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Abstract

The effectiveness of a daily report card in an intervention package involving home-school communication to decrease disruptive behavior in preschoolers was investigated. A sample of four preschool-aged children in two classrooms served as participants. Teachers rated behavior three times daily for each participant using a daily report card. Ratings were shared with the student and then parent, and contingent reinforcement involving positive praise and stickers was provided. A concurrent multiple baseline across-participants design was employed, with results demonstrating decreases in disruptive behavior for all students. Overall, results indicated the daily report card intervention with a home-school component to be an effective method for decreasing problem behavior in a preschool setting.

Keywords

disruptive behavior, preschool, daily report card, home-school communication

Attention to the behavioral, social, and emotional development of preschool age children is substantiated given that approximately one third of preschool-age children display chronic problem behaviors, and an even higher percentage of children may be at risk (Hemmeter, Ostrosky, & Fox, 2006). These concerns are recognized by teachers as well in that preschool teachers continually cite challenging and disruptive behavior as one of their biggest classroom concerns (Alkon, Ramler, & MacLennan, 2003; Fox, Dunlap, Hemmeter, Joseph, & Strain, 2003). In fact, rates of preschool expulsion have reached alarming levels in recent years (Gilliam & Shabar, 2006). In addition, many stressors are reported by families of children with behavior problems, including embarrassment because of child disruptive behavior in public settings, distressful communication with frustrated teachers, exposure to rejection, and isolation from friends (Knitzer, 2002; Webster-Stratton, 1990). Together, these issues support a clear need for strategies that can be easily used by educators and parents to target prevention and early remediation of behavioral difficulties in young children. The purpose of this study was to investigate the effectiveness of an intervention package involving home-school communication using a daily report card on the reduction of disruptive behavior in a sample of preschoolers.

Critical Features of Effective Early Intervention for Disruptive Behavior in Preschool

Although the types of setting vary, it is now estimated that approximately 70% of American children from 3 to 4 years of age spend time in early education settings (Pianta, 2007). Skills emphasized largely target social competence, including appropriate behavior. Preschool staff need to be equipped with effective strategies to teach and reinforce expected social skills for students who have difficulty demonstrating appropriate behavior. In fact, this need has prompted the development of comprehensive packaged programs (e.g., First Step to Success: Walker et al., 1997;

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Incredible Years: Webster-Stratton, 2001). Comprehensive programs that target multiple sources (teacher, parent, child) and integrate a variety of effective strategies (e.g., teaching adaptive skills, parent training, social skill training), such as Incredible Years, have demonstrated great success in addressing problem behavior across settings in young children, both prior to and following kindergarten entry (see the review by the National Registry of Evidence-Based Programs and Practices, 2007). Such programs undeniably offer tremendous benefits; however, many commercially available packaged programs may be too resource intensive for implementation across a range of early childhood education settings. In addition, although such programs often offer a multitude of strategies that are effective in promoting positive behaviors, packaged programs may limit flexibility to modify to meet contextual features of a particular setting. In summary, although commercially available packaged intervention programs serve a valuable role in service delivery for preschool populations, it is important to also establish the evidence base for individual strategies that can serve as complements to these options and can be flexibly modified and feasibly implemented with existing resources across settings.

Critical features of effective teaching that support social competence have been organized in a framework by Fox and colleagues (2003). In their teaching pyramid, a systemic approach is presented that provides a hierarchy of strategies to facilitate meeting the needs of all students. The critical features include (a) building positive relationships with children, family, and colleagues, (b) implementing practices that create supportive environments, (c) using explicit social and emotional teaching strategies, and (d) planning intensive individualized interventions. The premise behind use of this framework is that greater successes for appropriate preschool behavior can be found when adults work to address problem behaviors early; employ a feasible, acceptable, and positively framed design; and involve home-school collaboration (Fox, Dunlap, & Cushing, 2002; Shonkoff & Phillips, 2000). As previously noted, the rationale for addressing problem behavior early is founded within a prevention framework to reduce overall incidence and severity of current and future problem behavior. A feasible, acceptable, and positively framed design means use of strategies that include a proactive rather than reactive focus and that are usable across a variety of settings given existing resources. Finally, as suggested, communication among school and home setting is an essential component to early intervention given possible advantages such as consistent communication, increased potency of consequences across settings, and shared responsibility (Jurbergs, Palcic, & Kelley, 2007). Together, a systemic approach that integrates these features offers great promise toward facilitating preschool social competence. However, further work is needed to establish an evidence base for those specific intervention strategies that intensify supports for students who are not responding to classwide strategies. Such strategies should complement comprehensive packaged programs and also be consistent with all features within the teaching pyramid. That is, although the top tier in the pyramid refers to planning for more intensive individualized interventions, it certainly does not imply that the other features no longer apply. Rather, when planning more intensive individualized interventions, it is necessary to intensify options that incorporate, and possibly add to, the other features. The challenge lies in choosing options that offer appropriate balance between intensity afforded through additional resources and feasibility within existing resources.

