92.9% (range = 85–100%), praise 91.2% (range = 77–100%), and reprimands 85.5% (range = 67–100%).

Experimental Design and Procedures

Experimental design. Reversal single-subject design and variations were used to demonstrate experimental control across all classes (Baer, Wolf, & Risley, 1968). Classes 1, 2, and 5 used an ABAB reversal design with baseline (A), intervention (B), return to baseline (A2), and return to intervention (B2). Class 3 used a ABCBAB design, with A being baseline, B being intervention, and C being booster sessions (i.e., the instructional coach running the intervention sessions to provide modeling of lesson pacing and instructional delivery while using the CW-FIT intervention). Using an additional intervention condition (C) allowed a necessary step to improving instruction in Class 1. Kennedy (2005) describes a benefit to the C element in designs as an opportunity to analyze how various interventions (or an added component variable) influences behavior. Baseline conditions lasted from 1 to 2 weeks across the six classrooms. Initial interventions occurred for 1 to 2 months, with a brief 1-week reversal. The final intervention phase lasted for 2 months for Class 1, and less than 1 month for Classes 2 and 5. Classes 4 and 6 used an ABA design, with the final reversal condition ending the school year, thus not allowing the intervention to be put back in place. Though less rigorous without the final intervention condition, ABA design does still include a reversal condition, thus meeting this requirement for demonstrating a relation between the dependent variable and the independent variable.

Baseline: School-wide Positive Behavior Support (SwPBS; Horner & Sugai, 2005; Horner, Sugai, & Horner, 2000). Baseline consisted of use of the SwPBS model for school and classroom management. Schools were recruited as part of a larger university study of SwPBS, with researchers serving as consultants to the SwPBS process and team. Components in the SwPBS procedures included (a) teaching of schoolwide expectations of appropriate behavior across classes (e.g., be respectful, be safe, be kind), (b) teacher acknowledgement of students' use of appropriate behaviors (e.g., tokens delivered to classes and individual students), (c) consistent feedback for inappropriate behaviors linked to the schoolwide expectations, and (d) use of office referral/infractions data to make decisions with overall management and guidance from a SwPBS team. End of the year general school fidelity ratings of the SwPBS system indicated ratings of 80% or higher of implementation using the *Schoolwide Evaluation Tool* (SET; Sugai, Lewis-Palmer, Todd, & Horner, 2001) across the three schools. All classes in the study included classwide posters of expectations and examples of specific behaviors in the classroom to match the expectations. All teachers had taught the skills, used contingent feedback to

students on use of the skills, and used the schoolwide incentives program.

Intervention: SwPBS + CW-FIT procedures. Intervention procedures consisted of implementation of the CW-FIT intervention as a Tier II classroom intervention. CW-FIT meets the definition of a Tier II intervention to support the "universal" SwPBS in that it (a) targeted specific classrooms with low rates of universal use (i.e., less than 4:1 recommended praise to reprimand ratios and inconsistent re-teaching of expectations in response to inappropriate behaviors) and (b) benefited all students, but it was implemented because of concerns of a few students. Initial modeling and assistance was provided by the research staff for a 1- to 2-week period, and then all teachers managed the intervention.

CW-FIT intervention is a behavioral intervention designed to teach appropriate skills and reinforce students' use of the skills by using a game format (group contingency). It is not a function-based intervention per se, in that a functional analysis was not conducted prior to implementation. The group contingency was, however, designed to address attention as a commonly reported function of problem behavior (Ervin et al., 2001). In the current study, CW-FIT was implemented as a Tier II level intervention, thus a component of a three-tiered SwPBS intervention (Horner & Sugai, 2005), following interviews with individual teachers and review of descriptive observation data, confirming probable function of behaviors in the classroom to include social attention. The intervention procedures were designed to help students and classes that needed more than universal supports, be implemented at the classwide level, incorporate individualized components, provide attention for appropriate behavior and minimize attention to inappropriate behavior, and be implemented during "problem" times during the day. The CW-FIT incorporates best practices as published in (a) prior curricula (e.g., *Tough Kid Social Skills*; Sheridan, 1995; Utah's *B.E.S.T Project*; *Skillstreaming*; McGinnis, Goldstein, Sprafkin, Gershaw, & Klein, 1997), (b) group contingency intervention studies using skill teaching and classwide implementation (e.g., Mitchem, Young, West, & Benyo, 2001; Thorne & Kamps, 2008), and (c) prior studies using interventions based on functional analysis showing behaviors sensitive to attention and escape (Kamps, Wendland, & Culpepper, 2006).

CW-FIT procedures (see the description below) are "manualized" in part to assist with implementation and include (a) overview and instructional lessons to teach skills (six pages); (b) scripts for student lessons, reinforcer assessment, and use of the group contingency program (three pages); (c) posters, goal sheet, self-management charts (seven pages); and (d) use of self-management, help cards procedures (two pages).

