Positive Peer Reporting in the Classroom: a Review of Intervention Procedures

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Abstract Positive peer reporting (PPR) is a classroom-based intervention to improve social interactions between students using rewards and positive social attention. Along with a variant of the procedure referred to as “Tootling,” PPR has demonstrated overwhelmingly positive results since its development. However, a unified, standard protocol for successful implementation of PPR interventions has not yet been established. A review of 24 studies, including 48 separately described cases of PPR in classroom settings, provided information concerning adaptations for students in special education, alternative school, and mainstream classrooms. Student participants ranged from preschool (age 4) to eighth grade (age 16). This paper summarizes the common procedural components found across cases described in the literature by various research teams also revealed differences in the procedures for targeting individuals or groups, providing training and support, allocating rewards, proceeding with daily peer report sessions, and terminating the intervention. Variations in specific procedural elements that may relate to PPR’s effectiveness are discussed. The authors also provide suggestions to guide and support the advancement of standardized methods of PPR for future research and clinical application.

Keywords Positive peer reporting · Tootling · Special education · Positive behavior support · Treatment translation

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Introduction

An estimated one third of students in the USA’s educational system fail to learn because of psychosocial problems that interfere with their ability to fully attend to and engage in academic activities (Adelman and Taylor 2005). Fostering students’ social development can improve their interactions and attitudes toward school, thereby reducing problem behaviors and improving classroom learning conditions. Many currently recommended practices are based on behavioral analytic principles and the knowledge that positive interactions between teachers and students increase students’ compliance, emotional regulation, social skills, and academic motivation, while negative interactions between teachers and students increase students’ risk for failure (Epstein et al. 2008). Several established classroom behavioral interventions, such as *First Step to Success* (Walker et al. 2009), *Promoting Alternative THinking Strategies* (Kusché and Greenberg 2012), *The Good Behavior Game* (Kellam et al. 2011), and *Second Step* (Neace and Muñoz 2012) have been found to effectively decrease disruptive classroom behavior, mostly through the use of teacher praise and reward contingencies. Unfortunately, the above interventions do little to highlight and positively utilize the similar role of peers in shaping students’ social skills and classroom behavior.

Positive Peer Reporting

In 1976, Grieger, Kaufman, and Grieger found that rewarding kindergarten children for naming a peer who had done something nice resulted in increased observed cooperative play and decreased aggression during recess. Two decades later, Ervin et al. (1996) described a similar intervention used in a Boys Town residential treatment center for youth, which they coined “Positive Peer Reporting.” Positive peer reporting (PPR) is a peer-mediated positive behavioral intervention that has shown promise in increasing positive behaviors and social

collaboration in diverse individuals and groups of youth in a variety of settings. It was developed as an intervention strategy to individually target socially rejected children and/or children who are disruptive or negative in interactions with peers using directed, positive peer attention (Skinner et al. 2002).

Since the mid 1990s, a relatively large number of studies have found support for the effectiveness of PPR as a positive intervention to improve peer interactions among youth. In PPR, peers are able to earn points toward rewards for publicly praising one another during a specified time each day. During PPR sessions, reinforcement is withheld for any negative comments and positive comments are rewarded. Therefore, the behavioral mechanism of differential reinforcement works to extinguish negative peer interactions and increase prosocial behaviors. Simultaneously, PPR gives the “recipient” student an incentive to interact appropriately for positive attention while encouraging other “reporter” students to note the recipient’s prosocial behaviors rather than focusing on negative actions (Ervin et al. 1996). Hence, operant reinforcement for prosocial comments works by conditioning recipients to engage in positive interactions with peers more frequently.

In assessing treatment outcomes in various classrooms and alternative home settings, researchers have primarily relied on structured observations of youths’ social behavior, in which interactions with peers are coded as positive, negative, or neutral/no interaction (Ervin et al. 1998). Positive effects for increasing engagement and improving peer social interactions found in early PPR studies for have been replicated in several separate single-subject, small-*n*, and pre-test post-test group designs.

In school settings, observational assessments are also often supplemented with teacher-report and/or student-report ratings. In studies of PPR in which peer rejection was a primary target, peer sociometric ratings have been used to measure peer acceptance. By administering simple rating or ranking forms to participants, researchers can determine individual youths’ social standing compared to peers. Research findings support PPR’s effectiveness in increasing peer acceptance (Ervin et al. 1998; Jones et al. 2000; Morrison and Jones 2007) and in decreasing teacher-reported incidents of disruptive behavior in the classroom (Cihak et al. 2009; Morrison and Jones 2007).

The theory and basic structure of PPR has direct applicability to standards for positive behavior support delineated by the Individuals with Disabilities Education Act (IDEA 2004; Morrison and Jones 2007). According to the current “three-tiered model of behavioral supports,” the intensity of an intervention should be matched to the severity of the behavior problem, including primary or universal strategies (considered to be effective in preventing behavior problems for 80–90 % of students), secondary targeted intervention efforts, and tertiary or intensive individual support for students with the most severe problems (Sugai et al. 2000). Typically, PPR has been

studied as an intervention to target specific children with social difficulties and/or disciplinary problems, but the primary treatment goal is also consistent with enhancement and prevention through encouraging and reinforcing positive interactions and appropriate behaviors for all students (Skinner et al. 2002). In addition to its application as a targeted intervention for specific students with emotional, educational, and behavioral problems, PPR has demonstrated success in universal application across students in general education classrooms and as a supplemental support in more intensive settings such as self-contained special education settings.

