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Early Childhood Teachers' Use of Effective Instructional Practices and the Collateral Effects on Young Children's Behavior

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Abstract

This investigation examined the effects of a classroom-based intervention, Behavioral, Emotional, and Social Training: Competent Learners Achieving School Success (BEST in CLASS), on teacher behaviors and child outcomes in early childhood classrooms. First, we examined the effects of professional development training and practice-based coaching (including performance feedback) on teachers' implementation and maintenance of the BEST in CLASS model practices. Next, we examined the effects of teachers' implementation of these practices on young children's engagement and problem behaviors. Using a descriptive nonexperimental design, 10 teachers and 19 children received the intervention. Findings indicated that teachers' use of the BEST in CLASS practices including rules, precorrection, opportunities to respond, behavior-specific praise, and instructive and corrective feedback increased from baseline to completion of the intervention and these increases maintained. In addition, children's engagement increased while their problem behaviors decreased. Although these results are promising, the current investigation has limitations and the results should be viewed with caution.

Keywords

effective instructional practices, problem behaviors, early intervention

One of our nation's most challenging educational concerns is young children who enter early childhood programs unprepared for the learning opportunities they encounter in school, many of whom display significant and chronic problem behavior. Recent data indicate prevalence rates of young children who demonstrate problem behaviors that place them at elevated risk of emotional or behavioral disorders (E/BD) at approximately 12% to 25% (Burchinal, Peisner-Feinberg, Pianta, & Howes, 2002; Carter et al., 2010; Hamre & Pianta, 2001; Loeber & Farrington, 2000; Webster-Stratton, 1997). When children with significant problem behaviors are not identified or treated at an early age, the severity and intensity of their problems increase, ultimately requiring more intensive services and resources and increasing the likelihood of poor academic outcomes, peer rejection, adult mental health concerns, and adverse effects on their families (Dunlap et al., 2006; Marchant, Young, & West, 2004; O'Conner, Dearing, & Collins, 2011). Clearly, young children who lack social, emotional, and behavioral competence are at a noticeable disadvantage in classroom settings (Denham & Brown, 2010; Markowitz, Carlson, & Frey, 2006).

To address this serious educational issue, many states have implemented early education programs that target preschool-age children who come from high-risk backgrounds (i.e., poverty). Unfortunately, many of the children attending these programs enter school with established patterns of problem behavior and enter classrooms with teachers who are ill-equipped to deal with these behaviors. In fact, the number one area early childhood teachers report feeling the least prepared for is behavior management of problem behaviors (Campbell, 1995; Stormont, Reinke, & Herman, 2011).

Researchers have found that early childhood teachers often react negatively (e.g., increased restrictions, punitive interventions) to children who demonstrate problem behaviors (Barnett & Boocock, 1998; Scott-Little & Holloway, 1992). As a result, teacher's interactions with these children tend to be less positive than their interactions with children who do not demonstrate problematic behavior (Raver & Knitzer, 2002). This negative interaction pattern can lead to

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fewer learning opportunities (Raver & Knitzer, 2002) and less engagement in classroom activities, resulting in missed opportunities for learning critical school-readiness skills (Howes & Smith, 1995; Raver & Knitzer, 2002; Sutherland, Conroy, Abrams, & Vo, 2010; Webster-Stratton, 2000). Given the large number of children currently enrolled in early education programs, there is a critical need for interventions that can be implemented by teachers within the context of their classroom activities and are effective in reducing children's established problem behaviors (Gross et al., 2003).

Capitalizing on teacher behaviors that promote desirable child behavior is one way to accomplish this goal. That is, teacher instructional practices that support appropriate behaviors of children are often demonstrated in early childhood classrooms (Sutherland et al., 2010); however, these practices may not be delivered frequently enough or with the high quality necessary to maximize child outcomes. Performance-based feedback/coaching is one model that has demonstrated promise at increasing targeted teacher behaviors in early childhood and elementary school classrooms.