Skill teaching. Target skills were those outlined in prior social skills curricula and interventions (e.g., McGinnis et al., 1997; Mitchem et al., 2001; Young, West, Smith, & Morgan, 1997) and included (a) how to gain the teacher's attention; (b) following directions; and (c) ignoring inappropriate behaviors. Teaching of skills followed a direct instruction model: defining the skill, modeling the skill, teacher–student and student–student role-playing the skill, feedback from the teacher, and practice. Three to 5 days were spent teaching skills. In subsequent sessions, the teacher would (a) review skills briefly (precorrect) at the start of the lesson using CW-FIT referring to the posters and (b) provide incidental teaching of the skills. Thus, the same review procedure using precorrects and reference to the posters of skills was used then for all the subsequent days (following teaching in Days 1–3 or 1–5) of the intervention in all classes. The teaching component of scripts lasted 3 to 5 days, and the review using precorrects for skills was then implemented throughout all intervention sessions. Thus, variance in exposure to the skills and related behaviors was not significantly different across classes.

Group contingency and differential reinforcement. The group contingency component of CW-FIT consisted of a game format with class teams of two to five 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 to 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. At the end of the class period, rewards were given to each team (all students on the team) who met the stated goal. Teachers were encouraged to provide frequent, specific praise for appropriate behaviors and use of the skills, when awarding team points and to individuals and groups throughout the lesson.

Self-management. In the fifth-grade math classes (Classes 1–3), self-management was used for two to four target students per class who continued to have some difficulty during the initial sessions of intervention (e.g., a student who continued to talk out frequently, and thus their team was denied points during the CW-FIT contingency game). Self-management consisted of individual students having a minichart on their desk that matched the group goal chart posted for the class. At the sound of the beep, the teacher marked team points, and verbally told individual students to award themselves a point if they were also engaged appropriately (following directions, ignoring inappropriate peer behaviors). The procedure was viewed as more appropriate to the older students in the study. Having these individuals serve as their "own team" also eliminated negative attention from classmates.

Implementation. Initially, the researchers provided demonstrations and modeling, 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 the targeted skill (two to four sessions). The classroom teachers then assumed management of lessons, precorrects, and the game (including awarding points). All teachers assumed management of the CW-FIT within 2 weeks. Classrooms used the game on a daily basis during designated time periods. Rewards were initially provided to all teams in classes meeting the goal

and then extended to every second session for the fifth-grade classes.

Results

Effects of the CW-FIT intervention included increased levels in on-task behavior over baseline levels for all classes and grade levels. This same outcome was noted for target students at risk for EBD, with decreasing trends in the frequency levels of disruptive behaviors noted as well. Teacher attention to appropriate behaviors using praise and points increased during the intervention and reprimands decreased.

Classwide Effects

Table 1 presents the means and standard deviations in the percentage of on-task behavior by row (three to six students) in each of the six classes. The means were compiled across all baseline and intervention conditions. The baseline mean for on-task was 43.6% across the six classes, with a standard deviation of 17.8. With the implementation of CW-FIT, on-task levels increased to a mean of 79.7% (range = 58.9–98.2 across rows of students, *SD* = 14.6). This represents an average increase in 36% on-task behavior. Gains in on-task behavior ranged from 11.5% to 74.1% across rows. The effect size (ES) was computed using the formula ES = (intervention mean – baseline mean)/(baseline *SD*) including all conditions, described by Dunst, Hamby, and Trivette (2004) and Olive and Smith (2005) and was determined to be large, 2.03. Use of additional statistical analysis such as computing effect size is currently a recommended procedure for providing additional merit to the single subject design (J. Campbell, 2004).

Figure 1 presents session-by-session average on-task levels for the three fifth-grade math classes across conditions. Classes 1 and 2 implemented an ABAB reversal design. In Class 1, baseline on-task for the group averaged 45.1%, with an increase to 76.5% during CW-FIT, a decrease to 59% with the removal of the intervention, and an increase to a stable level (*M* = 82.7%) with the reinstatement of CW-FIT. In Class 2, baseline on-task for the group was higher than for Class 1 at 76.9%, with an increase to a stable level at 95.3% during CW-FIT, a decrease to 46.8% during reversal, and an increase to 90.4% on-task during the final intervention. In Class 3, an ABCBAB design was used. On-task levels were low initially at 35.3% during baseline, with an increase to 70.3% during CW-FIT, and 93.6% during the booster sessions conducted by the school's instructional coach (CW-FIT* on Figure 3). During Intervention 2 (conducted by the teacher), on-task behavior showed an upward trend, with an average of 78.7%. A decrease to 31.8% was noted during reversal and an increase to 78.1% during the final CW-FIT intervention.