Several studies of PPR have attempted to empirically evaluate the effects of various applications, extensions, and modifications on different treatment outcomes. However, with the diversity in treatment targets and settings to which PPR has been applied, there has also been substantial variation in the primary procedure itself. While behavioral interventions almost always include multiple components, bundling of components presents challenges when reviewing levels of evidence for the intervention because evidence of the impact of specific intervention components on students’ behavior cannot formally be attributed to one component. Even within similar settings and agreed-upon treatment targets and measurement tools, the lack of clearly defined, operationalized procedures within the literature has contributed to significant discrepancies in how PPR is implemented and studied. While this range of diversity attests to PPR’s flexibility and generalizability, it also limits the potential for comparison between and across studies and hinders efforts for treatment dissemination.

Identification and evaluation of PPR’s common components is, therefore, necessary in order to facilitate translation to clinical effectiveness research and practice (Chenier 2010). Subsequently, the general processes and procedures may be adapted to a wide range of contexts, replacing specific recipes that may have limited applicability. As a first step in accomplishing this aim, a retrospective analysis of PPR studies in classroom settings was conducted in order to (a) describe the basic procedures, rationale, and treatment components of PPR in detail, (b) compare several technical variations between classroom PPR studies, and (c) provide clarity and suggestions for future personnel, clinicians, and researchers who may wish to disseminate and/or study PPR in classroom settings.

Methods

The authors reviewed studies from 1976–2013. Inclusion criteria were: (1) intervention was primarily conducted in an educational setting, (2) study was reported in a peer-reviewed journal or accepted as a completed master’s thesis or doctoral dissertation, and (3) interventions were referred to as “Positive Peer Reporting,” “Tootling,” or “Peer Praise Reports” within

the respective article. The primary author performed searches February to June 2014 of EBSCO, ERIC, and PsychInfo. Search terms included titles of known PPR variants, including “Positive Peer Reporting,” “Praise Reports,” “Tootling,” and “Tootles.” References within identified PPR articles were also reviewed to obtain related studies. In total, 24 articles met criteria for inclusion. Evaluations that did not meet criteria (1) were conducted in treatment settings outside of the school setting (e.g., group home, foster home), (2) were presented at conferences as posters or talks, but not reviewed as manuscripts, and/or (3) did not present data (i.e., presented theoretical positions or reviews of literature). Two dissertation studies were excluded due to inclusion of the material as subsequently-published peer reviewed articles.

For each included article, the primary author reviewed the Methods sections in depth and recorded details of the setting, participants, and number of cases per article in a descriptive table. The methods regarding specific procedures for planning, training, and implementing PPR for each study were subsequently examined and recorded in a table format. An informal analysis of the reported procedures then allowed the authors to identify common procedures across cases and studies (i.e., selecting an target participant, selecting a reward, training students to provide positive peer reports, and implementing daily reporting sessions), as well as unique variables within those common procedures (i.e., group vs individual target participants, individual vs. group reward systems, providing praise aloud vs. privately, and length of PPR sessions).

Results

A large portion of the reviewed studies utilized designs that replicated treatment phases across more than one target participant (50 %). Within the 24 studies, 48 separate cases of PPR were described and evaluated. Of the 48 cases, the majority (70.8 %) were implemented in elementary school classrooms, 18.8 % (nine articles) were implemented in middle school classrooms, and five cases were implemented in preschool settings (10.4 %). Most of the cases reviewed were implemented with students in general educational settings (79.2 %). Four cases (8.3 %) were conducted in self-contained special education classrooms and the remaining six cases (12.5 %) were implemented in residential treatment classrooms. Table 1 presents descriptive information for all 24 studies and respective cases.

Description of Treatment Components

Among the various school-based PPR interventions reviewed, common components explicitly retained from the seminal

PPR studies include: designating a time for soliciting positive comments (usually a 5-min session at the end of class), offering some type of positive reinforcement (usually through a point system), and offering feedback from a supervising adult regarding appropriateness of comments (Ervin et al. 1996). Although researchers originally described implementing PPR using these broad, basic components, a finer analysis revealed additional essential components and steps for implementing the procedure. Although these additional components go unmentioned in most of the literature, they appear to be implicitly understood and are important to consider in comparing treatment outcomes, feasibility, and treatment integrity within studies of PPR and its variants.