Research indicates that performance-based feedback/coaching with teachers that includes direct training procedures involving modeling, rehearsal, and feedback leads to higher intervention fidelity (Lewis & Newcomer, 2002; Mortenson & Witt, 1998; Reinke, Lewis-Palmer, & Martin, 2007; Sterling-Turner, Watson, & Moore, 2002). In a majority of the studies that have examined performance-based feedback/coaching and teachers' instructional practices, teachers were initially taught each step of a behavioral plan outside the classroom, and then the coach observed and prompted the teachers as they administered the intervention procedures in the classroom. For example, Fox, Hemmeter, Snyder, Binder, and Clarke (2011) investigated the use of a professional development package that included performance-based coaching to increase teachers' use of instructional practices targeting young children's social/emotional competence. Three early childhood teachers received a multicomponent professional development intervention that included training, implementation materials, and instructional performance-feedback coaching. Teachers were taught and coached on instructional practices designed to prevent and ameliorate children's challenging behavior. Following training and coaching, all three teachers increased their use of targeted instructional practices. In another study, Hemmeter, Snyder, Kinder, and Artman (2011) examined the use of data-based performance feedback (delivered through electronic mail) on early childhood teachers' utilization of descriptive praise and children's subsequent challenging behavior and engagement. Teachers received a brief training session followed by observation and electronic performance feedback by a coach. Results indicated that teachers increased their use of descriptive praise and children's challenging behaviors decreased; however, there was little impact on children's engagement. Similarly, Smith, Lewis, and Stormont (2011) used performance-based feedback to train three teachers in Head Start settings in the use of precorrection and behavior-specific praise. Outcomes of this study indicated that teachers' use of specified strategies increased as well as children's behavior (i.e., on-task behavior improved and problem behavior decreased). In addition, Fullerton, Conroy, and Correa (2009) found that early childhood teachers increased their use of behavior-specific praise after receiving training and performance-based feedback on their use of this strategy.

These studies provide preliminary evidence that professional development including the use of performance-based feedback/coaching is an effective tool for increasing early childhood teachers' use of effective instructional practices and when implemented with fidelity, these instructional practices result in positive outcomes for children. Although promising, this literature base is in the early stages of development and findings are limited by the small number of studies, participants, and the limited range of instructional practices targeted. Further research is needed to examine the effects of training and performance-based feedback/coaching across a larger number of teachers, children, and instructional practices.

Behavioral, Emotional, and Social Training: Competent Learners Achieving School Success (BEST in CLASS) was developed to address some of the gaps in the current literature and provide further data supporting early childhood teachers' use of effective instructional practices with young high-risk children. Designed as a Tier 2 intervention, BEST in CLASS is a manualized classroom-based intervention that systematically identifies and targets high risk, preschool-age children, with an emphasis on changing the classroom ecology through improving teacher–child interactions during instructional times. Using a combination of professional development training and practice-based coaching (including performance feedback), BEST in CLASS supports the use of effective instructional practices that promote positive teacher–child interactions, enhance child engagement, increase learning opportunities, and decrease the occurrence of problem behaviors of young children (see, for example, Vo, Sutherland, & Conroy, 2012).

Thus, the purpose of this article is to investigate the effects of the BEST in CLASS model on teacher behavior and child outcomes in early childhood classrooms. Specifically, we were interested in two research questions:

Research Question 1: What is the effect of specific instruction and practice-based coaching (including performance feedback) on teacher's implementation and maintenance of behavioral teaching practices in early childhood classroom settings?

Research Question 2: What is the effect of early childhood teachers' implementation and maintenance of specific behavioral teaching practices on young children's engagement and problem behaviors?

We hypothesize that teachers will increase their use of targeted instructional practices following training and coaching on the practices, and that children's engagement will increase and problem behaviors decrease upon receiving the increase in targeted teacher instructional behaviors. Following a discussion of the results, limitations of this study will be discussed, as will implications for future research and practice.

Method

Setting

Two school districts and a university-based early childhood program participated in the study, which took place in the Southeast region of the United States. During the study, one district had a total enrollment of approximately 47,000 students, and approximately 37% of the students were African American and another 18% were members of other minority groups. Thirty-four percent of the student population received free or reduced lunch, and this school district had over 30 preschool classrooms serving nearly 550 children. The second district served approximately 23,000 students, of whom approximately 85% were African American and another 7% were members of other minority groups. Seventy-six percent of the student population received free or reduced lunch, and there were approximately 1,667 children enrolled in 95 early childhood programs.

The majority of the classrooms in which the study was conducted were federally or state-funded early childhood classrooms (e.g., Head Start, Title I, state-funded prekindergarten) serving children between the ages of 3 and 5 years who were eligible for such programs due to risk factors such as low socioeconomic status. However, one classroom was located in a university-based early childhood program serving children from the community, and children of students and faculty members, regardless of family income.

Participants

The study participants included 10 early childhood teachers and 19 focal children at risk of the development of emotional and behavioral disorder (EBD; approximately two children per classroom). Once informed consent was obtained, participating teachers were asked to nominate five children who demonstrated chronic problem behaviors in their classroom for possible participation in the study. Following teacher nomination consents from parents or guardians of child participants were obtained.

Teacher participants. All teacher participants met the following criteria: (a) teach in an early childhood setting, (b) teach children between the ages of 3 and 5 who demonstrate chronic challenging behavior, and (c) hold at least a bachelor's in education and current teacher certification. All teachers were female. Five teachers were Caucasian, four were African American, and one was Latina. Eight teachers held a master's degree. The teachers' ages varied, with two between 18 and 25 years, two between 26 and 35 years, one between 36 and 45 years, three between 46 and 55 years, and two above 55 years. Teachers' years of experience teaching preschool-age children ranged from 3 to 34, with a mean of 10.1 years.

