THE USE OF PEER MONITORS TO REDUCE NEGATIVE INTERACTION DURING RECESS

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The negative interactions of a mildly retarded child, Dennis, were reduced in three daily recess periods, with the use of a point system. Adult monitors initiated the intervention in the morning recess; reductions achieved during adult monitoring were maintained in that recess during two subsequent conditions: peer monitoring and self-monitoring. Dennis' negative interactions were reduced next in the afternoon recess by peer monitors. Again, reductions were maintained during a subsequent self-monitoring condition. Finally, during the noon recess, Dennis was trained to serve as a peer monitor for Ed, a moderately retarded classmate. Dennis' rate of negative interactions quickly decreased following his appointment as a peer monitor. The results show that a point system, originally designed for adult monitoring, can be adapted without loss of program effectiveness for peer monitoring or self-monitoring. The results also suggest that classmates who serve as peer monitors may benefit significantly from their role. The conditions under which these therapeutic effects occur and the role that treatment order effects may play in this process require further investigation.

DESCRIPTORS: aggressive behavior, group contingencies, playground behaviors, response cost, retarded children

Children tend to behave deviantly most often in settings with infrequent adult supervision and intervention, e.g., on a playground. One way to increase contingent intervention may be to enlist peers as playground supervisors. Although the peer group may not always provide social reinforcement for appropriate behavior or ignore inappropriate behavior (e.g., Christy, 1975; Strain, Kerr, & Ragland, 1981; Wahler, 1967), they can be trained to do so (e.g., Hendrickson, Strain, Tremblay, & Shores, 1982; Solomon & Wahler, 1973; Strain, Shores, & Timm, 1977).

In fact, researchers have indicated that peer me-

diation can produce effects comparable to those achieved with adult-mediated interventions (e.g., Carden-Smith & Fowler, 1984; Drabman & Spitalnik, 1973). In those studies, children or adolescents were trained to deliver points, tokens, or tangible reinforcers to peers contingent on appropriate performance (e.g., increased participation, study time, household chore completion); in some instances they also were trained to withdraw points or tokens for inappropriate behavior (e.g., disruption, off-task performance). The outcome primarily measured was the behavior change achieved with the children receiving the peer-delivered consequences compared to adult-delivered consequences. The fact that results achieved under peer-mediated interventions were comparable to those achieved under adult-mediated interventions provides strong encouragement for the adoption of peer mediation; yet several important issues remain to be analyzed. Specifically, studies are needed to assess the extent and manner in which peer therapists change their behavior, if at all. In addition, the relative durability and generality of effects produced with peer mediation, as well as the process

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Table 1
Characteristics of Study Participants

Child	Age	Sex	Diagnostic label	Behavioral characteristics	WISC-R full scale IQ
Dennis	9.1	M	Mild retardation	Aggressive, oppositional, and noncompliant behavior	63
Ed	10.9	M	Moderate retardation	Aggressive, oppositional, and noncompliant behavior	55
P ₁	9.1	F	Mild retardation	Noncompliant behavior, mild language delay	63
P ₂	8.6	M	Mild retardation	Aggressive and oppositional behavior, mild articulation problems	74
P ₃	8.6	M	Mild retardation	Aggressive, noncompliant behavior	61
P ₄	9.5	M	Mild retardation	Aggressive and oppositional behaviors	63
P ₅	9.7	M	Mild retardation	Mild language delay	65
P ₆	8.9	M	Moderate retardation	Social withdrawal, severe language delay, grand mal & petit mal epileptic seizures	57

variables associated with the intervention (e.g., accuracy of point awards, frequency of prompts, praise, corrections, reprimands) require careful analysis. In this study, we analyzed the effectiveness of a peer-monitored intervention, using the RECESS program, a treatment package designed for remediating negative and aggressive behavior on playgrounds. The RECESS program (an acronym for Reprogramming Environmental Contingencies for Effective Social Skills) was developed by Walker et al. (1978) for adult implementation. We modified the adult-mediated RECESS program to involve peers as the change agents.