According to popular teacher-resource websites, in which the procedure for PPR is delineated in step-by-step format (implicitly derived from Ervin et al. 1996), PPR also requires contingency planning such as selecting group rewards and deciding “how many points the class must earn” and “selecting targets.” Teachers and/or other leaders of PPR must also engage students in educational sessions in which they “Introduce the concept of praise and define the term for students,” “Teach students to praise each other,” and “Encourage discussion.” Modeling, including presenting sample praise statements by paying compliments to individual students for effort, behavior, and attitude, is also described in the list of tasks, as well as active leadership of daily sessions, including introducing the positive peer reporting intervention. During daily PPR reporting sessions, the website description instructs teachers that each day they are to announce the names, review the names with the class at the end of the day, ask volunteers to raise their hands to offer praise statements, and tally the amount of compliments given (Wright 2002). Figure 1 provides a description of the key components across studies of PPR sequentially as they are typically implemented in research and practice.

Selection of Target Participant(s) Positive peer reporting, as it was first described, was developed to target socially isolated individuals. The seminal study of Ervin et al. (1996), which targeted PPR for an isolated, 13-year-old girl in a residential treatment classroom, was reportedly guided by author Ken Kesey’s assertion that group members could “feed the hungry bee” or use affection and attention as social commodities in bringing an irritable, isolated member back to the group. In many cases, creative titles for recipients of praise have been utilized to enhance the intervention’s appeal to a particular group of youth. Designation of a “Star Student” or “Star of the Day” is most popular in the PPR literature, but researchers have also described choosing an “MVP” among older children and adolescents (Hoff and Ronk 2006; Murphy 2013) or a “honey bee” or “king/queen bee” in classes of very young children (Chenier 2010; Ervin et al. 1998).

Table 1 Characteristics of specific cases within studies of PPR in school settings

Study/case	Population			Setting		
	Preschool	Elem	Middle	Spec.	Gen.	Residential
(1) Grieger et al. (1976)		E			G	
(2) Ervin et al. (1996)			M			R
(3) Ervin et al. (1998)		E			G	
(4a) Jones et al. (2000)			M			R
(4b)			M			R
(4c)			M			R
(5) Skinner et al. (2000)		E			G	
(6) Cashwell et al. (2001)		E			G	
(7) Wilson et al. (2001)		E			G	
(8a) Moroz and Jones (2002)		E			G	
(8b)		E			G	
(8c)		E		S		
(9a) Shelton (2002)		E			G	
(9b)		E			G	
(10a) Lyons (2004)		E			G	
(10b)		E			G	
(10c)	P				G	
(10d)		E			G	
(11) Hoff and Ronk (2006)		E		S		
(12) Johnson-Gros and Shriver (2006)	P				G	
(13a) Morrison and Jones (2007)		E			G	
(13b)		E			G	
(14) Peterson Nelson et al. (2008)			M	S		
(15) Hofstadter et al. (2009)		E		S		
(16a) Libster (2009)		E			G	
(16b)		E			G	
(17a) Smith et al. (2009)	P				G	
(17b)	P				G	
(17c)	P				G	
(18) Johnson (2009)		E			G	
(19) Cihak et al. (2009)		E			G	
(20a) Shelton-Quinn (2009)		E			G	
(20b)		E			G	
(20c)		E			G	
(20d)		E			G	
(20e)		E			G	
(21a) Chenier (2010)		E			G	
(21b)		E			G	
(21c)		E			G	
(22a) Barahona (2010)		E			G	
(22b)		E			G	
(22c)		E			G	
(23a) Sherman (2012)		E			G	
(23b)		E			G	
(23c)			M		G	
(23d)			M		G	
(24a) Murphy (2013)			M	S		
(24b)			M	S		

Note. Capital letters denote the following study characteristics: *P* preschool, *E* elementary school, *M* middle school, *S* special education, *G* general education, *Res* residential treatment.

Fig. 1 Key components of PPR in classroom settings

In several studies, youth targeted for receipt of peer praise were nominated solely by teachers' anecdotal reports or the researchers' informal observations that they were "socially rejected" or had "poor social skills" compared to peers (Ervin et al. 1996; Hoff and Ronk 2006). Other studies of PPR have selected target students who were referred for behavioral consultation for disruptive behavior (Johnson-Gros and Shriver 2006; Jones et al. 2000; Sherman 2012). Peer sociometric measures are particularly useful for identifying who is socially rejected or neglected, and to what extent (Asher and Dodge 1986; Terry and Coie 1991). Standardized, teacher-report assessments of behavior have also been used to determine or confirm rejected or disturbed status (Chenier 2010; Moroz and Jones 2002), as have standardized observations of isolation behaviors (Libster 2009; Sherman 2012).

Although a large proportion of the reported PPR studies have designated especially challenging student(s) for measuring treatment effects, many of these have also described allowing other students in class to have a turn as the recipient of daily praise in order to diminish the appearance of "singling out" one child (Ervin et al. 1996). For example, although Lyons (2004) targeted PPR to specific youths who were identified as aggressive and rejected, the study noted that the teacher told the class that a "random student" would be chosen to be the star of the class each day. Most variations in the procedure allow every student in class to have a turn, but there is significant variation between studies in how often designated praise recipients rotate and how many students are recipients at one time. For example, Ervin et al. (1996) targeted a socially rejected girl for PPR in a residential treatment classroom and included two other students as recipients in daily sessions throughout the intervention phase; Chenier (2010) continued with one recipient for a period of 10 days before switching; and Hoff and Ronk (2006) and Lyons (2004) rotated the recipient students daily.

