**PROGRAMMING GENERALIZATION OF IN-CLASS
TRANSITION SKILLS: TEACHING PRESCHOOLERS WITH
DEVELOPMENTAL DELAYS TO SELF-ASSESS AND RECRUIT
CONTINGENT TEACHER PRAISE**

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We investigated a self-management intervention package that taught preschoolers with developmental delays to self-assess performance of targeted skills and to recruit teacher praise. Self-assessment alone resulted in increases in active engagement across all participants during the training sessions, but generalization to classrooms was sporadic and short-lived. When recruitment of contingent praise was added to the training package, treatment effects generalized to the participants' classrooms and teachers' rates of contingent praise increased. The implications of combining self-assessment and recruitment of contingent teacher praise are discussed.

DESCRIPTORS: generalization programming, recruitment of praise, self-assessment, in-class transitions, preschool children

An important goal of educating students with disabilities is teaching them to self-manage their behavior. A variety of techniques have evolved under the rubric of self-management. Two strategies that have been demonstrated to be effective are teaching students to self-assess and to recruit teacher praise.

Teaching students to self-assess their behavior has been effective in remedying some of the difficulties of students with disabilities (Lloyd, Landrum, & Hallahan, 1991). In preschool populations, self-assessment has been shown to be effective

in developing independent work skills (Sainato, Strain, Lefebvre, & Rapp, 1990) and engagement (Carden-Smith & Fowler, 1984). Even so, use of self-assessment in education has been limited (Sainato et al., 1990). The lack of general application of this technique may be due to the lack of reliable and durable generalization of treatment gains across settings and time (Hughes, Ruhl, & Misra, 1989).

A critical variable in the generalization of self-monitored behavior may be a stable source of reinforcement in targeted settings (Brodén, Hall, & Mitts, 1971). Unfortunately, the requisite source of reinforcement in many educational settings (e.g., teacher praise) may be too impoverished or inefficient to support the target behavior (Delquadri, Greenwood, Whorton, Carta, & Hall, 1986).

Teaching participants to recruit natural communities of reinforcement has been an effective means of activating and enriching natural communities of reinforcement in generalization settings (Stokes, Fowler, & Baer, 1978). However, using these enriched communities of reinforcement to entrap treatment effects, such as those gained with self-assessment, has remained unexplored.

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A self-management treatment package consisting of teaching students to self-assess their behavior and to recruit contingent praise may constitute a powerful intervention for developing and promoting generalization of target behavior across settings and time. An important area of skill building that might benefit from such a self-management intervention is in-class transitions (Fowler, 1986; Sainato, 1990). This study investigated a self-management package that taught students to self-assess performance of targeted transition skills and to recruit teacher praise when their work was of high quality. Specifically, we examined the ability of this package (a) to produce treatment effects in a separate training setting and (b) to generalize those effects to the students' classrooms.

METHOD

Participants and Settings

The participants were 4 students in an early-intervention preschool in Kansas City, Kansas. They were selected from students identified by the teachers as having difficulty remaining on-task during in-class transitions. All 4 participants were described as having difficulty (a) starting to clean up when told, (b) putting materials away, and (c) getting ready for the next activity.

Derrick was from Classroom A. He was 4 years 4 months old at the time of the study. He had received a Stanford-Binet Composite Standard Score of 88 and Brigance K-1 Screen Total Score of 34. He was referred to the preschool for language and cognitive delays.

Thomas was from Classroom B. He was 4 years 9 months old. His testing scores were not available. He was referred to the preschool for language delays and behavior problems.

Kevin was from Classroom A. He was 4 years 7 months old. He had received a Stanford-Binet Composite Standard Score of 92 and a Brigance K-1 Screen Total Score of 54. He was referred to the preschool for language and cognitive delays.

Karen was from Classroom C. She was 4 years 7 months old. She had a Stanford-Binet Composite

Standard Score of 89 and a Brigance K-1 Screen Total Score of 54. She was referred to the preschool for language and cognitive delays.

The generalization settings for this study were the participants' classrooms. We collected generalization data as each participant made the transition between free-play and opening group in their classrooms. Each classroom contained 6 students, a paraprofessional, and a classroom teacher. The classroom teachers were told only that the study involved teaching the students "new ways of cleaning up." No interventions were implemented in the classrooms.