Child participants. All nominated children were screened according to the following criteria: (a) between 3 and 5 years old, (b) enrolled in an early childhood program, (c) at elevated risk of EBD as indicated by the *Early Screening Project* (ESP; Walker, Severson, & Feil, 1995), (d) average or above average cognitive/intellectual abilities as indicated by the *Battelle Developmental Inventory–Second Edition Screener* (*BDI-II* Screener; Newborg, 2005), and (e) demonstration of chronic externalizing behaviors that interfere with classroom participation. Following the screening, the top 1 to 2 children in each classroom with the most extreme scores on the ESP were selected. All participating children, (with the exception of the child in the university-based early childhood classroom, where this indicator was not applicable) qualified for free and reduced lunch. A total of 14 children were male and 5 were female. At the start of the study 2 children were 3 years of age, 16 were 4 years of age, and 1 was 5 years of age. In all, 14 children were African American, 2 were Caucasian, 1 was Asian/Pacific Islander, and race information was not provided for 2 children.

Materials

Materials for this study included the (a) BEST in CLASS teacher manual, (b) BEST in CLASS coaching manual, and (c) Teacher–Child Interaction Direct Observation System (TCIDOS). The BEST in CLASS teacher manual included readings for teachers to complete related to the BEST in CLASS intervention practices, teacher-learning activities, and other supportive materials such as home–school communication forms. The BEST in CLASS coaching manual provided standardized coaching procedures and included all required forms and materials to be used during the coaching component of the intervention. The TCIDOS was used to collect observational data for the purposes of providing graphical feedback during coaching and of examining child and teacher outcomes and interactions across the course of the intervention.

Behavioral Definitions and Observation Procedures

Behavioral definitions. The following teacher behaviors were observed and coded: rules, precorrection, opportunity to respond (OTR), behavior-specific praise (BSP), instructive

feedback, corrective feedback, active supervision, and reprimands. Focal children's behaviors observed and coded included disruption, aggression, defiance (DAD) and engagement. In addition, teacher–child positive and negative interactions were coded. See Table 1 for behavioral definitions and codes.

Observation procedures. All observation sessions were conducted by trained research staff in each early childhood classroom during small and large group teacher-directed instructional activities. The TCIDOS was used for recording teacher and child behaviors during these times. The TCIDOS is a researcher-developed interval recording observation system (10-s observation and 10-s recording window) that utilized a paper/pencil format and audio cue. Partial interval recording was used to code teachers' display of rules, precorrection, OTR, BSP, instructive feedback, corrective feedback, and reprimands, as well as children's DAD. Momentary time sampling (MTS) was used to code teachers' active supervision, child engagement, and teacher–child interactions, both positive and negative. Observation periods lasted approximately 20 min and were conducted twice per week. During each 20-min observation period, 10 min of observation and 10 min of recording time occurred. MTS occurred at each point in time when observers were cued to record. Thus, MTS occurred at 60 momentary time points across each of the 20-min observation periods.

Data were collected every week during two 20-min observation sessions across two teacher-directed instructional formats (large and small group) during the three phases of the study: baseline, coaching phase (which lasted 14 weeks), and maintenance, which occurred approximately 1 month after completion of the full intervention. During baseline, data were collected on all codes across two 20-min observations. During the coaching phase, two 20-min observations were conducted every week on each targeted BEST in CLASS instructional strategy and other responses observed (e.g., child engagement, teacher reprimands). For example, the 2nd and 3rd weeks of the coaching phase targets teachers' use of rules, expectations, and routines; therefore, two 20-min observations were conducted on the teachers' implementation of rules, expectations, and routines in weeks 2 and 3 of the coaching phase. Data on each BEST in CLASS instructional strategy were averaged at the end of the time period when coaching was completed on that instructional strategy. For example, the observations of teachers' use of rules, routines, and expectations following coaching were averaged across Weeks 3 and 4. Throughout each week of the coaching phase, data on other responses (e.g., child behaviors [engagement, disruptive behavior] and positive and negative teacher–child interactions) were collected and the occurrence of these responses was averaged across the entire 14 weeks of the coaching phase. Similar to baseline, maintenance data were collected across two 20-min observations.

Interobserver reliability estimates. On 24.68% of the observation sessions (across phases), interobserver reliability estimates were assessed for the occurrence or nonoccurrence of the responses coded, represented by intervals coded. Interobserver reliability estimates were collected by having the secondary observer collect data at the same time as the primary observer. Interobserver reliability estimates were calculated by computing agreements / agreements + disagreements × 100. Overall, interobserver reliability estimates per code averaged above 80% (range = 61.40%–100%). Percentage agreement by code can be found in Table 2.