The mechanism of PPR may work to reinforce prosocial behavior for both the recipient and the reporter. Grieger et al. (1976) rewarded praise given for *any* classmates in two kindergarten classes and suggested, "Children's reporting of cooperative and friendly acts to the class would be a natural and inexpensive way of providing reinforcement of the reporter

and the child whose desirable behavior was reported." If this is the case, a target recipient for praise may not need to be designated, allowing instead for rewards to be earned for reporting positive comments for any peer. Appropriate behavior may also increase due to modeling/observational learning that occurs when reporters are encouraged to attend to peers' behavior and observe their peers being recognized and rewarded for positive behavior (Sherman 2012).

Several studies have attempted to evaluate whether PPR is effective in improving social behaviors of both recipients and students in the role of "reporter", or whether benefits are restricted to recipients. Using a reversal design (ABAB), Hoff and Ronk (2006) examined PPR's impact on positive interactions in a self-contained special education class and found improved interactions for the class as a whole, as well as for the third-grade girl who was targeted as a recipient. Hofstadter et al. (2009) conducted a study in a self-contained special education class of seven first and second graders that used an alternating treatments design (AB₁B₂) that compared rotating two praise recipients to designating every child as a recipient of daily praise. For the class as a whole, the class-wide reporting condition was found to be more beneficial. For three socially rejected youth who were observed individually, however, improvements in social interactions were limited to the phase in which they were respective recipients of praise. Similarly, in a non-concurrent multiple baseline design, Chenier (2010) found higher levels of positive social interactions when students were in the "recipient" phase compared to the "teller" phase.

Choosing a Reward System

In selecting an appropriate reinforcer for positive peer comments in PPR, it is important not only to determine an appropriate reward, but to decide whether rewards will be independently contingent or interdependent (group contingent) and how they will be distributed. Within the 24 studies reviewed, 6 (25 %) applied individual rewards for, 14 (58.3 %) applied rewards to the group, and the remaining 4 studies (16.7 %) employed a mix of individual and group-wide rewards within and across cases.

Individual Rewards Grieger et al. (1976) first described rewarding children who were recipients of praise during daily sessions (e.g., a classmate reported something "friendly" they had done on the playground) by allowing them to wear a happy face badge for the remainder of the day. Morrison and Jones (2007) provided both the praise reporter and recipient with a candy or sticker. Sherman (2012) also rewarded both the reporter and recipient with tokens. Grieger et al.'s (1976) original study specifically noted that the researchers instructed teachers to withhold giving social reinforcement during reporting sessions. However, later PPR studies appear

to have employed individual social reinforcement in the form of praise from the researchers and group leaders or teachers for both recipients and reporters in addition to contingencies or tangible rewards.

Group-Contingent Rewards The majority of PPR studies have found success in providing collaborative, interdependent group contingencies for the class to work towards together as a team, a strategy well supported in the extant literature (Ialongo et al. 2001; Lohrmann and Talerico 2004). This procedure for PPR was introduced in the study of Ervin et al. (1998), in which a group-contingent reward was selected for use in a general education environment. For each acceptable praise comment that the first-graders provided, a cotton ball was dropped in a “honey pot” at the front of the class. The students worked towards the goal of filling the pot for a class pizza party. In a single-case reversal design (ABAB), Skinner et al. (2000) found that praise reports increased when a group-contingent reward of extra recess was introduced. Similarly, Cashwell et al. (2001) allowed second-grade students to choose rewards for meeting their class goals, including popcorn and a movie or extra free time. In an adaptation for 12–16-year-olds in an alternative middle school classroom, Murphy (2013) allowed students to help brainstorm rewards choices (ice cream and game day, pizza and movie day, or chicken wings and dance party) and vote on a group selection.

A team goal requires planning from those implementing the intervention to make sure that the goal is reinforcing for all group members, attainable within the time allowed, but difficult enough to be a challenge. As an alternative, several early studies of PPR reported delivering individual reinforcement to the student who is the reporter of each positive comment (Ervin et al. 1996; Jones et al. 2000). At the time the PPR studies at Boys Town residential treatment schools were conducted (Ervin et al. 1996; Jones et al. 2000), a pre-existing token economy (in which “point” tokens could be redeemed for items or privileges) was in place throughout the centers, making individual tokens an easily available reinforcer for use in early PPR studies. This type of reinforcer had previously been shown to be a powerful motivator for the youth in the treatment center and was likely efficient to distribute during daily sessions.

Training Students in PPR Just as poor academic performance can reflect deficits in specific academic skills, some students’ failure to meet behavioral expectations may reflect deficits in specific social or behavioral skills. For students with learning disabilities, social skills deficits, and/or behavioral problems, direct instruction in how to give appropriate praise to peers allows them the opportunity to learn the positive behaviors and skills they are expected to exhibit (Gonzalez 2006). Demonstrating for students how they can use appropriate behaviors such as positive comments to others to replace

problem behaviors can increase students’ chances of experiencing social and behavioral success.