METHOD

Participants

Dennis, aged 9 years, 10 months and Ed, aged 10 years, were enrolled in a primary level, educable mentally handicapped class. Dennis was referred for participation in the study in the fall semester; and Ed was referred in the spring semester, shortly after his transfer to the special education class. Screening observations verified that both boys exhibited higher than normal rates of negative and aggressive behavior toward their peers and that they regularly broke many playground rules.

Six classmates served as monitors for Dennis during certain phases of his morning and afternoon recesses. The classmates ranged in age from 8 years, 6 months to 9 years, 7 months. These children were chosen on the basis of teacher and peer ratings: Teachers either recommended them as typically compliant to adult instructions, or Dennis rated them as preferred playmates on a sociometric scale administered twice, prior to the onset of the study. One of the six classmates (P₆) was dropped from the pool of peer monitors midway through the study, due to scheduling conflicts. Ed's peer monitor during later phases of the study was Dennis. Table 1 presents characteristics and ages of the six classmates and the two participants.

The classroom teacher and an aide participated during one phase of the study. The teacher was trained in special education and had taught for approximately 15 years. The classroom aide had 2 years experience but no special training.

Settings

Screening, baseline, and intervention observations took place on the playground assigned to the primary grades during the morning, noon, and afternoon recesses. The playground was an asphalt area, approximately one-half acre in size. The permanent playground equipment included: a jungle

gym, parallel monkey bars, wooden walk boards, a basketball goal, a climbing pole, a sand box, and game areas. Steps at the entrance of the building were designated as the time-out area.

Follow-up observations of Dennis and Ed took place the following academic year on the playground assigned to the intermediate grades. The playground was approximately one acre in size and contained similar, but fewer pieces of equipment.

Social skills training sessions were conducted in a small room near the classroom. Small-group activities, provided as a reward immediately after recess, took place in the hallway outside of the classroom. Weekly all-class rewards were conducted inside the classroom.

Procedures

Measurement systems. Two measurement systems were used in this study: a 5-second interval observation code and a consumer satisfaction rating scale, completed by the peer monitors.

Five observers, four undergraduates and one graduate student (the first author) collected the interval data. They were equipped with data sheets, clipboards, pencils, and an auditory signaling device. The undergraduate observers were trained by the first and third authors for approximately 1 month prior to the onset of the study. Observer training occurred on the playground; practice data were collected on members of the special education class until observers reached a reliability criterion of 0.80. The practice observations also served to acclimate the children on the playground to the presence of the observers. The observers remained approximately 6 feet from each observed child so as not to interfere with ongoing games and activities. Dennis and Ed were observed throughout the entire recess. Morning and afternoon recess observations ranged from 15 to 20 minutes, and noon recess observations ranged from 25 to 35 minutes.

Dennis was observed 5 days per week during the morning recess and approximately 2 days per week (during baseline) during the noon and afternoon recesses. After intervention was implemented during the morning recess, observations were in-

creased in the other recesses to 3 days a week. Ed was observed daily during all three recess periods.

When additional observers were available, classmates designated as peer monitors were scored. However, due to absences, holidays, detentions, schedule changes, and observer shortages, peer monitor observations were not made on a daily basis. In total, 280 peer monitor observations were collected across the course of the study. P_1 and P_2 were each observed for 85 sessions, P_3 for 40 sessions, P_4 for 36 sessions, and P_5 for 32. P_6 , due to the brevity of his appointment, was observed only 13 times.

The following categories of behavior were scored during each observation. Each category could be scored in the same interval with the exception of positive and negative interactions with peers. Scoring of negative interactions took precedence over positive interactions.

1. *Negative interactions with peers.* Negative verbalizations included derogatory, uncomplimentary, or rejecting statements (e.g., criticism, accusations, or name calling) as well as threats and taunts. Negative forms of nonverbal behavior included: (a) rough or harmful bodily contact, (b) threatening or offensive gestures, (c) property destruction, (d) taking a peer's play materials without permission, and (e) ignoring requests from peers.

2. *Positive interactions with peers.* All forms of verbal and nonverbal behavior directed toward peers that were not scored as negative were scored as positive. Positive behaviors ranged from giving a compliment or providing assistance to participating in games with a peer (e.g., basketball or dodgeball).