BEST in CLASS Intervention

BEST in CLASS is a manualized classroom-based intervention that emphasizes prevention and amelioration of chronic problem behaviors demonstrated by young children at risk of E/BD in early childhood settings. The overall focus of BEST in CLASS is to enhance and improve teachers' use of effective instructional practices as a means to prevent and reduce children's challenging behaviors and increase their engagement. In the BEST in CLASS intervention, early childhood teachers receive training and practice-based coaching (including performance feedback) to optimize their use of effective instructional practices with focal children in their classrooms. The BEST in CLASS intervention is divided into two training components: (a) an introductory 6-hr professional development workshop (provided through a one-day group workshop), and (b) 14 successive weeks of individualized practice-based coaching (including performance feedback). These training components are supplemented by a manualized teacher-training notebook and a manualized coaching notebook. All components focus on instruction and support around teachers' implementation of eight learning modules: (a) basics of behavior and development; (b) rules, expectations, and routines; (c) BSP; (d) precorrection and active supervision; (e) OTR and instructional pacing; (f) instructive and corrective feedback; (g) home–school communication; and (h) linking and mastery. All training and implementation materials used in the BEST in CLASS are manualized, including the practice-based coaching component[1] and an overview of each training module is provided in Table 3 (for further information, see Vo et al., 2012).

The initial 6-hr workshop, provided through group instruction, introduces teachers to the effective instructional practices that compose the BEST in CLASS intervention, as well as provides examples (i.e., written, modeled, video) and active learning opportunities (i.e., strategy practice) to lay the groundwork for the weekly practice-based coaching component in which teachers apply practices with focal children with the support of a trained coach. The coaching component of the BEST in CLASS intervention uses a 14-week practice-based coaching framework in which a

Table 1. TCIDOS Codes and Definitions.

Code	Definition
Teacher behaviors (PIR)	
Rules, routines, and expectations	A teacher issued verbal statement that contains the word "rule" and is directed at the focal child or focal child group.
Precorrection	A teacher issued verbal statement that reminds the focal child or focal child group of expectations prior to entering a situation (activity/transition) to prevent predictable problem behaviors or errors.
Opportunity to respond	A teacher issued instructional question, request, command, or gesture that seeks a response from the focal child or focal child group.
Behavior-specific praise	A teacher issued verbal statement directed at the focal child or focal child group that (a) indicates approval of a behavior or correct response over and above an evaluation of adequacy and (b) specifies the behavior being praised.
Instructive feedback	A teacher issued verbal statement to the focal child, focal child group, or member of the focal child group that (a) acknowledges a correct response or appropriate behavior and (b) provides additional instructional information.
Corrective feedback	A teacher issued verbal statement to the focal child, focal child group, or member of the focal child group that acknowledges (a) an incorrect response, or (b) a display of incorrect information, or (c) an inappropriate behavior; and provides information for a correct alternative behavior or response.
Reprimand	A teacher issued verbal statement directed at the focal child or focal child group that (a) indicates disapproval of the child's behavior or response after it occurs and (b) provides no information regarding an alternative behavior or appropriate response.
Teacher behaviors (MTS)	
Active supervision	A teacher is either (a) actively engaged with the focal child or focal child group (i.e., talking with) or (b) actively monitoring and supervising the focal child (using proximity control to monitor children through aural or visual scanning and is within approximately 5 feet of focal child).
Child behaviors (PIR)	
Disruption, aggression, defiance (DAD)	Focal child demonstrates one of the following behaviors: Disruption, defined as a verbalization, physical act, or gesture that either interrupts or has the potential to interrupt classroom instruction. Aggression, defined as a behavior aimed at causing harm or pain or personal injury (verbal or physical). Defiance, defined as a behavior that is challenging, noncompliant, confrontational, openly and boldly challenging, and resisting authority.
Child behaviors (MTS)	
Engagement	Focal child is participating appropriately and/or working on an assigned/approved activity.
Interaction codes (MTS)	
Positive interaction	The teacher and the focal child are engaged in a verbal or physical exchange in which both of them are exhibiting positive behavior and affect (e.g., smiling at each other, teacher is commenting in a positive manner to the child and the child is looking at the teacher).
Negative interaction	Teacher and focal child are engaged in an exchange in which one or both parties are exhibiting negative behavior and/or affect (e.g., teacher is reprimanding the child and the child is engaging in disruptive behavior).

Note. TCIDOS = Teacher–Child Interaction Direct Observation System; PIR = partial interval recording; MTS = momentary time sampling.

coach (trained in the BEST in CLASS model) meets individually (in a one-on-one meeting) for approximately 30 min with the teacher on a weekly basis to conduct further training on the targeted instructional practices. During these coaching meetings, the coach reviews information presented in the teachers' manual, checks the teachers' knowledge of the targeted strategy for the week, and assists the teacher in planning ways that the strategy can be implemented with focal children. Following the coaching meeting, live coaching (including prompting and modeling) is used to support initial strategy implementation, and data on the teacher's implementation is collected. Live coaching and observation occurs over one instructional activity (e.g., whole group instruction), which typically lasts approximately 20 min. Following the live coaching and data collection, the coach meets with the teacher and provides performance feedback on the teacher's implementation of the planned practices. Practices are introduced sequentially and are built on one another across the 14-week coaching period. For example, teachers first learn to implement effective use of rules (Weeks 1 and 2), followed by effective use of precorrection (Week 3), and so forth. In general, the coaching meetings average approximately 30 min per week and the instructional observation period averages approximately 30 to 45 min per week depending on the number of focal children in the classroom. During this

Table 2. Interobserver Reliability Estimates: Percentage Agreement by Code.