Figure 2 shows levels for classwide on-task behavior for Classes 4–6. Increased levels and upward trends similar to those noted in the fifth-grade classes were also observed in these classes for the younger students. In Class 4, kindergarten, baseline levels ranged from 17% to 39% on-task, with increased levels observed during intervention, means ranging from 77% to 93%. Class 5 averaged 24% to 61% on-task in the first baseline, with an increasing trend during CW-FIT (*M*s = 67%–88%). A slight decrease occurred during reversal (*M*s = 44%–68%), and an increased level from 70% to 80% on-task occurred during the last CW-FIT condition. Class 6 averaged 27% to 44% on-task in baseline and 52% to76% during the CW-FIT group contingency.

Table 1. On-Task Percentages: Means, Standard Deviations, Effects by Conditions

	Baseline		Intervention		
	M	*SD*	*M*	*SD*	Effect[a]
Class 1					
Row 1	49	23.3	78.4	17.9	29.4
Row 2	49.9	23.2	86.1	13.9	36.2
Row 3	59.2	23.1	88.8	9.9	29.6
Row 4	50.2	18.3	80.2	8.4	30
Class 2					
Row 1	55.4	17.17	84.1	12.03	28.74
Row 2	86.7	9.9	98.2	0.9	11.5
Row 3	66.6	15.4	92.9	9.6	26.3
Row 4	65.1	16	97.5	2.5	32.4
Class 3					
Row 1	47.2	23.1	76.8	19.8	29.6
Row 2	28	18.4	78.7	20.3	50.7
Row 3	20.1	13.8	70.3	25.5	50.2
Row 4	42.4	33.4	84.3	20.9	41.9
Class 4					
Row 1	25	10.9	82.6	40.8	57.6
Row 2	56.7	11.8	85.2	8.6	28.5
Row 3	34.2	3.8	82	14.4	47.8
Row 4	21.7	25.7	95.8	1.4	74.1
Row 5	23.3	25.2	75.8	15.3	52.5
Class 5					
All rows	46.7	16.8	78	7.4	31.3
Class 6					
Row 1	31.7	14.1	62.1	15.7	30.4
Row 2	46.2	19.7	76	13.2	29.8
Row 3	30	14.8	63.3	21.1	33.3
Row 4	38.5	11.2	68.6	18.7	30.1
Row 5	45.2	29.7	69.1	12.9	23.9
Row 6	28	8.7	58.9	20.2	30.9
Means	43.6	17.8	79.7	14.6	36.1
Effect size[b]	2.03				

a. Effect is the mean increase or decrease in on-task behavior between baseline and intervention.
b. Effect size = (intervention mean – baseline mean)/(baseline *SD*).

Effects for Students at Risk for EBD

Table 2 depicts results for the eight students with EBD risks, based on 10-min samples using the MOOSES observations