Prior to the implementing PPR in a residential treatment middle-school classroom, Jones et al. (2000) reported that the classroom teacher led a 20-min training with the students that included rationale and directions to provide daily compliments to a “star” student announced at the beginning of each week. Specific steps for “Providing Positive Compliments” were also listed on a bulletin board in the classroom and included “1. Look at the person, 2. Smile, 3. Report something positive the person did or said today, and 4. Say something like good job or way to go.” Later studies (Lyons 2004; Hofstadter et al. 2009; Moroz and Jones 2002) described researchers introducing PPR to students using precisely the same steps described in Jones et al. (2000) and reported further that the training session ends with a “trial run” in which the class is given the opportunity to give praise examples. The teacher praises acceptable examples and provides feedback for unacceptable or vague examples.

Libster (2009), Lyons (2004), and Johnson (2009) described teaching sessions in which researchers led multiple in-class training sessions with elementary school students (15–30 min each). Hoff and Ronk (2006) also described a rigorous training process in introducing PPR in a self-contained special education elementary school class. During two 40-min sessions, researchers instructed students on how to give compliments, gave students a compliment to memorize and practice, and constructed a “compliments poster” with help from the students. Skinner et al. (2000), Cashwell et al. (2001), and Shelton-Quinn (2009) conducted two to four similarly intensive trainings (15–20 min each) over the course of several days.

The procedure described above appears to be relatively consistent across most PPR studies, although often not explicitly noted. In many cases, materials adapted from teacher resource websites were used in training and displayed either as posters or on blackboards throughout the intervention (Wright 2002). Several studies included scripts used by teachers or researchers to introduce PPR to students, but these were specific to each study rather than for general application (Chenier 2010; Morrison and Jones 2007; Sherman 2012; Wilson et al. 2001). In studies in which teachers were responsible for leading or co-leading PPR, researchers sometimes report distributing printed educational materials to teachers in a folder during a teacher training session (Chenier 2010; Murphy 2013). Variation in methods of introducing students to PPR and training them in the procedure appear limited to the duration of training sessions, materials used, and the personnel who lead the training (classroom teacher vs. behavioral consultant).

Conducting PPR Sessions Providing instruction for appropriate social behaviors allows for skill acquisition, but in order to maximize the chance that skills will generalize, students must be consistently provided with opportunities to be reinforced

for appropriate interactions. A standard for reporting sessions' daily frequency was initially prescribed by Grieger et al. (1976) and established by Ervin et al. (1996). During most classroom PPR interventions, researchers note that the teacher is to remind all students at the beginning of class that they could earn points for praising the target student (Ervin et al. 1996; Jones et al. 2000; Murphy 2013). Later, teachers (or other intervention leaders) solicit comments, usually by asking for raised hands. Typically, reporting sessions are described as 5–10-min sessions, usually conducted at a specified time as part of a classroom routine, which is commonly at the end of the school day, but may be after recess (Grieger et al. 1976) or before lunch (Sherman 2012). Several researchers specifically describe that reinforcement is given for comments each intervention leaders judge to be "specific, direct, and genuine" (Ervin et al. 1996).

Private Reporting or "Tootling" The only substantive deviation from the basic reporting routine reported in the literature is a difference in reporting methods described in studies of the "Tootling" variation of PPR (the opposite of tattling). During PPR, students verbally report observed prosocial behaviors, but during Tootling, prosocial behaviors are reported privately and anonymously through the use of notecards (Skinner et al. 2002).

PPR only takes place at a certain time of day, but during Tootling, the class is given access to notecards on which to write instances of other students' appropriate behaviors at any time. In a small, self-contained elementary school classroom ($n=7$) Hoff and Ronk (2006) described a variation in which the students were rewarded for voluntarily providing verbal praise for the "MVP" both during designated sessions and throughout the school day.

Only two studies have directly examined the relative benefit of private vs. public reporting sessions, and have found conflicting results. None of the studies reviewed compared limited-duration sessions to reporting sessions that last throughout the day. Barahona (2010) compared Tootling's procedures to traditional PPR by alternating a private praise and public praise conditions in three third-grade classrooms, but did not find stable improvements in disruptive behavior in either condition. Conversely, Sherman (2012) found that in a multiple baseline design with alternating treatments (i.e., traditional PPR, Tootling, and a combination in which students could choose the method), the three different reporting methods were *equally effective* in decreasing disruptive behavior in four individual students.

Visual Displays of Progress In cases in which interdependent group contingencies are employed as reinforcers for positive comments, feedback on daily progress towards the group goal is usually posted in a visual display. Several variations of visual progress displays have been described in the PPR literature, including cotton balls in a jar (Ervin et al. 1998; Murphy 2013),

an icon climbing a ladder (Cashwell et al. 2001; Morrison and Jones 2007; Skinner et al. 2000), and bricks on a pyramid (Hoff and Ronk 2006). Lyons (2004) implemented a creative reward display for a PPR intervention in four classrooms of students grades K–1st that incorporated paper stars in a night sky, with a sky full of stars representing a completed goal.