Code	*M*	*SD*	Minimum	Maximum
Positive/neutral interaction	95.54	5.26	80.56	100
Negative interaction	99.70	1.07	95.33	100
Rule	99.38	1.14	95.00	100
Precorrection	98.05	3.11	87.50	100
Opportunities to respond	89.01	8.98	61.40	100
Behavior-specific praise	98.39	2.16	89.17	100
Instructive feedback	96.46	6.05	72.97	100
Corrective feedback	97.73	3.00	81.67	100
Reprimands	99.66	0.58	97.50	100
Disruption/aggression/defiance	97.16	2.78	90.00	100
Active supervision	97.42	3.63	83.33	100
Engagement	95.37	4.16	82.89	100

Table 3. BEST in CLASS Instructional Modules and Strategies.

Modules/instructional strategy	Content
Module 1: Basics of behavior and development	Provides instruction on BEST in CLASS and a review of information on behavioral principles and child development.
Module 2: Rules, expectations, and routines	Provides instruction on how to design and implement rules, expectations, and routines effectively during specific activities to support focal children's appropriate behavior.
Module 3: Behavior-specific praise	Provides instruction on providing effective praise to increase the likelihood that focal children will increase their display of appropriate behaviors.
Module 4: Precorrection and active supervision	Provides instruction on two specific preventive strategies that teachers can use with focal children to prevent the occurrence of challenging behaviors.
Module 5: Opportunities to respond and instructional pacing	Provides instruction on teacher behaviors that can be used to increase focal children's engagement and decrease the likelihood of challenging behaviors.
Module 6: Teacher feedback	Provides instruction on two different types of feedback (instructive and corrective feedback), which teachers can use to respond to focal children's incorrect and correct responses or behaviors to enhance children's learning and increase the likelihood that children will exhibit correct responses and behaviors.
Module 7: Home–school communication	Provides instruction on how to establish strong and positive relationships with caregivers of focal children and share information about focal child's behavior and effective strategies for ameliorating behavior at home.
Module 8: Linking and mastery	Provides additional instruction on how to link BEST in CLASS strategies and ensure that teachers' continued use of these strategies.

Note. BEST in CLASS = behavioral, emotional, and social training: Competent learners achieving school success.

study, all 10 teachers attended the initial 6-hr workshop and each teacher received 14 weeks of practice-based coaching that lasted approximately 1.5 hr in total per week.

Design and Data Analysis

A descriptive nonexperimental design was used to investigate the effects of the BEST in CLASS intervention on early childhood teachers' use of effective teaching practices and on the collateral behaviors of young children at risk of E/BD. Means of teacher and child behaviors were computed across each of three time points: baseline, module completion or full intervention completion (depending on the response coded), and maintenance (approximately 1 month following completion of the full intervention). In addition, effect sizes were computed to determine the magnitude of the effect from baseline to the end of module completion or implementation of the entire BEST in CLASS intervention (depending on the response) and from baseline to the maintenance time point. Cohen's *d* was computed using the pooled standard deviation of the two measurement administrations per recommendations by Dunst, Hamby, and Trivette (2004) for correlated or dependent designs, and interpretations were based on those suggested by Cohen (1988).

Social Acceptability

A posttest measure, the BEST in CLASS Intervention Acceptability Scale, was administered to obtain feedback from the teacher participants on the acceptability of the intervention model. Using a Likert-type scale (1 = *low*; 5 = *high*), teachers were asked to rate variables related to acceptability of the BEST in CLASS intervention. Items included comfort level with implementation, time intensiveness, difficulty of implementation, disruption to classroom teaching and routine, comfort level with the amount of training, usefulness and appropriateness, and goodness of fit with the classroom routine. In addition, teachers were asked to rate their confidence level in the effectiveness of the intervention and its component modules, familiarity with the intervention, likelihood of continued use of the intervention and its components, and to provide an overall rating.