One promising tool that offers combination of these features in intensifying supports for social competence can be found in home-school notes. Although seemingly simple, home-school notes can influence behavior change (Cox, 2005) and provide meaningful, immediate, and effective feedback to both the student and parent (Smith, Williams, & McLaughlin, 1983). It is not surprising that the tools have a long history of use and discussion within the literature (Chafouleas, Riley-Tillman, & McDougal, 2002; Kelley, 1990). Although many terms have been used to describe tools involving home-school notes, Chafouleas and colleagues (2002) initially discussed use of a standardized version of such tools as involving teacher rating of prespecified behavior at least daily and then sharing the gathered information with someone other than the rater (i.e., student or parent) with the intent to communicate about, and possibly intervene with, behavior. Since that organizing definition related to tools that incorporate direct behavior ratings, researcher attention to creating systematic lines of investigation into a variety of standard versions has begun to occur (Chafouleas, 2011). For example, in a related line, Fabiano and colleagues have adopted the term *daily report card* (DRC) to refer to this sort of standardized intervention protocol for promoting communication across settings, which can also serve as an intervention to promote positive behavior when combined with reinforcement (e.g., Fabiano et al., 2010). In brief, the critical components of DRC interventions involve predetermining behaviors of interest, performing a formative and systematic rating of those behaviors, and then sharing information about how that behavior meets expected performance. This sharing about expected behavior might be communicated through use of reinforcement (e.g., verbal, tangible) in a single setting (e.g., child and teacher at school) or across settings (e.g., school and home). Much of the work to date establishing the evidence base for DRC has included school-age populations (e.g., Chafouleas, Sanetti, Jaffery, & Fallon, in press), with limited empirical attention to application with preschoolers. One example using home-school notes as an intervention for preschoolers exhibiting problem behavior did demonstrate positive results. McCain and Kelley (1993)

examined the effectiveness of a school-home note intervention with home-based consequences for improving classroom behavior of preschoolers with attention-deficit/hyperactivity disorder. Using a reversal design, increased attentiveness and decreased disruptiveness in student behavior were demonstrated, which were determined to be functionally related to the home contingencies (McCain & Kelley, 1993). Taken together, use of a DRC-based intervention that integrates home-school communication shows promise for use in early childhood, but further work to evaluate effectiveness with preschoolers who display disruptive behavior is warranted.

Purpose of the Study

Further research is needed to identify and evaluate effective strategies that can be feasibly used to address problem behavior across preschool settings. Research findings have provided support for use of a DRC intervention that can incorporate home-school communication, yet limited extension has been conducted in preschool settings. The purpose of this study was to examine the effectiveness of using a DRC intervention package involving home-school communication and contingent reinforcement to decrease disruptive behavior in preschool-age children. Specific hypotheses were that (a) implementation of the intervention package would decrease disruptive behaviors exhibited in preschool settings and (b) teachers and parents would find it to be a usable strategy.

Method

Participants

Participating children attended a preschool located within a public school district in New England. Four children served as participants, with two participants in one classroom and two participants in a second. Of the child participants, two were identified as White non-Hispanic, one was White Hispanic, and one was Black non-Hispanic. Three of the four children were boys. In addition, the two classroom teachers and the mother of each child participated. Of the adult participants, all were women and four were White non-Hispanic, one was White Hispanic, and one was Black.

Participants were selected through a multiple-step process. Prior to beginning data collection, the primary researcher met individually with the teachers to discuss the project and request recommendations for students displaying disruptive behavior and capacity to understand the intervention (e.g., no known cognitive impairments). Once written parental consent was obtained, the *Behavior Assessment System for Children* (BASC-2) rating scales were completed by teachers and parents (Reynolds & Kamphaus, 2004) to confirm problem behavior deviating from normative expectations. Clinically significant or at-risk scores on either or both forms for any of the externalizing scales (i.e., aggression, hyperactivity, attention problems) were used to confirm nomination. The following students met all criteria and served as participants.

Robby. Robby was a 4-year-old boy attending his second year of preschool. His classroom teacher nominated him for exhibiting disruptive behavior problems (e.g., aggressive behaviors, inattention, inappropriate movement and vocalizations) deemed to be severe. Robby's mother also reported concern about his behavioral difficulties in the classroom, specifically expressing concern about his ability to interact with peers. Clinically significant scores in the areas of hyperactivity and aggression were reported by Robby's teacher on the BASC-2, as were at-risk range scores for attention problems.