3. *Rule infractions.* Any violation of the 13 established playground rules was scored as an infraction. Examples included climbing on the fence or window railings, leaving the boundaries of the playground, and bouncing balls off the building walls.

4. *Negative initiations or responses from peers.* This category referred to instances in which a peer interacted in a negative fashion toward the observed child. The same criteria used to determine

whether the observed child's behavior was negative also were used to code negative behaviors *from* peers.

5. *Praise*. This was scored whenever an adult or peer monitor verbalized approval or commendation to the child.

6. *Point loss*. A point loss was scored when an adult or peer monitor told the target child that he had lost a recess point or when the peer monitor physically moved a bead on the point-bead ring.

7. *Bonus point award*. Bonus point awards were scored when an adult or peer monitor told the target child that he had received a bonus point or physically moved a bonus bead on the point-bead ring.

Three-point scales were presented to each of the monitors during the peer monitor conditions at 2-week intervals to assess consumer satisfaction. The monitors were asked to rate as positive, neutral, or negative their responses to three questions: whether they liked or disliked being a monitor; whether they liked or disliked taking points away; and whether they liked or disliked praising and giving points to the target child.

Reliability Assessment

Throughout this investigation, reliability was assessed 127 times: 44 times during the morning recess, 49 times during the noon recess, and 34 times during the afternoon recess. In total, reliability was calculated for 22% of Dennis' sessions, for 12% of Ed's sessions, and for 12% of the peer monitors' sessions. Reliability was calculated by dividing the number of agreements on occurrence (or nonoccurrence) by the number of agreements plus disagreements on occurrence (or nonoccurrence) and then multiplying by 100. Separate occurrence and nonoccurrence reliabilities were calculated for each behavior in each condition for each child.

The occurrence and nonoccurrence reliabilities calculated for child behaviors, scored in Dennis' sessions, were consistently at or above 80% during the morning, noon, and afternoon recesses, throughout all conditions of the study. Consultant praise was the only adult behavior observed during

the reliability checks made in each recess. Reliability estimates for its scoring was 100%.

Likewise, separate occurrence and nonoccurrence reliability estimates for each of the child behaviors scored during Ed's sessions were consistently at or above 78% during each of the three daily recesses throughout all conditions of the study. Again, consultant praise was the only adult behavior observed during reliability observations; its reliability was 100%.

Reliability observations of the peer monitors were conducted only after their appointments as monitors. Occurrence and nonoccurrence reliability estimates of positive and negative child behavior were consistently at or above 82%. Reliability estimates for occurrence of consultant praise were at or above 89%.

Experimental Design

The effects of the RECESS program in reducing negative interactions were demonstrated in a multiple baseline across Dennis' morning and afternoon recesses and Ed's noon recess. Intervention was initiated first with Dennis in the fall semester and subsequently with Ed, in the spring, immediately following his midyear transfer from another school. (Ed's first day of baseline corresponds with Dennis' session 40 and Ed's first day of intervention corresponds with Dennis' session 49.)

The effects of appointment as a peer monitor in reducing negative interactions likewise was demonstrated through a multiple baseline application across Dennis' five peer monitors—first in the morning recess (Sessions 29–61), then in the afternoon recess (Sessions 37–65), and finally across Dennis in the noon recess, (Sessions 53–69), where he was appointed to monitor Ed.

The RECESS program and procedures, developed by Walker *et al.* (1978), were adapted for use in this study. Components of the program used during the intervention phases included: individual social skills training, class-wide social skills training, a point system, and a daily and weekly reward system. In addition, a peer monitor training program was developed and implemented based on these procedures.

Experimental Conditions

Baselines. No experimental procedures were in effect. The entire class was dismissed at the same time for each recess and the children were left to their own resources to manage their outdoor play.