The training sessions were conducted in another part of the school. Sessions were conducted for 15 to 20 min at the beginning of the free-play time. Various play materials, similar to those in the classrooms, were available during the session. Data were collected during a training transition that was similar in task demand to the targeted classroom transition.

Dependent Measures

Five classes of student and teacher behavior were scored during in-class transition times: (a) active engagement, (b) competing behavior, (c) opportunity to recruit (the child has been actively engaged, the teacher is within 1 m and is not busy), (d) appropriate recruitment (a statement or action from the student to the teacher, in the context of an opportunity to recruit, that solicits teacher praise), and (e) total teacher praise to the student. (The entire code is available upon written request to the first author.)

Observation Procedures

Each child was observed in both settings three times per week. In both settings, observation periods ranged from 3 to 7 min, beginning with the cue to clean up and ending when the teacher or trainer opened the group activity. Active engagement and competing behavior were scored in a 10-s momentary time sample. Opportunities to recruit were scored during continuous 10-s partial intervals. Appropriate recruitment and total teacher

praise were scored using discontinuous 10-s partial intervals.

Interobserver agreement. Interobserver agreement was assessed at least once during each experimental condition for each participant and in 26% of all sessions. Exact matches were counted as agreements for active engagement, competing behavior, and opportunities to recruit. Due to low frequency, isolated occurrence, unclear onset, and tendency to overlap intervals, we used the "sliding rule" (Goetz & Young, 1988) to calculate interobserver agreement for appropriate recruitment and total teacher praise. Agreements were scored if the observers had recorded an occurrence within the same or adjacent intervals. Agreement calculations for all categories were derived by dividing the number of agreements by the total number of agreements plus disagreements and multiplying the resulting ratio by 100%.

Mean interobserver agreement for each behavioral category and ranges across all experimental conditions and collapsed across participants were as follows: active engagement mean = 87% (condition range, 81% to 91%; participant range, 85% to 88%), competing behavior mean = 85% (condition range, 79% to 90%; participant range, 82% to 87%), appropriate student recruitment mean = 84% (2 of 22 agreements scored by sliding rule; condition range, 75% to 100%; participant range, 83% to 86%), total teacher praise mean = 83% (3 of 34 agreements scored by sliding rule; condition range, 66% to 100%; participant range, 74% to 92%), and opportunities to recruit mean = 75% (condition range, 66% to 100%; participant range, 71% to 82%).

Experimental Conditions

Baseline (A). The children were observed during classroom transitions 2 to 6 weeks before the out-of-class procedure. These transitions consisted of the same order of events in all classrooms. A teacher-designated student flashed the classroom lights and said, "It's time to clean up." At that time, the students were to (a) stop playing, (b) pick up their toys, (c) put them away, (d) find

their assigned seats, (e) move their chairs to the circle area, and (f) sit and look at the teacher. During these transitions, the teacher provided low rates of individual praise for appropriate behavior.

Training baseline (B). Approximately 2 weeks before the onset of training, the participants were taken out of the class, one at a time, by the investigator for a 15- to 20-min session in another area of the school building. The child played for 15 min. The child was then told to clean up, work as quickly as possible, find the assigned chair, move it to the designated place in the room, sit in the chair with feet on the floor, and look at the experimenter. The participant was noncontingently praised during this time. Each child was given a sticker at the end of each training session and was told that it was for "coming to work with me today."

Self-assessment (C). This condition was similar in all respects to the training baseline except that self-assessment and contingent reinforcement components were added in the training sessions. The child was taught, through modeling and behavioral rehearsal, that a happy face meant that the child had performed a task and a sad face meant that the task was not performed. A "Rules of Clean-Up" poster was then introduced, which showed pictures of the child performing the sequence of transition tasks described in the previous condition. The child and experimenter practiced the behaviors through rehearsal and modeling.

The poster was reviewed by the child and experimenter before the cue to clean up. While the child cleaned up, the experimenter rated the child's performance on a sheet of paper that had small copies of the pictures used in the poster with happy and sad faces next to each picture. Appropriate behavior (being actively engaged for 20 consecutive seconds) was praised at least twice per session.