Wendy. Wendy was a 4-year-old girl attending her first year of preschool. She was referred by her teacher for displaying problems with inattention (e.g., wandering, not following directions) and inappropriate vocalizations in the classroom (e.g., calling out, loud whining). Her parents endorsed behavioral difficulties occurring during Wendy's school day. On the BASC-2, at-risk range scores within the school setting were noted in the area of attention problems.

Zander. Zander was a 4-year-old boy attending his second year of preschool. His teacher nominated Zander because he was showing increasingly disruptive behavior in the classroom (e.g., inappropriate movement and vocalizations, inattention). Zander's mother expressed concern over this increase in problem behavior at school. Clinically significant scores on the BASC-2 were reported by Zander's teacher in the area of aggression. Zander was also rated in the at-risk range for hyperactivity and attention problems.

Jake. Jake was a 4-year-old boy attending his second year of preschool. Jake was referred by his teacher because he was exhibiting severe problem behaviors in the classroom. Disruptive behaviors reported in the classroom included yelling, hitting, throwing items, and refusal to comply with teacher directions. Jake's mother reported extreme concern about his behavior and stated that she was looking for an intervention involving positive framing rather than disciplinary measures. Jake was rated by his mother in the clinically significant range on the BASC-2 for hyperactivity and attention problems. Jake's teacher reported at-risk-range concerns for attention problems.

Setting. The two preschool classrooms were located in a public school building that housed grades prekindergarten through 5 and approximately 450 students. The school was located in a suburban district ranking in the lower third of towns within the state in terms of wealth, with approximately 10% of students receiving special education services. The preschool program consisted of a 4-day school week, 2.5 hours a day, over the academic year. Class size averaged 10–12 students per class. Mrs. Smith was the

classroom teacher in Classroom 1. She was a certified teacher and was employed as a teacher for 18 years. Mrs. Jones was the classroom teacher in Classroom 2. She also was a certified teacher and was employed as a teacher for 1.5 years. In addition to the classroom teachers, each classroom had a full-time paraprofessional. Robby and Zander attended Mrs. Smith's classroom, and Wendy and Jake were in Mrs. Jones's classroom. All participating children attended preschool during the morning session. According to teacher report and researcher observation, each classroom employed a number of universal prevention strategies (e.g., good classroom management, child-focused environment, clear expectations, positive behavior strategies). In both classrooms, disruptive behavior generally resulted in a verbal reminder of expectations and/or removal from an activity.

Measures

Systematic direct observation of disruptive behavior. Disruptive behavior was defined as a student action that interrupts regular school or classroom activities. Example behaviors included being out of seat, inappropriate movement, inattention, fidgeting, yelling or screaming, making noises, inappropriate use of materials, fighting, hitting, rough play, and throwing objects. Observational data were collected on each student using partial interval recording with 15-s intervals. Times or activities during which observations occurred remained stable throughout the study (e.g., circle time).

In addition to the primary author, two advanced graduate students in school psychology served as observers and were previously trained in systematic direct observation techniques as part of their coursework. In addition, all observers participated in a 3-hr training session involving didactic instruction in the specific observation procedures and practice in coding disruptive behavior displayed in video footage. The three observers were trained on data collection procedures to greater than 80% agreement prior to the beginning of the study. Interrater agreement of the direct observations was assessed throughout the study by having a second observer conduct simultaneous observations. This occurred randomly throughout the course of the study for approximately 30% of the total observations (n = 26 sessions). Retraining of observers was to occur if agreement for any single observation fell below 80%; however, the percentage of agreement stayed at or above 80% for the duration of the study. Interobserver agreement was calculated on a point-by-point basis using the following formula: agreements ÷ (agreements + disagreements) × 100. Overall, interrater reliability was 92.75% across observations (range = 80–100%). In addition, kappa was computed (M = .92, range = .66–1.0) to reflect the data accurately by accounting for chance (Watkins & Pacheco, 2000).

Usability. To measure intervention usability, adult participants completed the *Usage Rating Profile–Intervention* (URP-I; Chafouleas, Briesch, Riley-Tillman, & McCoach, 2009) at the completion of the intervention period to collect information about the factors influencing intervention use. Participants respond to the 35 brief statements by indicating their level of agreement or disagreement with each item using a 6-point scale (1 = *strongly disagree* to 6 = *strongly agree*). Strong support for a factor structure that includes (a) acceptability, (b) understanding, (c) feasibility, and (d) systems support has been reported.