Eliciting Praise Creative methods have also been described for eliciting praise from students within daily reporting sessions. Morrison and Jones (2007) described a procedure in which the teacher distributed numbered notecards to each student in the class during the beginning of PPR sessions. The teacher randomly selected a number by using a carnival style wheel and read a "chance card" to the student with the winning number. Chance cards had statements such as "give a praise statement to the student to the right of you" or "receive a praise statement from a student with a number greater than your number." This variation was later replicated by Sherman (2012). While displays generally appear to be helpful in providing immediate feedback and additional reinforcement to students, there does not appear to be a consensus in the literature on a standard or most effective type of display.

Translational Concerns

Variability in Protocol One of the primary issues in PPR's implementation is the lack of a clear protocol, method, or standard for the intervention's procedures. Although PPR is a well-researched intervention, close inspection reveals that interventions have been heterogeneous in implementation. Although early studies discussed procedures in vague rather than specific terms, attempts have been made to operationalize PPR intervention procedures through published implementation guidelines (Hoff and Ronk 2006; Johnson-Gros and Shriver 2006b) and the inclusion of treatment integrity checklists and procedural scripts in thesis and dissertation materials (Hofstadter et al. 2009; Murphy 2013; Robinson 1998). Across articles in which steps are outlined explicitly, however, the included components vary substantially, which may cause confusion in translation to practice.

Treatment Initiation Many studies of PPR, including Ervin et al. (1998) and Jones et al. (2000) found that teacher-report ratings in their studies of PPR indicated that the procedure is "effective and feasible" for teachers. Among studies of many PPR in classroom settings, however, there may be a selection bias for teachers who volunteer for behavioral intervention research and, therefore, systematically differ from most classroom teachers. Introducing PPR to a class without the teacher's initiation of the project, or expecting teachers initiate a PPR intervention themselves, therefore, may present challenges in implementation.

Clinical Support and Teacher Training Positive peer reporting is attractive as a classroom intervention in part because, as it is touted on teacher resource websites and described throughout the literature, it is easy for teachers to implement and requires few materials (Wright 2002). Several studies of PPR have described teachers leading PPR intervention sessions, but upon inspection, it is apparent that teachers and group leaders in many PPR studies were directly assisted with feedback and support from well-trained behavioral clinicians and researchers. In several other reported studies, implicit suggestions indicate that PPR sessions were implemented solely by research support staff, with little to no involvement from teachers (Skinner et al. 2000; Cashwell et al. 2001; Hoff and Ronk 2006).

For example, Ervin et al. (1998) reported that a graduate behavioral consultant, who worked closely with the teacher to implement PPR in a first-grade classroom, anecdotally suggested that clinicians “closely monitor PPR sessions due to risk of treatment infidelity.” In this case, the consultant was also a parent volunteer in the class and was able to attend class on a daily basis. In a later, affiliated study, Jones et al. (2000) also reported that clinical support for that behavioral intervention was reportedly provided to the residential classroom teacher by a consultant, a predoctoral psychology intern who was also the study’s first author. Though their role in provided training and support is not noted, the authors of Ervin et al. (1996) were also behavioral clinicians in the school where they studied PPR and were reportedly present during the intervention sessions. Most published studies of PPR neglect or briefly mention teacher training.

Treatment Integrity Several PPR studies have monitored and reported treatment integrity during PPR interventions, with most reporting very high levels of treatment integrity. Integrity checks were completed for 37 % of interventions in Ervin et al. (1996) and revealed 100 % procedural integrity. Sherman (2012) reported that “all of the participating teachers conducted sessions in their classrooms with 100 % integrity.” The high level of integrity found in many studies, however, may come at a high cost to school personnel. In order to independently implement components of PPR with integrity, teachers may require extensive training and monitoring by behavior professionals. For example, in a study of PPR applied to a pre-school setting, Johnson-Gros and Shriver (2006) held 2-h didactic PPR training sessions with the teacher until 90 % accuracy was reached. Sherman (2012) reported that teachers were trained using both didactic and direct training methods before each intervention phase, including written instructions (scripts), practice with implementing the intervention and recognizing acceptable praise statements, and direct feedback in role-play.

Although few studies report variability in treatment integrity, it appears to be an important component to PPR’s success

that may present confound treatment effects as well as present a barrier for dissemination. Anecdotally, researchers have reported some difficulties with teachers deviating from prescribed procedures, but research has not determined whether low integrity undermines treatment outcomes or how teachers can be prevented from adding steps to the procedure. Hoff and Ronk (2006) reported “there were several occasions when the teacher did not draw a name or count the number of tokens, suggesting some problems with treatment integrity.”