Results

The results indicated that (a) the overall percentage of intervals of teachers' use of rules, routines, and expectations, precorrection, OTR, BSP, instructive feedback, and corrective feedback increased from baseline to module completion and from baseline to maintenance, (b) the overall percentage of intervals of children's engagement increased from baseline to intervention completion and from baseline to maintenance, (c) the overall percentage of intervals of children's DAD decreased from baseline to intervention completion and from baseline to maintenance, and (d) the overall percentage of intervals of negative teacher–child interactions decreased from baseline to intervention completion and from baseline to maintenance. In addition, a slight decrease in the percentage of intervals of positive teacher–child interactions and active supervision was found. Little change occurred in teachers' reprimands over the course of the intervention. These findings are presented in Table 4.

Teacher Behaviors

As seen in Table 4, the overall percentage (during a 20-min observation) of teachers' use of rules, routines, and expectations increased from .01 during baseline to .07 when completion of strategy training occurred resulting in a large effect size (1.03) and maintained at a percentage of .03 with a moderate effect size (.63). Precorrection percentage levels increased from .02 during baseline to .11 with strategy training completion and .07 at maintenance. Large effect sizes were indicated at the strategy training completion (1.25) and maintenance (1.12). Percentage of intervals of teachers' use of OTR increased from baseline (.30) to strategy training completion (.48) and maintained (.44). A large effect size was found at strategy training completion (.92) and a moderate effect size at maintenance (.75). Similar results were found with BSP with the baseline percentage level at .01, which increased to .09 at strategy training completion, and .08 at maintenance. Large effect sizes were found at strategy training completion and maintenance (1.58 and 1.27, respectively). The percentage of intervals increased for instructive and corrective feedback across the intervention. Baseline levels were .02 for instructive feedback and .03 for corrective feedback. Following strategy training completion, these levels increased to .14 (instructive feedback) and .06 (corrective feedback) and increased to .17 and .07, respectively, at maintenance. Similar to the other teacher behaviors, large effect sizes were found for instructive and corrective feedback across both time points. Teachers' use of active supervision occurred at a high percentage of intervals at baseline, strategy training completion, and maintenance, with little variation across the time points. However, teacher reprimands occurred at a low percentage of intervals across each time point.

Child Behaviors

The findings indicate that children's engagement occurred in a high percentage of intervals at baseline, completion of the 14 weeks of coaching intervention, and maintenance. The percentage of intervals of engagement increased slightly across the three time points, which resulted in a moderate effect size at the completion of the coaching intervention (.61) and moderately large effect size at maintenance (.77). Children's DAD decreased over the course of the intervention and maintained over time. The percentage of intervals of DAD behaviors was .09 at baseline, .02 at the end of the intervention, and .03 at maintenance. Effect sizes were −1.01 at the end of the intervention and −.65 at maintenance.

Teacher–Child Interactions

Positive teacher–child interactions occurred at a high percentage of intervals throughout the study. At baseline, teacher–child interactions were .98% in comparison with .96% at completion of coaching intervention, and .96% at maintenance, resulting in a small effect size at both time points. Negative teacher–child interactions occurred at a low percentage of intervals at baseline and decreased to 0 at the completion of the coaching intervention, which maintained. A moderate effect size was found at the end of the intervention (−.60) and maintenance (−.41).

Social Acceptability

As indicated in Table 5, social acceptability findings indicated that the teachers felt very comfortable with the intervention and training they received during their participation.

Table 4. Changes in Teacher, Child, and Interaction Behaviors Between Baseline, Strategy Training/Coaching Intervention Completion, and Maintenance.

	Baseline	Strategy training/ coaching intervention completion	Maintenance	Strategy training/ coaching intervention completion	Maintenance
Teacher and child behaviors	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)	Cohen's *d*	Cohen's *d*
Teacher behaviors					
Rules, routines, and expectations	0.01 (.01)	.07 (.08)	.03 (.05)	1.03	0.63
Precorrection	0.02 (.03)	.11 (.10)	.07 (.06)	1.25	1.12
Opportunities to respond	0.30 (.18)	.48 (.22)	.44 (.20)	0.92	0.75
Behavior-specific praise	0.01 (.01)	.09 (.07)	.08 (.08)	1.58	1.27
Instructive feedback	0.02 (.02)	.14 (.09)	.17 (.15)	1.75	1.40
Corrective feedback	0.03 (.31)	.06 (.05)	.07 (.06)	0.70	0.68
Active supervision	1.00 (.01)	.94 (.20)	.97 (.10)	−0.43	−0.42
Reprimands	0.00 (.00)	.01 (.03)	.01 (.02)	0.12	0.27
Child behaviors					
Engagement	0.92 (.08)	.97 (.11)	.98 (.04)	0.61	0.77
DAD	0.09 (.08)	.02 (.05)	.03 (.07)	−1.01	−0.65
Teacher/child interactions					
Positive interactions	0.98 (.04)	.96 (.14)	.96 (.10)	−0.10	−0.15
Negative interactions	0.02 (.00)	.00 (.00)	.00 (.00)	−0.60	−0.41

Note. DAD = disruption, aggression, defiance.

Table 5. BEST in CLASS Teacher Acceptability.