Consultant. The original RECESS intervention was implemented in this condition. The program consultant (usually the first author) was the monitor. Monitoring consisted of withdrawing points for instances of negative behavior or rule infractions and awarding bonus points for instances of exemplary behavior (e.g., cooperative play, refusals to fight). The consultant occasionally prompted appropriate play. Dennis began recess with 4 points and the opportunity to earn 2 bonus points (Ed began the longer noon recess with 6 points and the opportunity to earn 2). If Dennis lost all 4 points during recess, he was sent to time-out for the remainder of recess. (The same rule applied to Ed's 6 points.) If either Dennis or Ed kept or earned enough points, he could exchange the points at the end of recess for a small group activity and choose two or three peers to participate in a 5-minute activity (e.g., letter bingo, 20 questions) immediately after recess. Different peers were chosen each time so that all members of the class took turns participating in the reward. In addition, the daily recess points were accumulated toward a class reward available at the end of each week (e.g., special film strip, popcorn, field trip). The class voted on one of two activities. Finally, a prearranged, individual home reward was available for Dennis (but not Ed, due to parent preferences). Dennis could exchange his points each evening for an activity (e.g., playing checkers with a parent, reading a special library book with his brother) or accumulate points toward larger family rewards at the end of the week (e.g., pizza, waffles on Sunday, a family trip to the park). The consultant condition was the first intervention introduced to Dennis' morning recess and to Ed's noon recess.

Recess supervisor. This condition was identical to the consultant condition except that the two classroom teachers alternated in the role of adult monitor. This condition was implemented only during Dennis' morning recess.

Peer monitor. During this condition, peers served as monitors. The number of points with which Dennis and Ed began their recess was decreased gradually from 4 (or 6) points to 1 point. Dennis' home reward was also eliminated. In other respects, the condition was identical to the previous adult-monitored conditions. As before, each boy exchanged the prespecified number of points earned on the playground for a small group activity. The boy, his peer monitor, and one or two peers, selected by the boy, participated in the activity immediately after recess. Likewise, each boy accumulated points for a class reward that typically occurred on a weekly basis.

During recess, the consultant occasionally prompted the peer monitors to watch their assigned peer. These prompts decreased to zero across the condition. Only one peer monitor was appointed during each recess. Appointments for Dennis' monitor rotated across a pool of five or six monitors.

Peer monitors intervened first in Dennis' morning recess and later intervened in his afternoon recess. Dennis was not monitored during his noon recess; rather he became a peer monitor and served as the only peer monitor for Ed in the noon recess.

Appointment as peer monitor. Dennis and Ed received the same training to be a peer monitor as had Dennis' six original peer monitors. Dennis served as a peer monitor for Ed during the noon recess and Ed served briefly as a peer monitor in the afternoon recess for a classmate whose recess behavior was generally appropriate. If the monitored peer kept the criterion number of recess points, both he and the peer monitor (Ed or Dennis) received a sticker or participated in a small group reward. The consultant prompted the boys to check on their monitored child and to implement point rewards or losses. Again, prompts were faded out for Dennis by the final days of the condition. They were not faded with Ed, given the brevity of his condition. No direct contingencies were implemented on the peer monitors' negative behavior or rule infractions.

Self-monitoring. Near the end of the study, Dennis and Ed were provided with a brief oppor-

tunity to monitor their own behavior. The number of points with which they began recess had been reduced to one during the preceding peer monitor conditions. At the end of recess, each boy reported on his behavior to the consultant. The consultant corroborated the report and awarded one sticker for a true report and a second sticker for appropriate recess behavior. Corrective feedback was provided for incorrect reports. This condition was implemented in Dennis' morning and afternoon recesses following the peer monitor condition and very briefly (i.e., 3 days) in Ed's afternoon recess.

Follow-up. Data were collected in September of the new school year, 3 months after intervention had ceased. No experimental contingencies were in effect. Due to their age, Dennis and Ed had been promoted to the intermediate level special education classroom and thus played on a new playground. Only one of their former peer monitors, P₁, was promoted with them. The observers who had collected data during baseline and intervention also collected follow-up data.

