CLASS-WIDE EFFECTS OF POSITIVE PEER REPORTING ON THE DISRUPTIVE BEHAVIOR OF CHILDREN WITH EMOTIONAL DISTURBANCE

by Kristi L. Hofstadter

Peers exert considerable influence on the behavior of one another, and positive peer reporting (PPR) has emerged as one method for successfully incorporating peer attention into social interventions. PPR consists of reinforcing classroom peers using a group contingency for making praise statements regarding the social behavior of target students. The current study employed an increasing intensity design to evaluate the effects of two levels of PPR, targeted and class-wide PPR, on the class-wide average of disruptive behavior for seven first and second grade students in a classroom for children with emotional disturbance. Targeted PPR consisted of one to two target students serving as recipients of praise statements, and class-wide PPR represented an increase in intensity, as all seven students became recipients of praise. Results indicated that class-wide disruptive behavior decreased by 15% during targeted PPR, and by an additional 7% during the class-wide PPR phase.
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EMOTIONAL DISTURBANCE

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Introduction

Disruptive behavior and social rejection are significant problems with deleterious effects that have considerable influence on the development of school-age children. van Lier, Vuijk, and Crijnen (2005) describe peer rejection and association with deviant peers as two related and significant risk factors for future development of antisocial behavior. These problematic factors, which exist in children’s social contexts, have serious immediate and long-term consequences. Parker and Asher (1987) found that children who have poor peer relations are at greater risk for problems later in life, such as dropping out of school and criminality. Further, early aggressive and disruptive behavior, which is associated with deviant peer group affiliation, is linked to later maladjustment (Asher & Parker, 1989). While the impact of poor social contexts may have long lasting detrimental effects, positive peer relations have been found to contribute to children’s optimal development (Brownell & Gifford-Smith, 2003). The fact that the quality of peer relations has such a tremendous impact on personal development indicates that peers may be the most valuable resource available to enact change in social contexts.

Within residential and educational settings, peers exert a great deal of influence on each other’s behavior (Carden Smith & Fowler, 1984; Patterson & Anderson, 1964; Skinner, Neddenriep, Robinson, Ervin, & Jones, 2002). Peers are ideal for use as change agents, as they naturally acquire social skills through interactions with one another in various contexts (Skinner et al., 2002). Peers have been found to increase positive behavior (Feldman, 1992) and decrease disruptive behavior (Carden-Smith & Fowler, 1984), however, the ability of peers to influence socially maladaptive behaviors has also been demonstrated (Arnold & Hughes, 1999; Catterall, 1987; Dishion, McCord, & Poulin, 1999; Dishion, Spracklen, Andrews, & Patterson, 1996; Handwerk, Field, & Friman, 2001).

Contingent positive reactions to certain behavior appear to serve as the mechanism through which peers influence one another (Dishion et al., 1996). Dishion, Patterson, and Griesler (1994) proposed a process termed confluence interaction, meaning that children reinforce behavior similar to their own, thus promoting friendships between children who share similar behaviors. Thus, antisocial children affiliate with
antisocial peers and reinforce disruptive and aggressive behaviors in one another. Correspondingly, children who display prosocial behavior affiliate with similar peers, reinforcing appropriate, positive behaviors.

Research conducted within self-contained classrooms for students with emotional disturbance supports these findings. Boivin, Dodge, & Coie (1995) suggest that aggressive students reinforce the aggressive behavior of peers, while prosocial peers may actually ignore or punish these behaviors. Feldman (1992) found that grouping prosocial and antisocial peers resulted in a decrease in antisocial behavior and an increase in prosocial behavior for the antisocial children. The reinforcement pattern which results in positive social behaviors for prosocial peers was demonstrated to be successful in promoting positive behaviors for antisocial peers. These findings indicate that peer-mediated strategies utilizing reinforcement of prosocial behaviors may be ideal for use with high-risk students in self-contained classrooms.

Behavioral Reporting

Behavioral reporting strategies, which involve peer reporting of positive behaviors, have recently emerged as successful social skills interventions. Skinner, Cashwell, and Skinner (2000) found that students’ reports of prosocial behavior were successfully increased by group reinforcement. Students were instructed to report occurrences of prosocial behavior exhibited by other classmates, referred to as “tootling.” During periods in which students were reinforced using a group contingency and given feedback regarding tootling, the number of prosocial behaviors reported increased dramatically. A follow up of this study, performed by Cashwell, Skinner, and Smith (2001), replicated these findings.

These two studies provide evidence that, when offered group activity reinforcers, students are more likely to report the prosocial behaviors of other students. In order to effectively report positive behaviors, the students must be made aware of such occurrences. So, it must be the case that students are more attentive to the positive behaviors of their peers during the intervention periods. This increased attention to prosocial behavior may result in a higher rate of recording and reporting the behavior, but it does not necessarily influence the occurrence of such behavior (Skinner et al., 2000; Cashwell et al., 2001). In other words, one possible limitation of the tootling studies was
that classroom peers were reinforced for the reporting of prosocial behavior, but the effects of these reports on prosocial behavior were not assessed. The research demonstrated effectively that reinforcement and feedback increased the reporting of positive occurrences, however these two studies offered no direct evidence that the incidence of positive behavior or prosocial interactions increased as a result of the tootling (Skinner et al., 2000; Cashwell, 2001).