Immediately after the transition, the child was given a booklet containing small poster pictures with happy or sad faces adjacent to each. The experimenter stated each target behavior, and the child marked the face representing his or her opinion of self-performance of that behavior. The ex-

perimeter then matched his ratings with the child's ratings. Following each accurate assessment (those in which the experimenter and the child both assigned the same face), the experimenter praised the child (e.g., "I agree, you did a great job of starting to clean up when you were told to today," or "I agree, you kept playing after I had given the call to clean up. Good assessing! Let's try to clean up when I tell you tomorrow."). Following each inaccurate assessment (those in which the experimenter and the child assigned conflicting faces), the experimenter gave corrective feedback (e.g., "I don't agree, I think you were a little slow in getting started today. Let's work harder on that tomorrow," or "I don't agree, I think you did a really good job getting started today. Let's try to assess better tomorrow."). The child then returned the assessment book to the experimenter. The child was given a sticker if at least 80% agreement was achieved with the experimenter. The child was then told to practice the new skills in the classroom. This condition continued until the child had accurately self-assessed all items for 2 consecutive days.

Recruitment (D). Participants were taught to recruit praise from the experimenter during the training session and were prompted to recruit praise from their teachers in the generalization setting. The students were given a small repertoire of cueing strategies (e.g., saying, "I'm done," approaching the experimenter with arms outstretched for a hug, etc.). They were taught to recruit praise only when the experimenter was within approximately 1 m and was not busy. These skills were initially shaped by the experimenter through modeling, role playing, drill and practice, and contingent praise.

Afterwards, the child was introduced to a poster containing five pictures of the child modeling new target behaviors: (a) cleaning up, (b) being ready for group, (c) recruiting praise when the participant had worked well, (d) recruiting praise when the experimenter was close and not busy, and (e) recruiting praise from the trainer at least twice during the transition training. During the transition training, the experimenter delivered praise only when the child had recruited appropriately (see dependent measure definition for "appropriate recruitment")

during the practice transition. Feedback was immediately given for inappropriate recruitments (e.g., "Now is not a good time to recruit, I'm busy/too far away/you haven't been working"). After the practice transition, the self-assessment procedure (assessment, matching, feedback, and reinforcement) was followed using the new target behaviors. Immediately before returning to the classroom, the child was reminded to use the skills during the transition in the classroom. Training was discontinued after each student had made two appropriate recruitments on 2 consecutive days in the generalization setting.

Design

Derrick and Thomas were paired in a multiple baseline design across participants, with a reversal condition (B) following the self-assessment procedure (C). The sequence of conditions was ABCBCDA. This design was replicated with Kevin and Karen, except that the initial condition (A) and the reversal procedures were excluded due to time constraints. The sequence of conditions was BCDA.

Social Validity

A variation of the Subjective Units of Irritation Scale (Sherman & Cormier, 1974) was used as a measure of social validity. On Friday of each week, the experimentally naive classroom teachers recorded on a blank note card a value from 0 to 100 (0 indicating the least irritating student the teacher could imagine, and 100 signifying the most) indicating the amount of irritation each student individually caused the teacher during the targeted transition over the past week. These weekly raw scores were recorded along with how the children's scores ranked in relation to their classroom peers' scores. (The full procedure is available upon request.)

RESULTS

Dependent Measures

To examine generalization and maintenance of treatment effects fostered by this intervention, active

Figure 1. Percentage of intervals of active engagement and competing behavior in the classroom generalization setting for each participant. Abbreviations are as follows: B = baseline, TBI = Training Baseline 1, SA = self-assessment, TBII = Training Baseline 2, and SAR = self-assessment and recruitment. Missing data are noted in Sessions 11 and 12

engagement and competing behavior in the generalization setting (Figure 1), appropriate recruitment of teacher praise, total teacher praise to children, and opportunities to recruit teacher praise (Figure 2) are presented. Active engagement and competing behavior during training sessions are depicted in Table 1.

Baseline conditions showed low or nonexistent levels of active engagement, appropriate recruitment, and total teacher praise for participants in all settings. Implementation of self-assessment yielded improved active engagement in the training setting, with transient and sporadic generalization to the classrooms. Pairing self-assessment with recruitment generated upward trends in active engagement, appropriate recruitment, and total teacher praise. Maintenance of treatment gains occurred for all participants. Long-term maintenance was demonstrated with Derrick. A severe disruption in Kevin's home life between Sessions 15 and 16 may have resulted in the variability observed in those data.