Integrity. Researcher-created checklists of intervention components for the researcher, teacher, and parent were used to indirectly assess the degree to which intervention procedures were implemented as planned. The researcher used a self-report checklist during meetings to set up the intervention with parents, teachers, and students, and in training teachers and parents on implementation steps. Teachers and parents also completed self-report assessments throughout the intervention phase. Specifically, teachers were asked to check boxes directly on the DRC form indicating whether reinforcement was provided and the DRC was sent home. Parents then checked whether the DRC was received and reinforcement was provided and were asked to sign and return the DRC. This was completed daily and returned DRCs were collected by the researcher. Percentage of steps completed was calculated for each of these self-report measures. In addition to this indirect assessment of treatment integrity, direct assessment of integrity was provided in the form of a permanent product through the return of the completed and signed DRC form to the researcher. Finally, to prevent any permanent loss of data, teachers were asked to complete a daily rating log to record ratings made each day in case the signed DRC was not returned. Implementation remained greater than 80% throughout the study.

Description of the Intervention

The design of the DRC intervention followed prior recommendations (e.g., Riley-Tillman, Chafouleas, & Briesch, 2007). The topic of each DRC form included specific intervention targets that were chosen by the teachers as most problematic for the individual student and related to the previously defined disruptive behavior construct. However, the targets on the DRC were worded with specific and age-appropriate examples and used positive phrasing (e.g., kept hands to myself, used a quiet voice). An age-appropriate 3-point scale (i.e.,☺, 😐, ☹) was used to represent a range of possible observed behavior, with each point representing gradients corresponding to consistently, somewhat, and inconsistently displayed, respectively. The form included space to rate three activity periods each day. To determine appropriate reinforcers, a reinforcer menu was presented to

parents and teachers prior to intervention implementation. Positive verbal praise and stickers were chosen for each child by teachers and parents. Delivery of reinforcement was based on ratings earned during each activity and totals from each day. More specifically, as the teacher checked in with each student immediately following each rating period, positive praise was provided if a smiley face was earned. That is, the criterion for reinforcement at the end of each rating period was earning a smiley face rating. Prior to implementation, teachers and parents received instruction and practice in using the procedures, including review of the DRC form, reiteration of point calculation and provision of reinforcers, and examples of specific positive praise statements (e.g., if a child did not earn a smiley face rating, the teacher explained reasons why and redescribed behavior expectations). Teachers were instructed to review the expectations and provide a specific example as to how they could earn a different rating the next time. The stickers were provided to the student at the end of each day (i.e., after all three ratings were completed) if at least two smiley faces were earned. That is, the criterion for reinforcement at the end of the day was earning at least two out of three possible smiley face ratings. The completed DRC form was then sent home to the parent at the end of each school day. The parent checked the appropriate boxes on the DRC, signed it, and returned it to the teacher the following day. If two smiley faces were earned, the parent provided positive verbal praise and a sticker to the child. As mentioned previously, the researcher provided parents with instruction and review, with emphasis on how to deliver specific positive praise statements. In addition, parents were also instructed to review expectations with the child if the criterion for reinforcement was not met. Specifically, if the criterion (two smiley faces) was not met, parents were asked to again review with the child why he or she did not earn a sticker and review (in concrete, specific terms) how he or she could earn a sticker the following day.

Design and Procedures

The intervention was implemented using a concurrent multiple baseline design across participants (Kazdin, 2011). The across-participant design with staggering of intervention implementation allowed for at least three demonstrations of experimental effect at three different points in time (Horner et al., 2005). Follow-up data points also were collected to probe for maintenance of intervention effects.

Baseline. Baseline data were collected on each participant using the previously described partial interval recording technique. Once the observed behavior remained stable across at least five consecutive observations, the intervention was implemented for the first child. Five observations was chosen as the criterion because of time constraints of the school calendar. Given the nature of a multiple baseline design, total baseline length varied across students. Baseline student order was determined at random and resulted in a staggering of participants across settings (e.g., first child in Room 1, second child in Room 2, third child in Room 1, fourth child in Room 2).

Intervention. Following baseline, the researcher met with participating teachers and parents separately to describe the DBR design and intervention procedures and secure agreements regarding implementation. The researcher also met individually with each student to describe the intervention (e.g., review of intervention procedures, expected behaviors). The exact activities during which the classroom teacher completed the DRC form was decided on based on class and student schedule and in consideration of the most problematic times of day for each student. Mrs. Smith rated Robby and Zander during free play, circle time, and center time. Mrs. Jones rated Wendy and Jake during circle time, center time, and transition from snack.

Systematic direct observations continued to be collected by external observers during the intervention phase of the study. Observational data were collected on participants and peer comparisons during a 15-min period approximately every other school day (e.g., 2 to 3 times per week during the same activity period). In addition, intervention implementation procedures were documented using the previously described methods to monitor implementation integrity. On completion of the intervention phase, the URP-I was completed by adult participants a measure of intervention usability. In addition, follow-up observations occurred for each student at 4 and 8 weeks following completion of the requested 15-day intervention period. However, it should be noted that Mrs. Smith, Classroom 1 (Robby and Zander), chose to continue the intervention for the remainder of the year, approximately 21 weeks.