**Positive Peer Reporting**

Positive peer reporting (PPR) has been shown to increase the occurrence of positive social interactions as a direct function of peer praise statements (Bowers, McGinnis, Ervin, & Friman, 1999; Bowers, Woods, Carylon, & Friman, 2000; Moroz & Jones, 2002). PPR is a system in which peers are instructed to provide genuine, positive praise for a target student’s behavior. Thus, it is similar to tootling (Skinner et al., 2000), except that positive reports are directed to a single, targeted individual. In turn, peers are reinforced individually or as a group for making positive comments regarding the prosocial behaviors exhibited by the targeted individual. The comments are either stated to the target child directly or are relayed by a teacher. The procedure for PPR typically includes selecting a target student, training peers to recognize and develop positive reports, and determining a specific time in which the students can relay the positive reports (Skinner et al. 2002).

Previous studies have indicated that PPR is effective in increasing positive social interactions (Bowers et al., 1999; Bowers et al., 2000; Ervin, Miller, & Friman, 1996), decreasing negative interactions (Bowers et al. 1999), increasing cooperative statements (Jones, Young, & Friman, 2000), and increasing peer acceptance (Bowers et al., 1999; Ervin et al., 1996; Jones et al., 2000) for socially rejected youth. Improvement in the area of social interaction has been found consistently in both academic and home settings. Jones et al. (2000) also found that positive peer reporting is an effective intervention for students exhibiting problem behaviors, such as aggression, illegal activity, and extreme anxiety. The expression of such antisocial behaviors may be the product of previously reinforced inappropriate behaviors. Positive peer reports give target students reinforcement for socially appropriate behaviors, which can effectively reduce the frequency of inappropriate behaviors.
PPR studies conducted within an educational setting provide evidence that school is an environment in which increases in positive social interactions can be effectively produced. Ervin et al. (1996) conducted a study in which classroom peers at a school within a residential facility were rewarded for publicly praising a 13 year old socially rejected female. For 5 min each day, the teacher solicited positive peer comments directed to the student. Points were awarded (to be exchanged later for privileges at home) for specific, direct, and genuine praise statements. Direct observations during interactive math activities revealed that negative peer interactions decreased from approximately 50% during baseline to near zero rates during PPR. A slight increase was also noted in the child’s sociometric status, according to pre- and post-intervention peer ratings.

Ervin, Johnston, and Friman (1998) conducted a similar study, in which peers in a first grade general education classroom were reinforced for reporting the positive behavior of a socially rejected, six-year-old female. PPR consisted of a brief period during which peers provided praise statements, and each praise statement earned credit toward a class reward. Observations during cooperative learning activities indicated that the child’s negative peer interactions decreased from approximately 40% during baseline to less than 10% during PPR.

Bowers et al. (1999) evaluated PPR in a family style group home, targeting the social interactions of a 15 year old male with multiple behavior and social problems. Observational data and a problem behavior checklist were collected by foster parents during a 1.5 hr leisure period. These data indicated that PPR delivered at home reduced the percentage of negative peer interactions and decreased the frequency of problem behaviors below clinically significant levels. Bowers et al. (2000) replicated the procedure for four youth in separate residential homes. Using a multiple baseline design, the effects of brief, peer praise sessions conducted each evening during family meetings were evaluated. Observations during leisure time indicated substantial increases in the percentage of positive social interactions when PPR was delivered for each youth, and ratings of sociometric status increased as well.

Jones et al. (2000) further investigated PPR in a school setting, targeting the academic interactions of three youth in a residential school setting. Cooperation,
participation, and encouragement were observed during 30 min cooperative learning math activities each day. The 7 to 10-min PPR session was conducted following the math class. Results indicated that the appropriate interactions of each child during the observation period improved to a level that exceeded peers. Dramatic improvements were also reported on peer ratings of sociometric status for two of the three participants.

Moroz and Jones (2002) evaluated PPR on a general education campus, targeting the social engagement and participation of three elementary-age females during recess. Due to the unstructured observation setting, this study represented a rigorous evaluation of the generalization of PPR effects. Daily PPR sessions were conducted in each child’s homeroom class, with peer comments earning credit toward a class prize. Observations during recess indicated substantial increases in social engagement and participation for all three participants.

A recent study provides preliminary evidence for the efficacy of PPR as a class-wide positive behavioral support strategy as well. Morrison and Jones (in press) implemented a class-wide adaptation of PPR in two general education classrooms at an inner-city public school. The primary outcome in the study was a teacher-completed daily checklist of 19 low frequency, high intensity behaviors (e.g., stealing, aggression toward peers) described as “behavioral earthquakes” by Gresham, MacMillan, and Bocian (1996). Results indicated that the frequency of critical events was reduced by about 10 episodes per day across the two classrooms. These findings suggested that use of PPR as part of a daily classroom routine may reduce the number of disciplinary infractions.

Hoff and Ronk (2006) evaluated the effects of PPR on the class-wide level of peer interactions in a special education classroom. One student was chosen randomly per day to serve as the target of PPR, and the class-wide percentage of positive and negative peer interactions were observed during morning free time. Results indicated that PPR increased the class-wide average of positive interactions, suggesting that traditional implementation of PPR may impact the entire class. This study provides additional support for the use of PPR as a strategy for class-wide positive behavioral support.