Social Validity

The weekly teacher irritation ratings are presented by how the target students' raw scores fell in order in relation to the scores of their classroom peers. Each student was given a rank from 1 to 6 (6 students in each classroom) indicating the order of the student's raw score. A rank of 1 indicated that the student received the lowest (least irritating) raw score, and 6 indicated that the student received the highest (most irritating) raw score in a given week. These weekly rankings were collapsed across conditions and are presented by mean rank per condition. Baseline mean ranks were 6 for Derrick and Kevin, 5.6 for Thomas, and 5.3 for Karen. Self-assessment mean ranks were 6 for Derrick and Kevin, 5 for Thomas, and 4.5 for Karen. Self-assessment and recruitment means were 3.3 for

for Kevin because of illness. Broken lines for Kevin from Sessions 17 through 23 indicate a period of severe disruption in his home life.

Figure 2. Total intervals of appropriate recruitment, opportunities to recruit, and total teacher praise to the target student in the classroom generalization setting for each participant. Abbreviations and other details as in Figure 1.

Derrick, 3.5 for Thomas, 1.5 for Kevin, and 2 for Karen. Maintenance means were 2.6 for Derrick, 3 for Thomas, and 2 for Kevin and Karen.

DISCUSSION

This study demonstrates that children can be taught to self-assess and recruit contingent praise and that the resulting treatment effects will generalize to in-class transition settings. This supports and extends research in recruitment of praise (e.g., Stokes et al., 1978) and self-assessment (Fowler et al., 1986; Sainato et al., 1990) to preschoolers with developmental delays and to in-class transitions. These data suggest a strong relationship between reliable across-setting generalization of behavior gains and appropriate recruitment of praise. However, the differential contributions of self-assessment and recruitment to the generalization of treatment effects remain unknown.

As was the case in earlier studies (e.g., Broden et al., 1971), this study was unable to show reliable generalization of the effects of self-assessment across settings or time in the absence of reliable reinforcement in the generalization setting. However, we showed that adding recruitment-of-praise training to self-assessment increased the density of reinforcement in the classroom and concomitant transfer of treatment effects.

The study also supports the findings of Harchik, Harchik, Luce, and Sherman (1990) that student recruitment of praise was not always successful. For instance, although nonverbal strategies (e.g., extending arms to the teacher in solicitation of a hug) were successful and durable in Classrooms A and C, these same strategies were not reinforced in Classroom B, where verbal strategies (e.g., "I'm finished," "I'm done") were more successful. Interestingly, most participants modified recruitment strategies to fit the classroom setting. For example, Derrick expanded "I'm done" to "I'm done and I'm the first one done," and Kevin generated "Aren't I cleaning up beautifully today, [teacher's name]?"

Social validity in this study was demonstrated through the use of the teacher irritation index. All target students were rated as the most irritating

Table 1
Percentage of Student Engagement During Training Sessions

	Training baseline	Self- assessment	Training baseline	Self- assessment	Self- assessment recruitment
Derrick					
Active engagement	10.8	84.8	33.0	46.3	84.8
Competing behavior	77.6	3.7	30.2	40.1	3.7
Thomas					
Active engagement	7.2	54.5	20.3	71.3	63.3
Competing behavior	81.4	31.4	44.4	10.7	9.9
Kevin					
Active engagement	27.6	88.5	N/A	N/A	97.5
Competing behavior	27.3	6.7	N/A	N/A	0
Karen					
Active engagement	31.2	79.3	N/A	N/A	81.0
Competing behavior	34.3	7.2	N/A	N/A	4.5

students in their respective classrooms during baseline transitions. However, these students were progressively rated as less irritating to classroom teachers in correspondence with improvements in classroom transition behavior. Derrick, Kevin, and Karen were rated as the least irritating students in their classrooms following generalization of treatment gains. These data may represent a type of social validity measurement that is sensitive to experimental control. We also argue that these improvements may indicate decreased requirements of teacher assistance. However, changes in rate of teacher prompts to the target students were not measured. Because of time constraints, reversal conditions were not implemented for Kevin and Karen. Thus, possible order effects in Kevin and Karen's data cannot be dismissed.

In summary, pairing self-assessment procedures with teaching students to recruit praise efficiently establishes and supports generalization of in-class transition skills in preschool students with developmental delays. Special classrooms preparing students for less restrictive environments may benefit from similar programs.

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