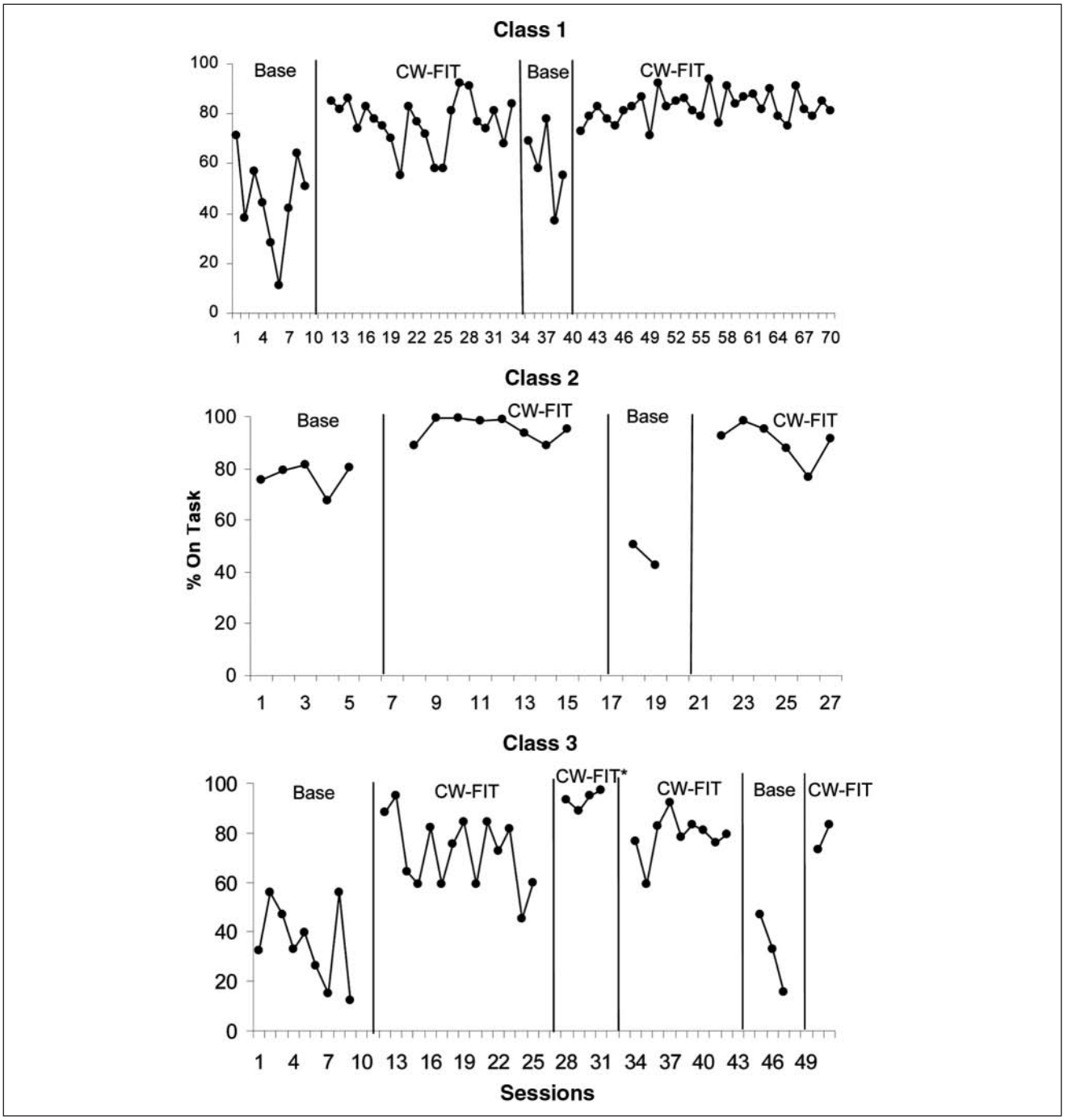

Figure 1. Means percentage on-task across Classes 1 to 3

and compiled across all baseline and intervention conditions. As depicted in Table 2 (top panel), baseline frequency levels of disruptive behaviors ranged from 10.5 to 25.8, with a mean of 18.2 and a mean standard deviation of 9.7. The frequency of disruptive behaviors decreased during intervention conditions for all eight students, to a mean of 5.7 (range = 3.1–9.5) and a standard deviation of 4.0. This represents a decrease of 12.5 disruptive behaviors per 10-min observation. The effect size was large at 1.29 (using the formula above).

Six of the students showed increased levels of engagement/on-task during intervention (bottom panel, Table 2) to levels of 80% or higher, indicating large gains. Baseline on-task levels averaged 54.4% (range = 24.5–73.3%, *SD* = 31.5), with an increase to 83.6% on-task during the CW-FIT intervention

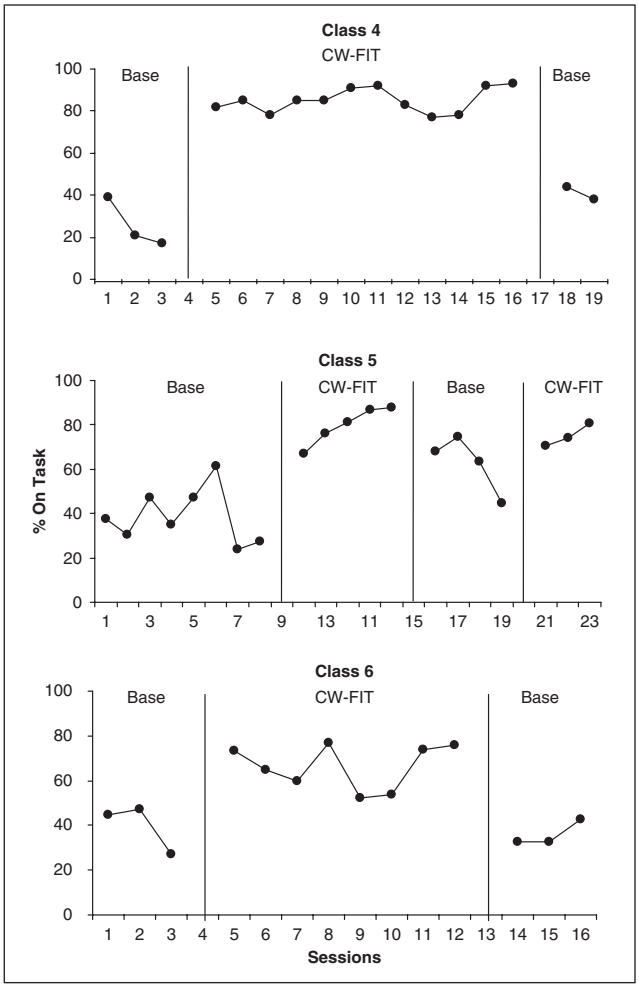

Figure 2. Mean percentage on-task across Classes 4 to 6

(range = 66–96.1%, *SD* = 20.2). This represents an average increase of 29.5% on-task behavior for the students with behavior risk. Student 2 showed minimal change (52.7% in baseline to 66% in intervention). Calculated effect size using all data was .93.