Murphy (2013) specifically investigated the translation of PPR in two middle school classrooms with two teachers who were given the same procedural script for implementing PPR (derived from Wright 2002). In one classroom, a researcher/consultant was highly available, involved in training the teacher and supporting the teacher throughout the intervention, and in the other classroom, PPR was implemented primarily by the teacher, within a more typical school consultation model. Treatment integrity and teacher acceptance of the intervention were found to be substantially higher for the class with a higher level of clinical support. Subsequently, improvements in social interactions were also higher for the more highly supported classroom.

Duration and Maintenance Single-subject studies rely on the comparison of intervention effects on a single participant or group of single participants, where outcomes of the participant are compared in nontreatment phases (baseline) and in treatment phases (Horner et al. 2005). Generally, PPR studies have employed single-subject methods using withdrawal and reapplication of treatment (reversal design) or several baselines with variable-length baseline and intervention durations for different subjects (multiple baseline design), or a combination of the two methods to estimate effects. Due to demands based on research design, as well as data-collection constraints, studies of PPR have been conducted over a wide variety of lengths of time, ranging from two days to four months, and have prompted positive change even in short-duration interventions. Because the comparative effects of interventions of differing durations may be due to additional treatment differences, the current literature cannot specify whether there is a “dose–response” relationship in the duration of PPR treatment. Cashwell et al. (2001) and Johnson (2009) found that reporting is high in the beginning of the first intervention phase, but decreases with the novelty of the reward contingency.

Recommendations for Practitioners

Direct Administration

PPR has shown preliminary success in studies conducted in several real-world classroom settings, but the evidence

suggests that it may not be equally effective in every procedural sequence or in every setting. Because the majority of the current evidence comes from studies implemented in small, general education, elementary school classrooms, these types of settings may be particularly good candidates for PPR. In general education settings, applying PPR to the group overall, rather than to a specific student, appears to be a preferred and effective method. In light of preliminary findings of higher levels of positive social interactions for “recipient” students (Chenier 2010), as well as to reduce the chance of further isolating rejected youth, it may be appropriate in group-wide PPR to rotate the target daily or even ensure that each child is praised by one designated peer each day.

Within classrooms, applying a group contingency has also become the default procedure in the literature and may be more cost-effective and easy-to-implement than assigning individual rewards. Although using a display of progress generally appears to be helpful in providing immediate feedback and additional reinforcement to students, there does not appear to be a consensus in the literature on a standard or most effective type of display. Thus, it is at the discretion of the class intervention leader to select a contingency display and/or theme appropriate for the specific setting and participants.

In consideration of reports in previous PPR studies, practitioners should be cautious that PPR interventions run the risk of becoming less effective over time and appear to require a high level of treatment integrity for maintenance. For example, Cashwell et al. (2001) identified notable decreases in praise reports following the class receiving an award, with more frequent responding as students neared the next goal. Theoretically, when decreased in praise reports were found following the class receiving an award and more frequent responding as the students’ neared the next reward, the students’ responses were consistent with a fixed ratio schedule of reinforcement. In order to promote maintenance of PPR gains, it may be useful to manipulate students’ access to rewards to encourage higher volumes of praise when the intervention’s novelty wears off.

Lyons (2004) recommended that to promote maximum maintenance of treatment gains, a high volume of positive statements must continue to be generated by peers and, hence, reinforcement should be given frequently. It may also be helpful to implement supplemental interventions for reducing reinforcement for socially inappropriate behavior in the natural environment. Gradually, extrinsic rewards should be faded or gradually replaced with more intrinsic, naturally-occurring reinforcements that come from positive academic and behavioral experiences, such as feeling satisfaction and pride in the work produced, enjoying working in a team and gaining friendships, and having fun while learning.

In the majority of reported single-case studies, PPR has demonstrated positive effects on student’s behavior, including

increased positive social interactions between students, increases in peer acceptance, and decreases in disruptive behavior. Student behavior is shaped by multiple social and systemic factors, though, only a few of which are addressed in PPR. Classroom setting, age, developmental stage, and disability status of students are clearly important contextual factors that will influence how PPR is carried out with regards to rewards and expectations for communication. Adaptations in materials and support will also be necessary depending on the resources available in the school context. In order for PPR to work within a particular system, it is important for school staff and/or external consultants to translate the treatment’s recommendations as appropriate for their specific contexts, while adhering to the basic procedural components outlined in the research literature.

Additionally, although the current protocol for PPR does not specify modifications for cultural differences, teachers and personnel should be aware that multicultural sensitivity in adapting PPR is likely an additional critical component of its effectiveness. In order to promote positive behavior and mutually beneficial relationships for all students, staff should model and praise students for language in PPR that is gender neutral and free of stereotypes. Care should also be taken in selecting inclusive group rewards and visual displays for PPR that reflect and honor the cultures and life experiences of students in the class.

Across treatment settings and targets, behavior specialists, teachers, and other school staff should be aware of the importance of their support in students’ successful generalization of positive behavior and social skills practiced in PPR. Although the empirical evidence on PPR at this time is insufficient to show a causal relationship between the intervention’s success and a positive working alliance between students, teachers, behavioral consultants, and school administrators, researchers have anecdotally reported a relationship. To supplement efforts in PPR, students’ social and emotional development can also be improved through teachers and staff encouraging and praising them for working together, sharing materials, following directions, being polite, listening, and working out disagreements.