Items	*M* (SD)
How comfortable were you with implementing the BEST in CLASS strategies?	4.29 (0.76)
How time intensive was it for you to implement the BEST in CLASS strategies?	2.57 (1.13)
How difficult was it for you as a classroom teacher to implement the BEST in CLASS strategies?	2.00 (0.63)
How disruptive was it to your classroom teaching to implement the BEST in CLASS strategies?	2.00 (1.10)
How disruptive was it to your routine to implement the BEST in CLASS strategies?	2.14 (0.90)
How comfortable were you with the amount of training you received in gaining competence to implement the BEST in CLASS strategies?	4.43 (0.79)
How useful were the BEST in CLASS strategies to improving your classroom atmosphere?	4.00 (0.82)
How useful were the BEST in CLASS strategies to improving focal children's challenging behavior?	4.17 (0.75)
Given the behavior problems of focal children in your classroom, how appropriate did you find the BEST in CLASS strategies to be?	4.14 (0.69)
To what extent do you think there might be disadvantages in using the BEST in CLASS strategies? (reverse scoring for this item)	4.13 (0.64)
How confident are you that the BEST in CLASS strategies were effective?	3.71 (1.38)
How well did the BEST in CLASS strategies fit into your classroom routine?	3.86 (1.07)
How natural did you feel implementing the BEST in CLASS strategies?	3.86 (1.07)
Are the BEST in CLASS strategies new or different that you have not used previously?	2.50 (1.23)
Are the BEST in CLASS strategies familiar strategies that you have learned how to implement better or more effectively?	4.00 (1.16)
Will you continue to use the BEST in CLASS strategies?	4.14 (0.90)
In general, how useful were the BEST in CLASS strategies to your classroom?	4.00 (1.05)
Overall how would you rate this intervention?	4.20 (0.79)

Note. BEST in CLASS = behavioral, emotional, and social training: Competent learners achieving school success.

They found the intervention to be only minimally difficult to implement or disruptive to their classrooms and requiring minimal to moderate amounts of time. They also indicated that the intervention was highly useful in improving their classroom atmosphere and improving focal children's behavior. Overall, they indicated that the intervention was highly useful, appropriate for their classrooms, and effective. Most teachers indicated that they were familiar with the intervention practices, but that the BEST in CLASS training and coaching intervention helped them gain the ability to use the information in a more effective manner. Teachers indicated that they are highly likely to continue using the BEST in CLASS intervention.

Discussion

In general, these findings suggest that teachers' use of specific effective instructional practices increased and maintained following training and coaching in the BEST in CLASS intervention. In addition, focal children's engagement occurred at high levels throughout the intervention and increased slightly over time while their problem behaviors decreased. Teacher–child interactions occurred at high rates and remained positive throughout the intervention. Although teacher reprimands and negative teacher–child interactions occurred at low percentages throughout the study, negative teacher–child interactions did not occur at all toward the end of the intervention or during maintenance. Finally, teachers found the BEST in CLASS intervention acceptable and appropriate for use in their classrooms.

These findings confirm what other researchers have previously reported. Specifically, teachers who receive instruction, which includes performance-based feedback and coaching, in effective instructional practices increase their use of those practices within their classroom settings and an increase in teachers' use of these practices is often accompanied by changes in children's behaviors (see Fox et al., 2011; Fullerton et al., 2009; Hemmeter et al., 2011; Smith et al., 2011; Stormont et al., 2011). Similar to Fox et al. (2011), this study extends previous research by examining the influence of an intensive practice-based coaching (including performance feedback) intervention on the implementation and maintenance of a combination of effective instructional practices by early childhood teachers that support children's social and behavioral competence. However, the current investigation extends previous research in that BEST in CLASS is a Tier 2 intervention designed to ameliorate the challenging behaviors demonstrated by focal children who have been systematically identified as high risk by their early childhood teachers. In addition, the relationship between teacher and child behaviors (i.e., teacher–child interactions) was also explored.

Several findings from the current investigation are noteworthy. Our findings indicate that not only the use of BEST in CLASS instructional practices by teachers increased by the end of the intervention but also that these gains maintained above baseline levels at least 1 month after the intervention ended. This finding is important, because previous research has not always examined or found maintenance effects (e.g., Fox et al., 2011; Fullerton et al., 2009; Stormont, Smith, & Lewis, 2007). Several factors may help explain this finding including the emphasis of the BEST in CLASS intervention on sequential linking of effective instructional practices within ongoing instructional activities over a practice-based coaching period. Specifically, throughout the intensive 14-week practice-based coaching (including performance feedback) component, teachers were encouraged and supported to continue to use and link all the BEST in CLASS instructional practices they learned within the context of ongoing instructional activities. For instance, teachers learned how to use rules and precorrection to prevent focal children's challenging behaviors during instructional activities and link these practices with increased opportunities for children to respond followed by the provision of BSP and teacher feedback. Over the 14-week coaching component, teachers increased and enhanced the use of these practices and the practices became a part of their instructional day. Also notable are the effect sizes that were found between baseline levels to strategy training completion (or end of the coaching intervention) and baseline to maintenance. As indicated by baseline levels, teachers already used many of these practices to varying degrees within their classrooms. Following coaching on specific practices and cumulatively over time, however, their mean percentage of use of BEST in CLASS strategies increased and continued to maintain. For example, teachers' use of BSP increased from baseline to strategy training completion (1%–9%) and remained at 8% during maintenance. Similarly, OTR increased from baseline to module completion (30%–48%) and remained at 44% during maintenance, and similar results were found for instructive feedback (2%–14% from baseline to module completion, with 17% at maintenance).