Data Analysis

Data were visually analyzed by plotting the percentage of intervals in which disruptive behaviors were observed. Percentage of observed behaviors across baseline, intervention, and follow-up periods were examined. The follow-up period refers to 4- and 8-week observations collected following the intervention phase. Level, trend, and variability are discussed, and percentage of nonoverlapping data was also reported.

Results

Intervention Integrity

Results indicated that study components were implemented with 100% integrity during the training and treatment phases by the researcher and teachers. In addition, DRC forms were signed by the teacher, signed by the parent, and

Table 1. Percentage Observed Disruptive Behavior at Baseline, Intervention, and Follow-Up for Each Participant.

	Baseline		Intervention		Follow-up	
	M	*SD*	*M*	*SD*	4 weeks	8 weeks
Robby	54.40	7.40	6.60	6.06	2.00	6.00
Wendy	37.29	11.09	5.77	5.54	6.00	4.00
Zander	32.22	13.12	4.45	9.79	2.00	4.00
Jake	44.09	13.52	9.95	7.62	8.00	6.00

Note. Follow-up points for Robby and Zander reflect continued implementation of the daily report card (DRC) intervention based on teacher choice.

returned to school an average of 94% of the time (range of 88–100% across students). In instances of less than 100% integrity, DRC forms were either (a) not returned by the parent or (b) returned to the school unsigned by the parent.

Student Measures

Data collected from DRC ratings demonstrated that all participants met the criterion for earning a daily sticker during the majority of days during the intervention phase. Data (i.e., smiley face ratings) were converted to a number of points for the purposes of data summarization. Specifically, a sad face (e.g.,☹) was equal to 0 points, a so-so face (e.g.,😐) was converted to 1 point, and a smiley face (e.g.,☺) equaled 2 points. Given that there were three ratings per day, the maximum number of points that could be earned per day was 6. As previously noted, the criterion to earn a sticker following all three daily ratings was a minimum of 4 points (e.g., 2 out of 3 smiley faces). During the intervention, Robby earned a sticker 93.3% of the days, Wendy earned a sticker 100.0% of the days, Zander earned a sticker 93.3% of the days, and Jake earned a sticker 66.6% of the days.

Baseline. During baseline, Robby displayed disruptive behavior during a mean of 55.4% of the observed intervals (*SD* = 7.4) and Wendy displayed disruptive behavior during a mean of 37.3% the intervals observed (*SD* = 11.1). Zander displayed disruptive behavior for a mean of 32.2% of the observed intervals (*SD* = 13.1), and Jake displayed disruptive behavior for a mean of 44.1% of the observed intervals (*SD* = 13.5) during baseline (see Table 1). It should be noted that slight decreasing trends in disruptive behavior during baseline were evident for three of the participants (Robby, Wendy, Zander), which are referenced in the discussion (see Figure 1).

Intervention. On implementation of the intervention for the first participant, Robby, an immediate decrease in disruptive behavior was observed. Wendy, Zander, and Jake continued to present with high levels of disruptive behavior as Robby moved into the intervention phase. Overall, Robby displayed disruptive behavior for a mean of 6.6% of the intervals observed (*SD* = 6.1) during the intervention phase. As noted in Figure 1, visual analysis supports an immediate, maintaining change in level from baseline to intervention and a small decreasing trend is observed during the intervention phase for Robby. Percentage of nonoverlapping data from baseline to intervention was 100%, and low rates of disruptive behavior maintained at the follow-up assessments (note that the teacher chose to continue intervention implementation during follow-up). Qualitative teacher description of changes observed in Robby's behavior included fewer inappropriate vocalizations (e.g., yelling) and aggression (e.g., hitting).

In the intervention phase, Wendy's display of disruptive behavior during implementation of the intervention decreased to a mean 5.77% of the intervals observed (*SD* = 5.5). Visual analysis supports an immediate, maintaining change in the level of the data with 100% nonoverlapping data. In addition, there was a small decreasing trend and decreased variability during the intervention phase. Qualitative teacher description of changes observed in behavior included the decrease of inappropriate vocalizations (e.g., calling out) and inattention. Although Zander continued to show high levels of disruptive behavior as Robby and Wendy moved into the intervention phase, his disruptive behavior decreased to a mean of 4.5% (*SD* = 9.8) of observed intervals during implementation of his intervention phase. Visual analysis supports an immediate decrease in problem behavior following the first day of intervention and an overall decreasing trend, with 91% nonoverlapping data. A reduction in variability is also visually evidenced during the intervention phase. Teacher description of change in Zander's behavior included a noticeable decrease in inappropriate movement and talking (e.g., calling out, yelling).