Providing Consultation

It is likely that researchers anticipate that consultants’ transfer of PPR to teachers is implicitly understood, but the methods for disseminating the theoretical rationale, procedures, and materials for use in PPR may be important factors in the intervention’s success. In order to maintain the high levels of treatment integrity reported in the PPR literature, it may be necessary to involve one or more behavioral consultants for training, feedback, treatment monitoring, and support of the intervention. Support clinicians for many PPR studies were authors and co-authors of the research studies, so it is likely

that they were particularly invested and motivated in the interventions' success. Among professional behavioral consultants available in most schools, it may be difficult to attain the same level of expertise and motivation. Although behavioral professionals' expertise can be helpful in assisting teachers with classroom management, getting teachers to refer for these services may require trust and buy-in.

Although PPR's methods are consistent with principles of behavior theory, teachers may fear that providing their students with extrinsic rewards will undermine students' motivation to learn and succeed without rewards (Adelman and Taylor 2005). School behavioral consultants are usually familiar with teachers' concerns that "Too much praise and attention is harmful to students." Many teachers also see teaching academics as their primary role in the classrooms, and they may be reluctant to dedicate time and effort to engage in a social-behavioral intervention like PPR (Hamre and Pianta 2005).

Research suggests that schools with strong, trusting peer relationships among its staff are more likely to have teachers who are willing to learn and engage in new practices, which can produce gains in student outcomes (Epstein et al. 2008). Chronic or serious behavior problems in the classroom can quickly exhaust the behavior management resource strategies and interventions of many teachers and the guidance and advice of a behavioral consultant can be a welcomed and effective form of support. Research indicates that consultation with experts in behavior management, such as psychologists, can help reduce classroom behavior problems (Dunson et al. 1994). The success of PPR may be dependent on teacher or group leader buy-in to the intervention and rapport with a behavioral consultant. Therefore, implementation of PPR may present challenges to school settings with limited resources for time and personnel. As a forum for discussing and disseminating evidence-based approaches to addressing behavioral challenges, school administrators should provide time and structures for small, interdisciplinary groups comprised of teachers, administrators, and specialists to meet (Epstein et al. 2008).

Results of this review also emphasize the importance of collecting data, not only for academic publication, but to guide clinical decision-making in PPR. This recommendation is also consistent with standards for data-driven planning for individualized education planning in IDEA (2008). Observational methods are preferred in the PPR literature, but in settings without access to an unaffiliated observer to temper reactivity, teacher and student survey measures may be more feasible and accurate. Monitoring the effectiveness of PPR interventions by continuing to collect and review data can support ongoing improvement to achieve maximum results.

Recommendations for Researchers

Continued research on PPR will be necessary to support its wide-scale dissemination. Some variation in effectiveness has been illustrated in the literature and technical differences in procedural implementation may be related to these corresponding differences in intervention effectiveness. Ervin et al. (1998) suggested that future PPR analyses move away from examining PPR as a main effect to examining the interactions to interpret which subjects and settings PPR is most effective with. However, many of the studies conducted on PPR since have failed to exercise the degree of methodological rigor necessary to allow for such comparison. Future investigators of PPR interventions in classrooms are encouraged to control and report details of clinical experimental methods, including participant selection, the provision of clinical support, treatment integrity, and termination/maintenance.

Additional research is needed to evaluate PPR's naturalistic relevance and validity in the applied settings it has been experimentally applied to. Specifically, in the existing literature, variation in constitution of "phases" limits generalizability of findings from one study to another. For example, many existing PPR studies illustrate a decline in positive social interactions during withdrawal phases that is below the level found during the intervention phase, but above baseline levels. This evidence is misleading in that, for many PPR studies in classrooms, "withdrawal" phases represent time periods in which students other than the target student were recipients of praise. Because the target students in these studies continued to participate in PPR sessions as reporters, the reversal phases do not represent true treatment withdrawal. In light of the current trend towards administering PPR equivocally to all students in a given class, it is more appropriate to label these phases as alternate treatment phases (in studies comparing reporter and recipient conditions) or to consider them as extended treatment phases. A related research concern presents with the finding that, in accordance with response extinction, PPR and Tootling studies have generally shown that peer relations or peer reporting rates return to baseline levels when intervention is withdrawn. While PPR has been researched primarily as a short-term intervention, long-term application to ensure maintenance of treatment gains is a more likely goal for PPR's clinical application and should be researched as such.

Another important area for the extension of PPR's research base is to shift from efficacy research to effectiveness research, by investigating the intervention's translation and dissemination. Most published studies of PPR neglect or briefly mention teacher training. Despite appearing to be a common, essential component of successful PPR studies, existing studies offer insufficient detail to allow for replication of treatment conditions with regards to clinical support. With additional information regarding the specific conditions for PPR to be

implemented effectively, it may be more widely disseminated as a highly beneficial, low cost class-wide positive behavioral support intervention.

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