There may be several plausible explanations for the findings of this initial investigation of BEST in CLASS. BEST in CLASS comprises evidence-based practices that, independent of each other, have some evidence of effectiveness. In addition, there is evidence that some of these practices may in fact be related during academic instruction (Sutherland, Wehby, & Yoder, 2002) such that an increase in one (e.g., OTR) may result in an increase in the other (e.g., teacher praise). As described by Embry (2004), many programs identified as evidence-based "best practices" in prevention are comprised of behavioral kernels (e.g., reinforcement procedures), and he notes that evidence-based kernels can be combined to produce positive results (referred to by Embry as "behavioral vaccines"). As BEST in CLASS actively links these effective practices together

for teachers during both training and practice-based coaching, effects found in this initial investigation may be related to the synergistic relationship between effective practices that is ultimately represented by higher quality instruction.

Although these findings are promising, it is important to note that not all practices increased and maintained at these levels. For example, no meaningful differences were found in teachers' use of active supervision, which occurred at a high percentage at baseline, at the end of the strategy training, and at maintenance. A likely explanation for this finding may be a limitation of observation procedures and the contexts in which the observations were made. All observations occurred within the contexts of large and small group instructional settings and due to the nature of these contexts, teachers were always in close proximity to the focal children. Interestingly, we found low percentages of teachers' use of reprimands and negative teacher–child interactions and a high percentage of positive teacher–child interactions, which differs from other research that has examined teacher–child interactions in early childhood settings (Barnett & Boocock, 1998; Scott-Little & Holloway, 1992). These findings may be related to reactivity, which Kazdin (1982) indicates is a limitation of direct observation. In this study teacher participants were aware of the purpose of our intervention (i.e., improving teacher–child interactions) and were also aware when they were being observed. Both of these factors may have influenced their display of positive and negative teacher behaviors. Finally, although our effects sizes across many of the behaviors were moderate to large, the mean percentage of change between baseline and strategy training and coaching intervention completion and baseline and maintenance for some behaviors were small in comparison with the effect size. Therefore, the effect sizes should be interpreted with caution. There are several plausible explanations for obtaining a larger effect size in relation to mean difference of change. Although the mean percentage of change increases may seem small, in many cases they represent a substantial change in behaviors. In some cases, the rate at which teachers engaged in the strategy increased fivefold. For example, teachers' rates of using precorrection increased from 2% to 11% of the observed intervals by strategy training completion. This rate of change, albeit relatively low, is substantial particularly given the small number of teacher participants. As such, the patterns of change are reflected in the larger-than-expected effect sizes. Furthermore, to accurately present the impact of the intervention, effect sizes were calculated using the pooled-variance of the data for each analysis (i.e., comparison of baseline with strategy training and coaching completion and comparison of baseline with maintenance). This approach accounts for the variability in teacher behaviors at baseline and at the completion of the strategy training and coaching intervention and maintenance time points.

This study has several methodological limitations; thus, the findings should be viewed with caution. First, the data were collected in the context of a development grant using a within-subjects pretest–posttest design. Without a comparison group, we are unable to discuss the efficacy of the BEST in CLASS intervention. Second, this study had a small sample size, which affects the generalizability of our findings. Third, our coding system had several limitations. As discussed above, reactivity may influence the occurrence of teacher behaviors. Finally, the TCIDOS (Sutherland, Conroy, Abrams, Vo, & Ogston, 2012) is an interval recording system that includes partial interval recording and MTS. As with any interval coding system, the possibility that teacher and child responses were over or underreported may have occurred.

In summary, this study reports initial findings on the BEST in CLASS intervention. This intervention was designed as a Tier 2 intervention to provide additional instructional support for young children at elevated risk of the development of EBD. Although these findings provide support for the BEST in CLASS intervention by indicating that teachers can increase their use of effective instructional practices, additional research needs to be conducted to determine the efficacy of the BEST in CLASS intervention on child outcomes.

Authors' Note

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Note

1. Behavioral, Emotional, and Social Training: Competent Learners Achieving School Success (BEST in CLASS) manualized training materials can be obtained from the first author.

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