Finally, Jake was the last participant to move into the intervention phase, during which he displayed disruptive behavior for a mean of 9.9% of the intervals observed (*SD* = 7.6), and visual analyses revealed a decreasing trend. The percentage of nonoverlapping data from baseline to intervention phases was 85%. Overall, more variability is seen in Jake's classroom behavior as compared to the three other participants. However, Jake was described as having fewer temper tantrums, able to follow directions more frequently, and able to participate in group activities during the intervention and follow-up phases.

Follow-up. Follow-up observations revealed Robby displayed disruptive behavior for 2% and 6% of the intervals observed and Wendy displayed disruptive behavior for 6% and 4% of observed intervals. Similarly, for Zander, low rates of disruptive behavior maintained in the follow-up (2% and 4%). In follow-up assessments, disruptive behavior was recorded for Jake during 8% and 6% of the observed intervals. In summary, across all four participants, a positive effect of the intervention is evident via visual analysis of systematic direct observation data.

Intervention Usability

Overall, both parent and teachers rated the intervention as highly usable with regard to items associated with the

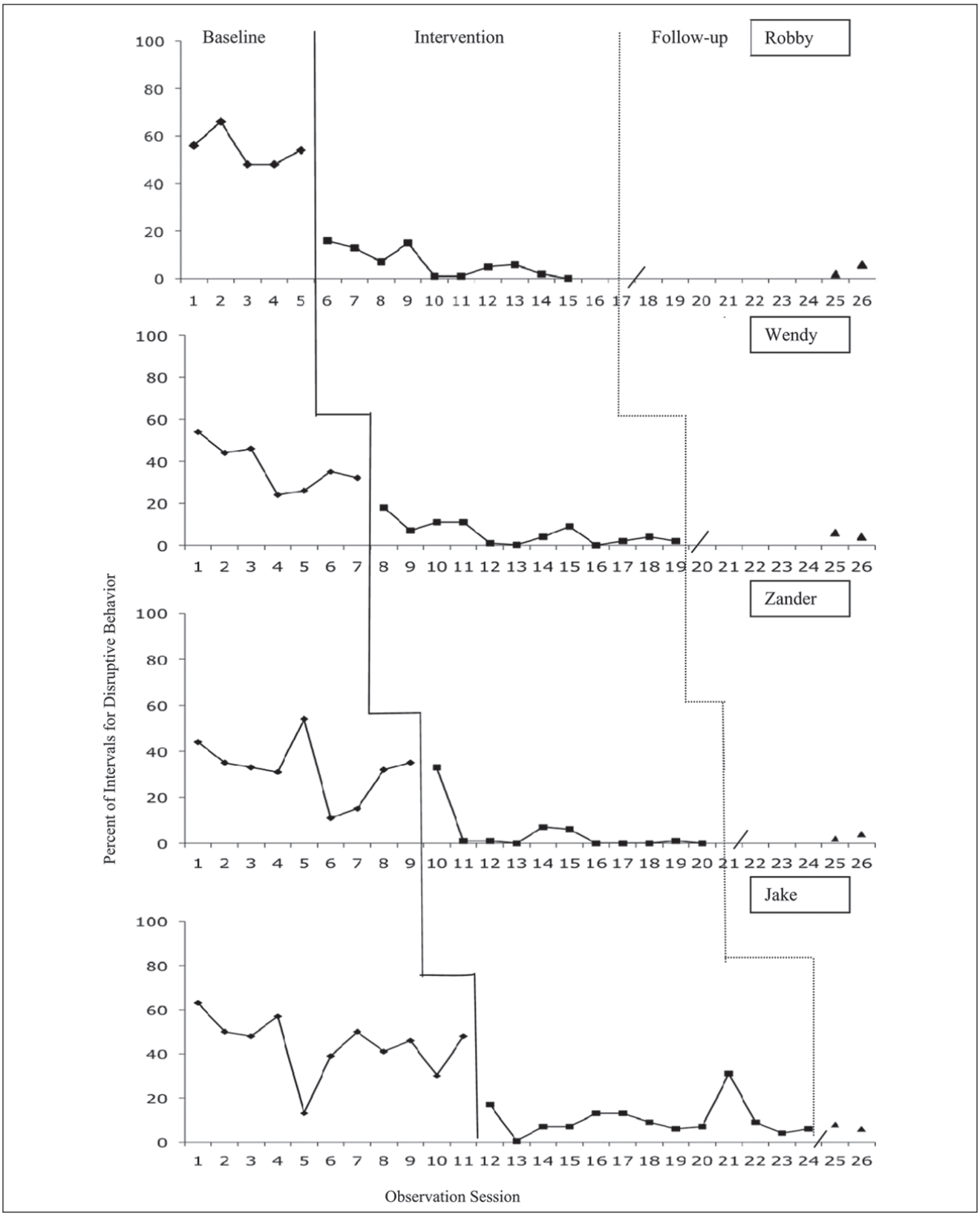

Figure 1. Percent intervals in which disruptive behavior was observed.
Note. Follow-up points were conducted at approximately the 4 and 8 week points and represent continued intervention for Robby and Zander because of teacher choice.