The majority of previous research has focused on the impact of PPR on the social interactions of rejected or isolated students. However, PPR is ideal for use in self-
contained classrooms for students with emotional disturbance, because this strategy provides peer-mediated reinforcement of prosocial behavior, which may not occur naturally within this context. The influence of deviant peers puts students in self-contained classrooms at increased risk for reinforcement and maintenance of disruptive and aggressive behaviors (Boivin et al., 1995). The impact of positively reinforced prosocial behaviors, provided during structured PPR sessions, may generalize to everyday classroom behaviors outside of the sessions. The present investigation measured the impact of PPR on the classroom disruptive behavior of students served in a self-contained classroom for emotional disturbance. The following research question was addressed: What is the class-wide impact of PPR on the disruptive behavior of children with emotional disturbance?

This study attempted to extend the literature on PPR in three important ways. First, disruptive behavior was targeted, rather than the social interactions of students. A broader measure of classroom disengagement (motor and verbal off-task) was targeted in this study, due to the critical influence of academic engaged time on achievement (Greenwood, Delquadri, & Hall, 1984).

Second, the class-wide effects of PPR were examined. To date, only two previous studies (Hoff & Ronk, 2006; Morrison & Jones, in press) have examined the class-wide effects of PPR. The importance of identifying effective class-wide strategies is underscored by the recent adoption of a 3-tiered model of service delivery (Kratochwill, Albers, & Shernoff, 2004), which includes the application of research-based interventions at the school-wide, targeted, and individual levels. Within this framework, class-wide interventions play an important role in proactively addressing problems and potentially reducing the need for more costly services at the individual-child level.

Third, the study compared the incremental effects of targeted PPR, wherein peer praise is directed only to the most disruptive and socially isolated children, versus class-wide PPR, wherein all children provide and receive peer praise, on class-wide levels of disruptive behavior. Using an internally valid changing intensity design (Barnett, Daly, Jones, & Lentz, 2004), the class was exposed to two levels of PPR that varied the “intensity” of positive peer reporting. One assumption of past research has been that receiving praise statements positively impacts future social interactions between the
child and recipient (e.g., Jones et al., 2000). Thus, the class-wide PPR condition was conceptualized as a more intense or higher dosage of peer praise than the targeted PPR condition. If receipt of peer praise is the effective component of PPR, it was hypothesized that treatment effects would be observed when targeted PPR was implemented, and that these effects would be replicated when the amount of peer praise was increased further during the class-wide PPR phase.

Method

Participants

Participants included children in a self-contained classroom for students with emotional disturbance at a suburban public elementary school. The class consisted of 7 first and second grade Caucasian students; one was female and six were male. Six students in the class were identified as emotionally disturbed and one student was identified with a specific learning disability.

Participant selection was based on referrals from both teachers and administrators for high rates of disruptive and aggressive behavior. The class-wide percentage of academic engagement fell well below literature-based benchmarks due to high rates of interfering behaviors. The two students with the most intense need for intervention were selected as initial targets. Selection was based on the following criteria: The students were referred by the classroom teacher to be initial targets, and both students displayed the highest percentage of disruptive behavior during academic tasks.

Setting

The study was conducted during teacher-led small group activities in a self-contained classroom for students with emotional disturbance. Small group instruction, following the classroom teacher’s typical lesson plan, was delivered for one hour each day for two months. During these activities, small groups of two to three students completed individualized assignments with teacher direction.

Response Definitions

Motor disruptions and verbal disruptions were the target behaviors of interest. Motor disruptions included touching or hitting another student or teacher, any movement resulting in audible sound, and the child’s full body weight not being supported by a chair
for 3 seconds or more. Verbal disruptions included any instance of vocal noise not preceded by a raised hand and acknowledgement from the teacher.

**Dependent Measures**

**Behavioral Observation System (BOS).** Observations were conducted during small group instruction using the BOS, a 10-second partial interval recording system (see Appendix A). The first author served as the primary observer. Observations took place 45 minutes per day, three to five days per week. Each observation was divided into consecutive 10-second intervals. The students were observed sequentially in a pre-set, random order, and each individual student was observed for approximately 35 nonconsecutive 10-second intervals. The mean length of observation for each child was approximately 6 minutes per day. The class-wide percentage of disruptive behavior was then derived by calculating the mean occurrence of behavior across students. Within each 10-second interval, student behavior was coded as disruptive (motor or verbal) or on-task. Jones, Wickstrom, and Friman (1997) found the BOS to be sensitive to classroom-based behavioral interventions, and adequate interobserver agreement was obtained using the system.

An advanced graduate student in school psychology served as a secondary observer during 29% of the observations. Prior to data collection, both observers simultaneously coded class-wide behavior, observing each student during a specific, pre-determined 10-second interval. Practice observations continued until interobserver agreement (IOA) exceeded 85%. Percentage of agreement was calculated by dividing the number of agreements on the occurrence or nonoccurrence of disruptive behavior within a 10-second interval by the total number of observed intervals, and multiplying that figure by 100 (Hartmann, 1977). The mean IOA across observations was 92% (range, 80-98%) for the current study.

**Class-wide Sociometric Ratings.** Sociometric ratings were collected by the primary investigator from all students in the class before and after the study (see Appendix B). Students were interviewed individually and asked to rate the extent to which they agreed with three statements about each student in the class on a 5-point scale, ranging from 1 (*not at all*) to 5 (*very much*). Student scores were derived by finding the median rating for each student across items, and the class-wide score
represents the median rating of all student scores. Yugar and Shapiro (2001) indicated that peer ratings are highly reliable and sensitive to change in social status.