Teacher Behavior Effects

Figure 3 shows changes in teacher behaviors for Classes 1–3. All three classes showed increased levels of praise (which included points during the CW-FIT conditions) from baseline to intervention. Class 1 means were 23 in baseline, 33 in intervention, 11 in the reversal, and 50 during the final CW-FIT intervention. Class 2 averaged 13 in baseline, 40 in intervention, decreased to 3.5 during reversal, and increased to 34 during the final intervention. Class 3 showed similar levels from 13 to 15 in Baseline 1 and 2 conditions, to increases in means from 41 to 54 during intervention conditions. Figure 4 shows changes for Classes 4 and 6 (ABA design). No praise and reprimand data were available for Class 5. Class 4 showed higher praise levels and trends during intervention (range = 2–44, *M* = 21) than in the Baseline 1 and 2 frequencies (range = 1–4). Class 6 showed higher levels of praise during intervention, especially during the last four sessions, ranging from 18 to 39, compared to Baseline 1 and 2 sessions, with frequencies typically less than 10.

Reprimands were variable but with lower levels during the majority of CW-FIT sessions compared to baseline. As depicted in Figure 3, baseline reprimands for Class 1 averaged 10 to 15, decreasing to 8 to 12 during intervention. In Class 2, reprimands averaged 6 to 9 in baseline, and 1 to 3 in intervention. Baseline mean frequencies in Class 3 were 11 to 19, with decreases to 7 to 14. Reprimands were variable in Class 4 (ranges of 5–14 across conditions). Use of reprimands was also variable in Class 6, but lower during intervention (*M* = 8) than baseline means, 13 to 15 (see Figure 4).

Consumer satisfaction. Teachers reported favorable ratings for the effectiveness of the intervention and utility for future use, but ratings showed moderate ratings for time required and ease of use. Ratings averaged 4.25 for overall effectiveness, for students learning to gain teacher's attention appropriately, and for following directions and averaged 3.5 for students' ability to ignore inappropriate behaviors by peers. For acceptability, ratings averaged 4.75 for likelihood to recommend to a colleague, 4.25 for the extent they liked the intervention, and 3.75 for likelihood to use again. Ratings averaged across teachers were 3.25 for ease of implementation, 4.25 for ease to learn, and 3.0 for time required for implementation.

Discussion

Overall findings for the study were that the CW-FIT group contingency intervention, implemented in elementary schools using SwPBS, improved behavior for all classrooms and for the majority of individual students with behavioral risks. On-task engagement increased from baseline levels during the intervention conditions as noted in Figures 1 and 2. For students with behavioral risks, disruptive behaviors decreased. Improvements over baseline levels (SwPBS alone) suggest a need for Tier II or targeted interventions that can be applied at the class level. The CW-FIT class-level intervention is viewed as an intermediate step to targeted pull out or small-group Tier II interventions applied for two to three students in a class. This would be especially relevant when overall class on task is low. Effects in the study were noted across teams (small groups of students in each class) and for students with behavior risks, promoting generalized on-task behavior for whole classes of students. These findings are similar to prior studies showing the effects of group contingency interventions in general education classrooms (Cashwell et al., 2001; Embry, 2002; Salend et al., 1992; Stage & Quiroz, 1997; Thorne & Kamps, 2008). Findings also are similar to

Table 2. Outcomes for Students at Risk for Behavior Disorders

		Baseline		Intervention		
	Student	*M*	*SD*	*M*	*SD*	Effect[a]
Frequency of disruptive behavior						
Class 1	1, male, 4th	14.8	3.8	3.6	3.5	–11.2
	2, female, 5th	18.7	17.8	8	5.7	–10.7
Class 2	3, male, 5th	13.5	9.1	5.5	2.7	–8
	4, female, 4th	23.5	6.9	5.9	4.3	–17.6
Class 3	5, male, 5th	10.5	6.4	4.9	6.4	–5.6
	6, male, 5th	25.8	14.4	3.1	2.7	–22.7
	7, female, 4th	22.7	11	4.8	3	–17.9
	8, male, 4th	16	8.4	9.5	3.7	–6.5
Means		18.2	9.7	5.7	4.0	–12.53
Effect size[b]		1.29				
Percentage on-task behavior						
Class 1	1	73.3	36.3	84.4	22.5	11.1
	2	52.7	29.1	66	29.7	13.3
Class 2	3	74.3	17.2	87.2	17.6	12.9
	4	61.8	43.2	93	14.3	31.2
Class 3	5	65.5	32.6	88.7	22.1	23.2
	6	24.5	26.5	96.1	7.2	71.6
	7	33.3	32.2	71.8	36	38.5
	8	49.7	34.7	81.8	12.4	32.1
Means		54.4	31.5	83.6	20.2	29.54
Effect size[b]		0.93				