RESULTS

Dennis and Ed

The effects of the RECESS program on reducing Dennis' negative interactions with peers are presented in Figure 1 using a minimum rate per minute of negative interactions. The minimum rate per minute measure is based on the number of negative interactions scored in 12 consecutive, 5-second intervals (i.e., 1 minute). The measure reflects a minimum rate in that only one negative interaction with a peer could be scored in a 5-second interval. This provides a conservative estimate of the number of negative interactions; i.e., three physical blows against a peer in 5 seconds would be scored only once. Thus an upper limit of 12 negative interactions per minute is imposed by the 5-second interval scoring system. Minimum rate per minute is calculated by dividing the number of intervals in which negative interactions are scored by the number of minutes observed (e.g., 15 aggressive actions divided by 17.5 minutes of observations = 0.86 acts per minute).

Dennis' rate of negative behavior was reduced

from baseline averages of one or more negatives per minute to near zero levels following intervention in the morning and afternoon recesses. Specifically, Dennis' negative behavior was reduced first in the morning recess by the consultant's implementation of the program. These reductions were maintained in the morning recess through subsequent program implementations by the recess supervisors, peer monitors, and Dennis (self-monitoring). Implementation of the program in the afternoon recess by the peer monitors likewise reduced Dennis' rate of negatives; again, these low rates were maintained during a subsequent self-monitoring condition. Finally, an indirect intervention in the noon recess in which Dennis was appointed to implement the program as a monitor for another classmate, Ed, also reduced Dennis' negative interactions.

Figure 2 presents Ed's rate per minute of negative interactions with peers. Ed's rate of negative behavior was reduced to nearly zero during noon recess from baseline averages of nearly one per minute, following implementation of the recess program by the consultant; these reductions were maintained throughout the subsequent condition when he was monitored by Dennis. A gradual decline in negative interactions was noted in the untreated baselines of Ed's afternoon and morning recesses, concurrent with the consultant's implementation of the token program in the noon recess. Given this decline no intervention was implemented in the morning recess. In the afternoon recess Ed was appointed briefly as a peer monitor. His negative interactions were eliminated in the afternoon recess only during the 3 days of his appointment.

Follow-up observations (depicted by the histogram) were conducted for 1 week on the children's new playground 3 months after intervention ended and at the start of a new school year. Dennis (Figure 1) exhibited a relatively low rate of negative interactions during morning and afternoon recesses. His average rate of negative interactions during noon recess, however, approached the previous year's baseline averages. Ed's rate of negative interactions (Figure 2), also were noticeably higher than his previous intervention rates.

DENNIS

Figure 1. Minimum rate per minute of negative interactions exhibited by Dennis during the morning, afternoon, and noon recesses. Closed dots represent an average of two sessions; open dots represent one session. Follow-up sessions are represented by histograms: Shaded histogram represents 2-day sessions; open histogram represents 1-day session.

Data were also collected on the boys' rates of positive interactions and rule infractions. During intervention, Dennis' rate of positive interactions increased noticeably in each of his three daily re-

cesses: He averaged five to seven interactions per minute in baseline and nine or more positive interactions in intervention. Dennis maintained these improvements through follow-up. In contrast, Ed

ED

Figure 2. Minimum rate per minute of negative interactions exhibited by Ed during the noon, afternoon, and morning recesses. Closed dots represent an average of two sessions; open dots represent one session. Follow-up sessions are represented by histograms: Shaded histogram represents 2-day sessions; open histogram represents 1-day session.

maintained a fairly stable rate of seven to eight positive interactions per minute throughout the study and follow-up.

The boys' rates of rule infractions typically mir-

rored their rates of negative interactions; immediate reductions were noted in this behavior following intervention in each recess. Dennis' rate of rule infractions, which averaged approximately 0.60 or

greater during baselines, declined to approximately 0.20 or less during interventions. Ed's behavior change was more dramatic. His rate of rule infractions decreased from 1.4 or more per minute during baseline to less than 0.10 per minute during adult and peer monitor conditions. A generalized decline was noted also in the morning and afternoon recesses.

Visible reductions in negative interactions from peers were observed with the onset of intervention with both boys. Specifically, negative interactions from peers to Dennis decreased from average rates of 0.50 or greater to average rates of 0.16 or less during all intervention conditions. Negative interactions from peers to Ed decreased from baseline averages of approximately 0.25 to below 0.10 per minute during peer monitoring.