*Intervention Rating Profile-15 (IRP-15).* Treatment acceptability of PPR was assessed upon completion of the study by asking the primary classroom teacher to complete the IRP-15 (see Appendix C; Martens, Witt, Elliott, & Darveaux, 1985). The IRP-15 consists of 15 statements rated on a Likert-type scale of 1 (*strongly disagree*) to 6 (*strongly agree*). Martens et al. (1985) report that the total score, which is calculated by summing the ratings (range, 15-90), has excellent reliability ($\alpha = .98$).

*Student Rating Form.* Additional evidence of social validity was assessed upon completion of the study by obtaining student ratings on an intervention acceptability scale (see Appendix D). The student rating form consisted of five statements rated on a scale of 1 (*disagree*) to 5 (*agree*). A total score was derived by summing the ratings on all five items.

**Experimental Conditions**

*Baseline.* During baseline, the teacher conducted small group instruction five times per week. Positive peer reporting procedures were not implemented, and the teacher was instructed to handle disruptive behavior according to typical classroom management procedures. Each student’s behavior was observed and recorded during teacher directed small group instruction.

*Targeted Positive Peer Reporting.* Prior to the initial intervention phase of the study, the primary investigator conducted a classroom training session to introduce targeted PPR. Students were presented with a rationale for PPR and steps for giving praise statements were outlined, accompanied by examples and non-examples. It was explained to the class that, during the following weeks, they would be working on peer relationships during small group instruction, by stating:

For the next few weeks, we will be working on our relationships in the classroom by giving one another praise statements. I will choose one person to be the star student, and next week I will add another student to the star group. At the end of class, everyone will have two opportunities to praise the behavior of the star student(s). To praise the star(s), you should describe something positive the person said or did during the day.
During this initial training session, the investigator provided the students with four steps, which comprise appropriate praise statements (Jones et al., 2000). These steps were also posted visibly within the classroom.

Steps for giving appropriate praise statements
1. Look at the person
2. Smile
3. Explain something positive the person said or did
4. Say something like “great job” or “good going”

The students were then given examples (e.g., “Joe shared his snack with me today”) and non-examples (e.g., “Joe is smart”) of appropriate praise statements. All students were given an opportunity to provide their own examples of appropriate praise statements.

On the first day of the targeted PPR phase, the first author provided the name of the first star student, who served as the initial target student. Each day, during the last 10 minutes of class, all students were given two opportunities to direct praise statements toward the star(s). Each student in the class was given the option to provide two praise statements or pass on one or both occasions, and rewards for appropriate praise statements were provided in the form of a group contingency. Specifically, each student who provided an appropriate praise statement directed toward at least one of the star students received a cotton ball, which was placed into a jar in the front of the classroom. When the jar was filled with cotton balls, the class received a group reward of their choice (e.g., pizza party).

Class-wide Positive Peer Reporting. A second training took place prior to the initiation of class-wide procedures. Classroom rules were reviewed, and corresponding examples and non-examples of appropriate behavior were presented in three areas: respect others, respect your teachers, and respect yourself. Students were provided with a rationale for class-wide PPR, and the steps for giving praise statements were reviewed. The class was told:

From now on, everyone in the class will be a “star” each day. At the beginning of each day, everyone will draw a “secret star” from the star bucket. You should watch your secret star very carefully throughout the day, and at the end of class,
everyone will have two chances to praise their secret star. You should describe something that your secret star said or did at any time during the day.

The students were then given examples (e.g., “I like the way Joe shared his crayons with me during art”) and non-examples (e.g., “Joe did not get in trouble today”) of praise statements, corresponding to the previously reviewed classroom rules and appropriate behaviors.

At the beginning of each day, the classroom teacher had each student draw a note card, which had a peer’s name printed on one side and the steps in giving appropriate praise statements on the other side. Students drew a new card each day, replacing the card if they obtained their own name. The teacher then instructed the students to watch their secret star throughout the day. During the last 10 minutes of class, the steps of appropriate praise statements were reviewed, and the students were given two opportunities to praise their secret star or pass. For students who directed an appropriate praise statement toward their secret star, a cotton ball was placed into a jar in the front of the classroom. The class continued to receive a group reward of their choice each time the jar was filled.

Treatment Integrity

During the targeted PPR phase, a procedural checklist was completed by the teacher during each day to ensure consistent implementation of PPR procedures. In addition to the exact PPR procedures, the checklist included a frequency record for each target student as well as the total number of praise statements given (see Table 1). The teacher also completed a checklist during the class-wide PPR phase, which included the six components of class-wide implementation as well as a frequency count for the number of praise statements issued by each student (see Table 2). A review of these documents indicated that the teacher reported 100% adherence to treatment steps during both phases of the study. During the targeted PPR phase, 1.2 praise statements per child (range, .88 to 2.0) were delivered to one or both target students per day, and during the class-wide PPR phase, 1.7 praise statements per child (range, 1.0 to 1.86) were delivered to four to seven students per day ($M = 6.0$), depending on the number of children present. On two occasions, one child (Joe, Luke) received no praise during the class-wide PPR
session. These data indicate that the rate of praise statements increased 42% from the targeted PPR to the class-wide PPR phase.