a. Effect is the mean increase or decrease in frequency of disruptive behavior, and the change in on-task behavior between baseline and intervention.
b. Effect size = (intervention mean – baseline mean)/(baseline *SD*).

prior interventions that improved behavior through the use of (a) differential attention and (b) direct instruction for appropriate classroom behavior (Babyak et al., 2000; Kamps, Tankersley, & Ellis, 2000; Northup et al., 1995).

In addition to improved student behavior, the CW-FIT intervention increased teacher attention to appropriate behaviors of students. These findings support a core feature of SwPBS, use of positive attention from teachers for appropriate student behavior (Sugai et al., 2000). This was evidenced in increases in praise statements (including points for appropriate behaviors delivered during the group contingency) across the five classes in which the behaviors were monitored. Teacher reprimands (i.e., attention to inappropriate behaviors) showed decreases in four classrooms as a result of the CW-FIT intervention. These findings further support the use of group contingencies and behavior supports that address common functions of inappropriate behaviors such as access to attention from teachers and peers (Lewis & Sugai, 1996).

Findings from the study also indicated social validity for the intervention. Consumer satisfaction surveys were completed by four of the five teachers. They indicated they were very satisfied with the intervention procedures but thought that the procedures took effort and time to implement. They reported, however, spending less time attending to problem behavior and that their students were better behaved. Students anecdotally reported that they like the CW-FIT game, and they reported that they used the game at other times. Two teachers have continued to use the intervention in subsequent school years. It is unknown if the other teachers have continued. Although positive effects were noted, there was still variability in the data across classes as a whole and for some of the students with challenges. As indicated in the fidelity ratings, teachers were more proficient with the CW-FIT group contingency components (precorrects, using the team chart, delivering points, delivering feedback, giving rewards for meeting the goal), and less proficient in some cases with other general management procedures. The reliability on this component was low however (mean of 73%), and thus a limitation. As reported in prior research (Kamps, Kravits, et al., 2000), management procedures related to environmental variables such as structure, organization of the class or lesson, and transition between activities in the lesson potentially influence intervention effects. Class 1 percentages on the management questions on fidelity checks averaged 68%. To address the low fidelity for general management, the research staff provided the teacher with specific strategies for reducing down time, having materials ready and organized, and increasing lesson pacing. This feedback, in addition to the CW-FIT intervention, appeared to increase the on-task average (see Figure 1, later points in intervention). For Class 3, environmental adjustments were