factors of acceptability, understanding, and feasibility. That is, parents and teachers perceived that they liked the intervention, understood how to implement it, and found it reasonable to implement with existing resources. For example, in response to the question, "Overall this intervention is beneficial for the child," a rating of 5 ("I agree") or 6 ("I strongly agree") was obtained across all participants. Parent ratings of acceptability ($M = 5.56$, $SD = 0.84$), understanding ($M = 5.68$, $SD = 0.48$) and feasibility ($M = 5.54$, $SD = 0.51$) were high. Systems support was moderately rated by parents ($M = 2.96$, $SD = 2.07$); however, it is important to remember that in contrast to the other factors, lower scores on systems support indicate a lower perceived need for support in intervention implementation. Given the collaborative nature of this intervention, the wording of some of the questions related to this factor may have been confusing to participants (e.g., "Parental collaboration is required in order to use this intervention") given the item was an inherent part of the selected intervention. Similarly, teachers rated the intervention with high scores in the areas of acceptability ($M = 5.5$, $SD = 0.51$), understanding ($M = 5.43$, $SD = 0.51$), and feasibility ($M = 5.0$, $SD = 0.78$). Teachers also rated systems support in the moderate range ($M = 3.75$, $SD = 1.6$).

Discussion

Results of the current study indicated that a DRC-based intervention involving a home-school component was an effective strategy for decreasing disruptive behavior in preschool-aged children. In addition, results indicated the intervention package to be usable for teachers and parents of preschool-aged children. These findings are particularly encouraging given that the intervention package developed for this study was relatively simple to implement and low resource intensive. Overall, results suggested a meaningful decrease in observed disruptive behavior for each participant. Across all participants, visual analyses demonstrated clear and maintaining changes in the level of data and decreased variability on intervention implementation and a high percentage of nonoverlapping data from baseline to intervention. For most participants, improvements in behavior were immediate on implementation of the intervention, and all evidenced low rates of disruptive behavior that were clear and maintaining within a few days after intervention began. Although some participants displayed slight decreasing trends in disruptive behavior during baseline that could indicate that disruptive behavior would continue to decrease in the absence of intervention, immediate-level changes suggestive of more acceptable behavior were evidenced on intervention implementation. For example, Zander's data demonstrated variable and high rates of disruptive behavior with a slightly decreasing trend at baseline. However, implementation of the intervention resulted in relatively stable and low rates of disruptive behavior for Zander, supporting that the intervention was at least partly responsible for the behavior change. Follow-up observation points suggested disruptive behavior remained stable and within low levels (2–8%) for each participant. It is important to reiterate that one classroom teacher (Robby, Zander) chose to continue the intervention beyond the expected intervention phase. This point serves to provide further support for the intervention usability since it is unlikely that the teacher would have continued beyond the expected research period if the benefit did not outweigh the cost of implementation.

Related, the criterion for delivery of the sticker was met during the majority of intervention days for each participant (range 66.6%–100.0% of the days). Jake earned a sticker less often (66.6%) than the others; however, he still earned a sticker more often than not. It is possible that had the criteria for or types of reinforcement been modified, student behavior may have been even more quickly reduced to expected levels. For example, had the criterion for earning positive praise and/or a sticker been lowered for Jake during the first days of the intervention phase, disruptive behavior may have decreased more quickly.

Results of the current study are similar to results of previous studies that have demonstrated support for a DRC-based intervention as an evidence-based practice (Chafouleas et al., in press; Fabiano et al., 2010) for assisting students with meeting behavior expectations. As noted, the majority of extant DRC intervention studies have included school-aged populations, and the majority has not included a reinforcement system that extends across home and school settings. Thus, results from the current study represent an extension within the literature with regard to preschool-aged participants and school-home collaboration about student behavior in school. Although somewhat dated, the study by McCain and Kelley (1993) represents one example of a DRC-type intervention application with preschool and home collaboration. It is interesting that current results are consistent with those findings in demonstrating clear and often immediate improvements in behavior following implementation of an intervention involving feedback, contingencies, and home-school collaboration. Together, results continue to build support for a DRC-based intervention, and with additional work encouraged to further delineate those intervention components that are critical to effectiveness, for what populations and under which circumstances. For example, although a home component may be desirable from a communication and relationship-building standpoint, it may not always be a reasonable component to add in various situations (Chafouleas et al., 2002). Understanding the added benefit of this component can be helpful to consultants in determining those situations that might benefit from extra resources to ensure successful buy-in and sustained implementation.