**Design and Procedures**

A brief description of PPR was presented to the participating institution, the classroom teacher, and to each child’s legal guardian. Written consent was obtained from each student’s legal guardian to indicate agreement with the following procedures.

An increasing-intensity design (Barnett et al., 2004), a type of parametric design, was used to evaluate the effectiveness of the intervention. Following baseline, two levels of positive peer reporting were implemented sequentially. Thus, the class-wide intervention was evaluated using an A-B-B’ design, in which B’ represented an increased amount of the independent variable, praise. During the targeted PPR phase, one to two students were recipients of praise statements and five to six students administered praise. Throughout the class-wide PPR phase, the intensity of the intervention increased as all seven students administered and received praise. Targeted PPR was implemented for approximately five weeks, and the class-wide PPR phase continued for approximately three weeks following termination of targeted PPR.

Parametric designs serve as an appropriate means of examining behavioral response to intensity variables. Additionally, an increasing intensity design features intrasubject replication, as response to increased values of the independent variable is measured repeatedly across phases for the same individuals. Intrasubject replication is essential to establishing internal validity (Sidman, 1960). If two conditions systematically increase the amount of treatment, and behavior varies systematically and according to these parameters, experimental control has been demonstrated. Barnett et al. (2004) noted the advantages of changing intensity designs for educational decisions, because the independent variable can be modified as necessary, according to student response. By varying intensity, it is possible to establish the minimal level of treatment or intervention necessary to achieve performance goals.

The current study introduced two conditions, targeted PPR and class-wide PPR, in order of increasing intensity and according to class-wide response. Specifically, targeted PPR consisted of seven students delivering praise and two students receiving praise. This condition, which represents typical implementation of PPR, resulted in approximately 1.2
praise statements per day. Class-wide PPR consisted of seven students delivering praise and seven students receiving praise. The increase in intensity is clearly evidenced by the number of receivers in each phase, as well as an increase in the number of praise statements (1.7 per day). If praise statements are the effective component of behavioral reporting strategies, the two conditions represented different intensities of PPR.

In order to evaluate the impact of PPR on class-wide disruptive behavior, visual inspection was utilized. Visual inspection was employed to determine whether the targeted PPR phase was distinguishable from baseline characteristics and whether the class-wide PPR phase was distinguishable from the previous treatment phase. Baer (1977) indicated that, when using visual inspection, a difference between phases must be readily perceptible to the eye in order to be affirmed, so the graphic representation of collected data was visually examined in order to evaluate the effectiveness of treatment.

Summary statistics, including effect size and percentage of nonoverlapping data (PND), were used to compare the effects of PPR to other social skills interventions. PND was calculated by determining the proportion of treatment data points above the highest baseline data point. Effect size was calculated using the “no assumptions” method (Busk & Serlin, 1992): the mean difference was divided by the baseline standard deviation. PND and ES for both targeted PPR and class-wide PPR were calculated, using baseline data as the reference. ES is expressed in standard deviation units; for example, an ES of -1 indicates that the treatment outcome was 1 standard deviation below baseline. PND should be 70% or greater in order to demonstrate the effectiveness of treatment. Although ES and PND are relatively controversial procedures for summarizing individual cases, they provide a meaningful and reliable metric for aggregating individual cases or making comparisons between cases (Scruggs & Mastropieri, 1998).

The sequence of events for the current study followed the corresponding timetable (see Appendix E). First, IRB approval was obtained. After receiving approval, the participating classroom was identified through administrator and teacher referral. Next, parental consent for participation was collected from all students in the classroom. Pre-intervention sociometric rating interviews were then conducted with each student by the primary investigator. The teacher was then given background information and training on implementation of PPR procedures and corresponding checklist completion. Next, the
baseline phase was initiated, and observations were conducted in the classroom three to five times weekly. After stability was demonstrated for the class-wide percentage of disruptive behavior during the baseline phase, targeted PPR was implemented. After stable treatment effects were established for the class, PPR was increased and implemented at the class-wide level, with all students receiving and delivering praise concomitantly. After the class-wide phase ended, the teacher completed the Intervention Rating Profile for Teachers (IRP-15) and post-intervention sociometric ratings were collected via interview. During the interview sessions, students also completed the student rating checklist, providing an additional acceptability measure.

Results

Figure 1 displays the percentage of intervals during which disruptive behavior was recorded across baseline, targeted PPR, and class-wide PPR conditions. Evaluation of class-wide response to PPR revealed that disruptive behavior decreased from a mean of 41% (range, 32-59%) during baseline to a mean of 26% (range, 18-37%) during the targeted PPR phase. During the class-wide PPR phase, disruptive behavior decreased further to 19% (range, 5-23%). Literature-based benchmarks suggest that off-task behaviors in general education settings should not exceed 20% (Greenwood, Horton, & Utley, 2002). Thus, results indicate that class-wide PPR was necessary in order to exceed benchmark levels.

Summary statistics, including PND and effect size, were calculated in order to summarize intervention effects for each experimental phase. The PND score for targeted PPR was 85%, and the PND score for class-wide PPR was 100%. The effect size of the targeted PPR was -1.54, and the effect size for class-wide PPR was -2.52. These data indicate that both treatments were effective, and that there were incremental positive outcomes associated with the increase in intensity of PPR.