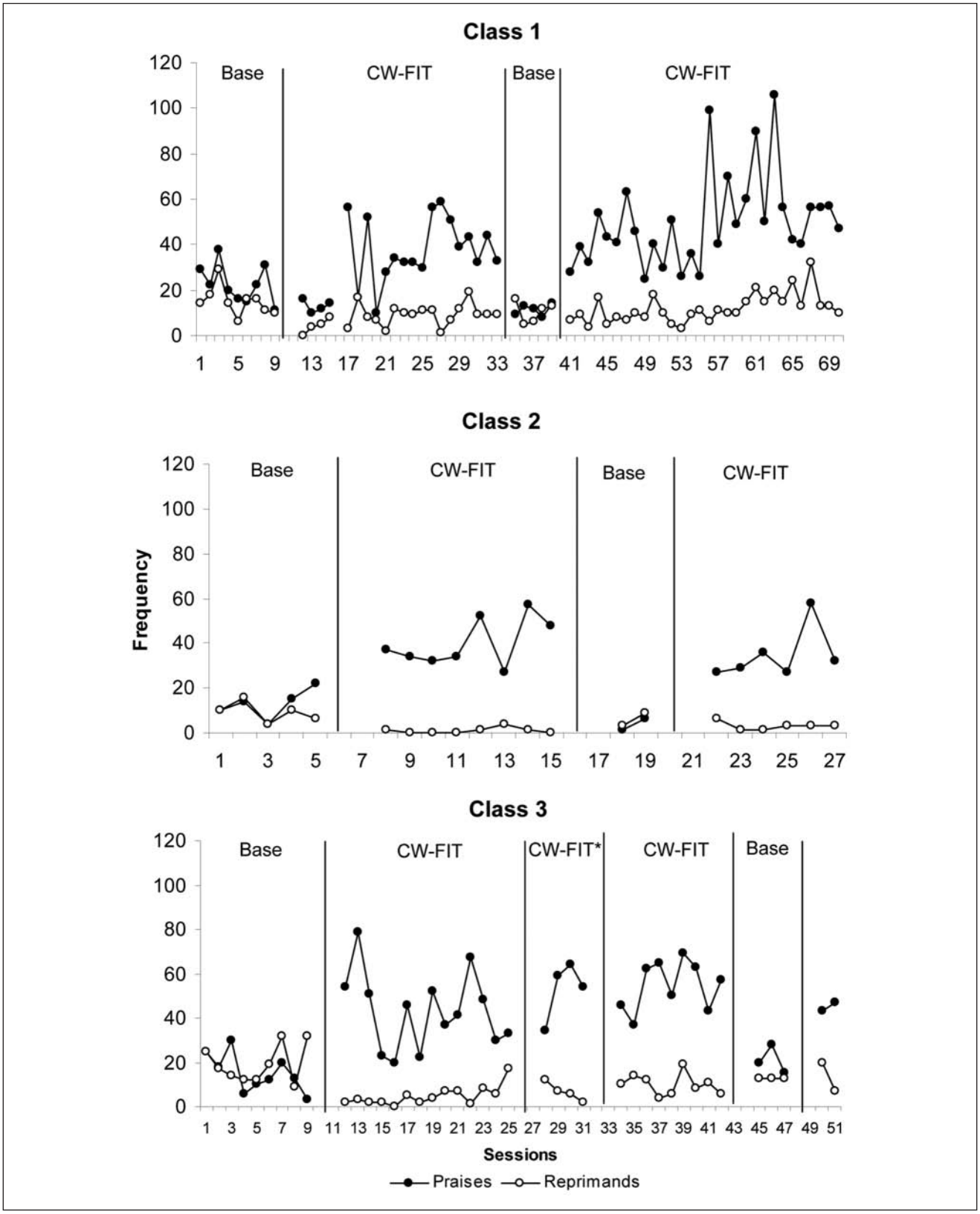

Figure 3. Mean teacher praise and reprimands across Classes 1–3

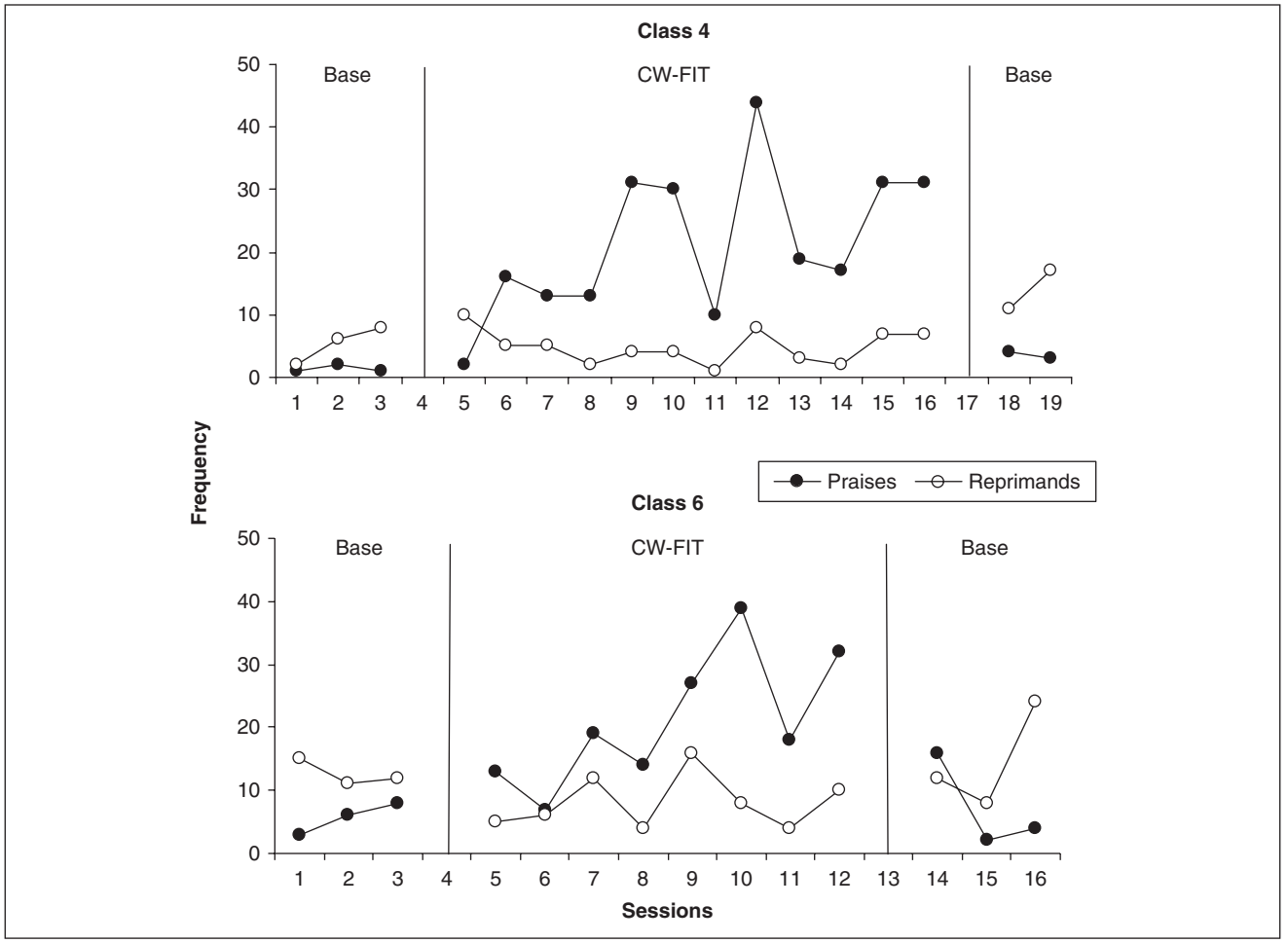

Figure 4. Mean teacher praise and reprimands for Classes 4 and 6

also necessary to increase pacing and reduce down time between activities. Several lessons were conducted by the instructional coach to model fast-paced instruction. This additional support, in addition to the CW-FIT intervention, appeared to increase and maintain acceptable on-task levels. Structural supports (increased organization, class routines) and instructional improvements (faster pacing, increased active responding), as used in this study and others, appear to improve the effects of behavioral interventions (Kamps, Kravits, et al., 2000; Stichter, Lewis, Johnson, & Trussell, 2004).

For participants with behavioral risks, most showed dramatic reductions in disruptive behavior with implementation of the CW-FIT intervention. Similarly, most students showed increases in on-task behavior. These findings provide additional evidence showing the effectiveness of group contingencies for this population (McQuillan et al., 1996; Thorne & Kamps, 2008), and the effects of Tier II level intervention for at risk groups who are nonresponsive to universal or schoolwide systems. There were exceptions, however. For example, although disruptive behaviors for Student 8 decreased from a mean of 16 per 10-min observation in baseline, they still occurred at a rate high enough to interfere with the learning of that student as well as his or her classmates (9 per 10-min observation). In addition, on-task during intervention remained low for two of the participants with behavioral risks. Student 2 only improved from 52.7% in baseline to 66% during the CW-FIT game. Student 7 was on-task at 71.8%, still lower than desirable during the intervention yet improved over an average of 33.3% in baseline. These findings suggest the need for (a) Tier III level intervention as described in the SwPBS model for the students most at risk who do not respond to Tier II intervention, (b) use of functional behavior assessment (Ervin et al., 2001; Kamps et al., 2006), and/or (c) modifications of functional assessment procedures to fit educational environments (Doggett, Edwards, Moore, Tingstrom, & Wilczynski, 2001).