The DRC intervention package and current results from this study are consistent with recommendations outlined in the teaching pyramid that emphasizes building positive

relationships, practices that support positive environments, explicit teaching around social and emotional behavior, and planning for more intensive interventions for those students who are nonresponders to the general curriculum (Fox et al., 2003). In particular, this DRC intervention utilized a positively framed design given feedback and positive reinforcement that was delivered across school and home settings. Results indicate that this intervention shows promise as a more intensive strategy (e.g., Tier 2 type) that can be useful with students who demonstrate minor to moderate problematic behavior yet have not responded to universal instruction or strategies. Current results also align with other research suggesting the possibility for large decreases in preschool problem behavior because of an increase in teacher positive recognition of appropriate behavior (Stormont, Covington Smith, & Lewis, 2007). For example, Stormont and colleagues (2007) demonstrated that universal small changes and simple methods (e.g., increase in praise) can produce significant positive gains in behavior of preschoolers. In addition, building positive relationships across settings was emphasized through involvement of both home and school in communication about student behavior and also with students about their behavior. Both parents and teachers perceived the intervention to be highly usable with regard to understanding, feasibility, and acceptability. Teacher acceptability of this intervention is a particularly encouraging finding given that teachers are the most frequent implementers of school behavior supports, and findings are similar to results from prior research on school-home notes in which teachers reported minimal disruption to their routine but noticeable student results (Kelley & McCain, 1995). Finally, although student buy-in and understanding were not directly assessed, anecdotal child comments ("Two smiles! I'll get a Thomas® sticker!") suggest that the children truly (a) understood the intervention (i.e., helping them to behave), (b) understood criteria for reinforcement (i.e., two smiley faces), and (c) were motivated by the rewards (i.e., sticker).

Limitations

Limitations to the study warrant discussion. First, perhaps the most notable limitation was the small sample size, which restricts generalization. Potential homogeneity of the sample must be noted given that, in many ways, the current setting might be considered to provide high-quality preschool (e.g., small class–staff ratios, teachers with advanced degrees). Second, it is relevant to note researcher decision to move forward with the intervention phase despite evidence of decreasing baseline trends for some participants. Although this decision was based solely on practical reasons, weakened confidence with regard to experimental control is acknowledged even given overall results suggest intervention effectiveness. It is worth repeating that it is possible that by tracking positive social behavior concurrently, the data might have provided additional support for the interventions. In addition, given the multicomponent design of the intervention, it is not possible to separate the effects of feedback on behavior, the reinforcement, and the home-school collaboration.

Another limitation stems from the chosen assessments of implementation integrity given that the majority was considered to be indirect rather than direct measures. Although the permanent product data (return of signed DRC forms) that were obtained supported high levels of overall integrity, it is important not to generalize regarding all aspects of implementation integrity. In particular, parent provision of reinforcement was collected via self-report but not directly observed, and thus we cannot be certain as to whether and how it was delivered.

Implications for Research and Practice

The current investigation adds to the literature and can inform practice in several important ways. First, it offers further empirical support for a relatively simple, standardized protocol intervention that can be used in planning more intensive intervention for decreasing problematic behavior. The recent interest in continuing to build a body of evidence regarding DRC-based interventions is encouraging given the need to increase options for effective strategies across all tiers within a multitiered problem-solving model. A DRC-based intervention is particularly relevant to tiers that emphasize provision of more intensive supports, in which some additional resource intensity is available yet feasibility remains of utmost importance.

Furthermore, this study adds to the literature supporting the benefits of family–school partnerships. Although the intervention was designed to affect school behaviors, the actual intervention procedures were collaborative in nature in that both school and home environments worked together toward improving student behavior in school. This highlights a difference in approach, which may be needed for young student populations. In contrast to older students who might be expected to take greater role with the DRC ratings (Chafouleas et al., in press), younger students may benefit from an adult-directed, collaborative approach with the home setting. Given the promise of using a DRC intervention as a mechanism to increase positive interaction and communication between home and school for students who need additional behavior supports beyond the general classroom strategies, additional investigation into home and school communication systems and how they fit within a three-tiered approach within early childhood would be of interest. Furthermore, future research may wish to investigate whether the DRC intervention had a positive impact on relationships over time.

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