Table 3 displays the mean level of disruptive behavior for each individual student across baseline, targeted PPR, and class-wide PPR phases. Six of the seven students experienced a stepwise decrease in disruptive behavior in response to each successive treatment phase. Interestingly, the disruptive behavior of four of the five non-target students decreased more substantially than that of either of the target students during the
targeted PPR phase. Class-wide PPR produced a decrease in disruptive behavior for all of the seven students, including the two students targeted during the previous phase.

Social Validity

Both pre- and post-sociometric ratings were collected for six of seven children in the classroom. Analysis of sociometric ratings revealed that the overall class-wide social status improved from a pretest median of 3.5 to a posttest median of 4.0. Four children received a mean rating of “4” or higher following treatment, while only two children achieved this level before treatment. Interestingly, the two students initially targeted during the first treatment phase had consistent pretest and posttest median scores, making no gains or losses in terms of social status.

The primary classroom teacher completed the IRP-15. The sum obtained from the teacher’s ratings was 69 (of a possible 90). The mean item rating on the IRP-15 was 4.6 (out of 6), suggesting a moderate level of acceptability of the procedures. Each participant also completed a student acceptability rating form. The sum of student ratings was 20 (of a possible 25). The median item rating across all students was 4 (out of 5), indicating a high level of student acceptability.

Discussion

These findings indicate that PPR is an effective strategy for reducing class-wide disruptive behavior among students classified with emotional disturbance. Brief, structured sessions, in which students provided reinforcement for prosocial behaviors, reduced the mean percentage of classroom disruptive behavior in a self-contained classroom for students with emotional disturbance. The observations, during which the percentage of disruptive behavior was measured, were temporally distant from the PPR sessions, suggesting that the effects of praise during the sessions generalized to behaviors exhibited throughout the school day. The data indicated that the targeted and class-wide PPR treatments combined produced an effect size of -1.64, which is more than twice the average effect size (-.78) produced by school-based reductive interventions (Stage & Quiroz, 1997). Additionally, as the intensity increased with each successive phase there was a corresponding decrease in the percentage of disruptive behavior. The decrease in disruptive behavior in response to each of two increasing intensity phases, while setting and individuals remained constant, provides evidence of experimental control. The
repeated measurement of class-wide disruptive behavior serves as additional evidence of experimental control, because behavior varied systematically and primarily according to the intensity of PPR within each phase.

Although the data indicate that PPR was effective in decreasing disruptive behavior, it is important to address the degree of social validity evidenced. While the teacher’s ratings on the IRP-15 indicated only moderate acceptability, the teacher expressed a desire to continue implementation of the program over the following school year, explaining that the program “really made a difference for most students”. Elliott, Witt, Glavin, and Peterson (1984) report that acceptability ratings by teacher vary according to the severity of the problem addressed. One variable that possibly accounts for moderate acceptability ratings is the severity of disruptive behavior exhibited by two of the students, as the teacher described the behavior of these students as “too severe to be handled in the classroom”. Additional support of social validity included student ratings, which consistently indicated a favorable view of the PPR program. Throughout the course of the investigation, students frequently expressed excitement regarding participation in “praise time”.

This is the first study to compare the impact of targeted and class-wide PPR procedures on the class-wide level of classroom disruptive behaviors. Previous studies have examined either the impact of targeted PPR on the targeted individuals (Bowers et al., 1999; Bowers et al., 2000; Moroz & Jones, 2002) or the impact of class-wide PPR on class-wide measures (Morrison & Jones, in press). Traditionally, these studies have measured the impact of receiving praise, as targeted student response typically serves as the dependent variable. The current study measured the response of all students to both targeted and class-wide treatment, which allowed for greater analysis of the impact of giving versus receiving praise. The targeted PPR phase measured the class-wide behavioral response to seven students giving praise and only two students receiving praise. The resulting decrease in disruptive behavior for the entire class, and more interestingly for four non-targeted individuals, suggests that giving praise has an impact on behavior. For four students, the act of giving praise alone produced a decrease in the amount of disruptive behavior exhibited.
The class-wide PPR condition measured student response to seven students giving praise and seven students receiving praise, representing a significant increase from the previous phase in praise receipt. Increasing the number of receivers resulted in an additional decrease in the amount of disruptive behavior displayed class-wide. Not only was a class-wide decrease found, but the disruptive behavior of all seven individuals also decreased upon implementation of the class-wide PPR phase. The amount of students giving praise remained constant across both conditions, suggesting that the decrease in disruptive behavior during the class-wide condition was due solely to the increase in praise receipt. These results indicate that both giving and receiving have an impact on behavior, but receiving praise may have a more powerful and widespread impact.

**Limitations**

Although the current results indicate promise for the effectiveness of PPR in reducing disruptive behaviors, limitations must be considered when interpreting these findings. The end of the school year limited the number of data points for the class-wide PPR condition, which obscures the interpretation of these data. There are considerably fewer data points for the class-wide condition than for the targeted condition, so the stability of class-wide PPR effects is questionable. A systematic replication of the class-wide procedures is necessary to thoroughly evaluate the impact on disruptive behavior.