Limitations and Future Directions

A limitation to the study was the low number of participating classes and students. Six classes participated from three schools. Eight students were screened as being at risk for serious behavior disorders, but only from three of the classrooms. No data were collected for at-risk students in the other three classes. No control group classes were included, nor comparison schools using the CW-FIT intervention without SwPBS. The schools were randomly selected to be experimental schools as part of the larger university study; however, each of the participating classroom teachers were volunteers, and thus a sample of convenience. An additional limitation is that limited reliability probes were collected, less than the standard recommendation of 20% to 25% of data sessions. More reliability probes would be recommended in future studies. A limitation for two classes is that the intervention was not started early enough in the school year to end with the intervention in place (Classes 4 and 6).

In conclusion, the CW-FIT intervention was demonstrated as an effective classroom practice to increase on-task behaviors for groups of students including those with EBD risks. Future studies are needed using randomized trials with experimental–control group designs to demonstrate effectiveness with larger samples. In addition, future studies might collect data on students' use of the specific skills taught in the lesson (i.e., compliance to directions) in addition to general on-task behavior as well as academic performance during sessions.

Declaration of Conflicting Interests

The authors declared no conflicts of interests with respect to the authorship and/or publication of this article.

Funding

The authors disclosed receipt of the following financial support for the research and/or authorship of this article:

Support for this research was provided by Grant No. H324X01001 from the U.S. Department of Education, Office of Special Education and Rehabilitative Services, awarded to the University of Kansas.

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