The primary limitation of the current study is that the generality of the findings is unclear. The effects were only demonstrated in one classroom. Additionally, targeted PPR failed to normalize the disruptive behavior of the target students. While the data show that targeted PPR benefited both targeted individuals, their levels of disruptive behavior continued to be the highest in the class, and their overall level of off-task behavior remained above the literature-based benchmark of 20% (Greenwood et al., 2002) across both PPR conditions. Thus, it is not clear whether class-wide PPR would have the same, incremental impact in instances when targeted PPR effectively reduced the off-task levels of the one or two most disruptive children. In other words, the class-wide strategy may not “add” to a highly successful targeted approach. The current study suggests only that class-wide is more effective than targeted PPR if the first phase fails to significantly impact the most disruptive children.
Another limitation is that the current study failed to isolate the process responsible for the effects of PPR on disruptive behavior. It is unclear whether the decrease in disruptive behavior was due to a corresponding increase in prosocial behavior, as instances of positive behavior were not measured. Only disruptive behavior was recorded during direct observation, so the behaviors that replaced the occurrence of disruptions remain unknown. Failure to identify the underlying mechanism responsible for the effects of PPR is not a limitation exclusive to this study. To date, there has been no research aimed at isolating the source of PPR effects.

**Future Directions**

Future research is necessary to identify the underlying factors contributing to PPR effectiveness. It is not clear whether PPR actually increases the occurrence of prosocial behavior or simply increases awareness of existing prosocial behavior. Another possible explanation for PPR effectiveness is the basic desire to display behavior consistent with public proclamations. It is also possible that the mechanisms responsible for the effects of PPR on social interactions differ from those responsible for PPR effects on disruptive behavior.

The findings of this study, specifically the decrease in non-targeted individuals’ disruptive behavior in response to targeted PPR, imply that there may be possible benefits to giving praise in addition to receiving praise. Future studies are necessary to directly measure student response to giving praise during structured PPR sessions. It appears that receiving praise may have a greater impact on behavior, as demonstrated by the further reduction of disruptive behavior due to an increase in receivers of praise, but the extent to which each component is essential to the PPR process remains unclear. In order to further isolate the effects of giving versus receiving praise, it may be necessary to separate the responsibilities of giving and receiving praise, measuring each independently of the other. The impact of giving versus receiving praise should also be considered when exploring processes contributing to PPR effects.

The impact of PPR on social interactions has been evaluated in a variety of settings, including a group home (Bowers et al., 1999), residential schools (Ervin et al., 1996; Jones et al., 2000), general education classrooms (Ervin et al., 1998; Moroz & Jones, 2002) and a special education classroom (Hoff & Ronk, 2006). In order to
evaluate the impact of PPR on other behavioral and academic indicators in this wide range of settings, it is necessary to modify procedures to accommodate various classrooms and target various areas of concern. Variations of PPR should be explored in order to provide additional options for evidence-based versions of peer-mediated praise programs. The current study demonstrated that one variation of PPR, class-wide implementation, is an effective means of reducing class-wide disruptive behavior. Other variations, such as immediate praise for prosocial behavior, presented in an ongoing fashion throughout the day, could potentially be highly effective. Varying aspects of PPR, such as utilizing private versus public praise statements and differentiating between giving versus receiving praise, could also aid in the identification of aspects essential to all variations.

The current study provides evidence that PPR could serve as an effective component of school-based positive behavior supports (PBS). PBS systems typically utilize four levels of service delivery, including school-wide, specific setting, class-wide, and individual student services (Sugai & Horner, 2002). These services consist of evidence-based interventions designed to impact behavior at each level. The current findings demonstrate the utility of class-wide PPR for decreasing disruptive behavior at the class-wide level, suggesting that PPR could make an important contribution to a PBS model.
References


student academic performance. In W. Heward, T. Heron, D. Hill, & I. Trap-Porter (Eds.), Behavior analysis in education (pp. 58-88). Columbus, OH: Merrill.


## Appendix A

**Behavior Observation System**

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<th>Date: ____________</th>
<th>Observer: _______________</th>
<th>IOA: Y   N</th>
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### Target Behavior(s)

- **t1 = ______Verbal___________**
- **t2 = ______Motor____________**

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Appendix B

Please rate the following statements about each of your classmates. Circle a number, 1 through 5, to indicate how much you agree with each statement. If you choose 1 (not at all), it means you disagree completely, and if you choose 5 (very much), you fully agree. For example, consider the following statement:

I like to play sports.

Not at all       Very much

If you don’t like to play sports at all, you would choose a 0. If you like to play sports sometimes, you would choose a 3. If you like to play sports very much, you would choose a 5.

Name: _______________________

1. I enjoy working with this person in class.

Not at all       Very much

2. I enjoy spending my free time with this person.

Not at all       Very much

3. I enjoy talking with this person.

Not at all       Very much

Name: _______________________

1. I enjoy working with this person in class.

Not at all       Very much

2. I enjoy spending my free time with this person.

Not at all       Very much

3. I enjoy talking with this person.

Not at all       Very much
Appendix C

INTERVENTION RATING PROFILE-15
The purpose of this questionnaire is to obtain information about your reaction to the classroom intervention developed during your meeting with you the consultant. Please circle the number (1 - 6) which best describes your agreement or disagreement with each the following statements about the intervention developed for the referred child.

1. This is an acceptable intervention for the child's problem behavior.
   Strongly Disagree 1 2 3 4 5 6 Strongly Agree

2. Most teachers would find this intervention appropriate for other behavior problems as well as the one identified.
   Strongly Disagree 1 2 3 4 5 6 Strongly Agree

3. This intervention should prove effective in changing the child's problem behavior.
   Strongly Disagree 1 2 3 4 5 6 Strongly Agree

4. I would suggest the use of this intervention to other teachers.
   Strongly Disagree 1 2 3 4 5 6 Strongly Agree

5. The child's behavior problem is severe enough to warrant the use of this intervention.
   Strongly Disagree 1 2 3 4 5 6 Strongly Agree

6. Most teachers would find this intervention suitable for the behavior problem identified.
   Strongly Disagree 1 2 3 4 5 6 Strongly Agree

7. I would be willing to use this intervention in the classroom setting.
   Strongly Disagree 1 2 3 4 5 6 Strongly Agree

8. This intervention would not result in negative side-effects for the child.
   Strongly Disagree 1 2 3 4 5 6 Strongly Agree

9. This intervention would be appropriate for a variety of children.
   Strongly Disagree 1 2 3 4 5 6 Strongly Agree

10. This intervention is consistent with those I have used in classroom settings.
    Strongly Disagree 1 2 3 4 5 6 Strongly Agree

11. The intervention is a fair way to handle the child's problem behavior.
    Strongly Disagree 1 2 3 4 5 6 Strongly Agree

12. This intervention is reasonable for the behavior problem identified.
    Strongly Disagree 1 2 3 4 5 6 Strongly Agree

13. I like the procedures used in this intervention.
    Strongly Disagree 1 2 3 4 5 6 Strongly Agree

14. This intervention is a good way to handle this child's behavior problem.
    Strongly Disagree 1 2 3 4 5 6 Strongly Agree

15. Overall, this intervention would be beneficial for the child.
    Strongly Disagree 1 2 3 4 5 6 Strongly Agree

(Martens, Witt, Elliott, & Darveaux, 1985)
Appendix D

Praise Statement Program Ratings

Please rate the following statements by circling a number, 1 through 5, to indicate how much you agree with each statement. If you choose 1, it means you disagree completely, and if you choose 5, you fully agree.

1. The peer praise program was fair.
   1 2 3 4 5
   Disagree Agree

2. The peer praise may cause problems between friends.
   1 2 3 4 5
   Disagree Agree

3. There are better ways to handle problems than using peer praise.
   1 2 3 4 5
   Disagree Agree

4. The peer praise/praise statement program would be good to use with other children.
   1 2 3 4 5
   Disagree Agree

5. I liked the praise statement program.
   1 2 3 4 5
   Disagree Agree

6. I think that peer praise would help children to better in school.
   1 2 3 4 5
   Disagree Agree
Appendix E

Timetable

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<th>Event</th>
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<td>1/15/06</td>
<td>IRB approval obtained</td>
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<tr>
<td>2/10/06 – 3/15/06</td>
<td>Participating classroom identified</td>
</tr>
<tr>
<td>3/22/06 – 3/27/06</td>
<td>Parental consent for participation obtained</td>
</tr>
<tr>
<td>3/29/06</td>
<td>Pre-intervention sociometric ratings collected</td>
</tr>
<tr>
<td>3/30/06 – 3/31/06</td>
<td>Teacher training for PPR implementation and for use of</td>
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<td>treatment integrity checklist</td>
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<tr>
<td>4/3/06 – 4/11/06</td>
<td>Baseline phase and initiation of observations</td>
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<td>4/12/06 – 5/12/06</td>
<td>Targeted PPR phase</td>
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<tr>
<td>5/16/06 – 6/1/06</td>
<td>Class-wide PPR phase</td>
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<tr>
<td>6/6/06</td>
<td>Post-intervention sociometric ratings and student</td>
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<td>acceptability ratings collected</td>
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<tr>
<td>6/6/06</td>
<td>IRP-15 completed by teacher</td>
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Table 1

Targeted PPR session checklist

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<td>1.</td>
<td>Announce the beginning of the PPR session.</td>
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<tr>
<td>2.</td>
<td>Review the steps of appropriate praise.</td>
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<tr>
<td>3.</td>
<td>Reward each appropriate praise statement by placing a cotton ball into the class jar.</td>
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<tr>
<td>4.</td>
<td>Record the number of praise statements made for each target student.</td>
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<tr>
<td>5.</td>
<td>Record the total number of praise statements made during the session.</td>
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Table 2

Class-wide PPR session checklist

1. At the beginning of the day, instruct students to draw one secret star.
2. Instruct students to watch their secret star.
3. Announce the beginning of the PPR session.
4. Review steps of appropriate praise.
5. Reward each appropriate praise statement by placing a cotton ball into the class jar.
6. Record the number of praise statements made for each student in the class.
7. Record the total number of praise statements made during the session.
Table 3

*Mean level of disruptive behavior for individuals across baseline and treatment phases*

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<tr>
<td>Luke</td>
<td>42</td>
<td>16</td>
<td>7</td>
</tr>
<tr>
<td>Jake</td>
<td>39</td>
<td>18</td>
<td>11</td>
</tr>
</tbody>
</table>

*Note. Will and Joe were target students during the targeted PPR phase.*
Figure Caption

Figure 1. The average percentage of intervals in which disruptive behavior occurred for the class across baseline, targeted PPR, and class-wide PPR conditions.