An examination of the rates of praise indicates that Dennis and Ed were praised frequently only during the initial consultant condition. Dennis was praised approximately every 2 minutes and Ed was praised approximately every 3 minutes. During later conditions, the boys typically were praised either by the consultant or by their monitor once every 10 minutes.

Peer Monitors

Figure 3 presents Dennis' peer monitors' average rates of negative interactions for their baseline and peer monitor phases. Shaded bars represent data from sessions in which a child was *not* appointed to monitor; open bars represent data from sessions when a child was appointed to monitor. Baseline observations for children appointed as peer monitors were collected in the morning recess prior to the children's appointment and training as monitors. (The monitors' baseline sessions corresponded in time with Dennis' consultant and recess supervisor conditions.) The three children (P_1 , P_2 , and P_4) who were observed during the morning baseline, averaged 0.72 to 0.30 negative interactions per minute. This rate was well below Dennis and Ed's baseline rates. Even so, their negative interactions immediately decreased to near zero rates (see open bars) during the morning recess, once they were appointed to monitor Dennis. A generalized decrease in their rate of negatives also was

noted during this recess to days in which they were not appointed as monitors (see shaded bars).

All five children were observed prior to and during their peer monitor appointments in the afternoon recess. Their appointments to monitor in the afternoon recess also produced an immediate decrease in four of the children's rates of negative interactions. No systematic change was noted with P_3 ; he already exhibited a low rate of negatives. Again, the decrease was evident both on the days in which they monitored and on the days in which they did not.

The peer monitors typically were praised once or twice per recess by the consultant. Teacher praise was observed on only one occasion.

Program Implementation

The frequency and consistency with which point fines were levied for Dennis and Ed are presented in Table 2. Points were withdrawn most consistently during the consultant condition and progressively less consistently during subsequent phases.

In contrast to point withdrawals, the peer monitors were the most frequent awarders of bonus points. Table 3 presents the number of bonus points awarded over the number of points available. Dennis and Ed both received their highest percentage of available point awards during the peer monitor conditions, earning 75% and 94%, respectively.

DISCUSSION

The results of this study contribute to the peer-mediated intervention literature in three ways. First, previous studies have not involved children as behavior change agents for aggressive classmates. In this study, we demonstrate that peers can implement a token system to maintain reductions in previously high-rate negative interactions. The results suggest that peers subsequently may be able to initiate reductions in high rates of negative interactions. Second, a package designed only for adult implementation was adapted without loss of program effectiveness for use by moderately retarded peers. Although peers withdrew points less consistently than the adult monitors, the effects

Figure 3. Minimum rate per minute of negative interactions exhibited by the peer monitors (presented as an average rate for each condition for each peer monitor, P₁-P₅). During the peer monitor condition, open bars represent sessions in which the child was appointed to monitor; shaded bars represent sessions in which the child was not appointed to monitor. Numbers below each bar represent the total minutes of observation on which the condition average is based.

produced with the target children were comparable. This finding is contrary to that of Walker, Hops, and Greenwood (1981), the developers of the RECESS package, who caution that consider-

able decay in the achieved treatment effects may occur when the program is turned over from the consultant to other implementors. Third, we assessed the effects of peer monitoring not only on

Table 2
Number of Points Withdrawn Over the Number of
Episodes Scored for Negative Interactions or Rule
Infractions or Both

	Con- sultant	Recess super- visor	Peer monitor	Self- monitor
Dennis				
Morning	19/39 (49%)	6/26 (23%)	9/103 (9%)	3/38 (8%)
Dennis				
Afternoon	N.A.	N.A.	9/83 (11%)	0/10 (0%)
Ed				
Noon	2/3 (67%)	N.A.	6/34 (18%)	0/11 (0%)

the children who were monitored, but also on the children who served as monitors. Although researchers have noted the need for such data (cf. Greenwood, 1981), they have rarely been collected. In fact, data collected with the peer monitors have provided an intriguing finding in this study: The four peer monitors (P_1 , P_2 , P_3 , and P_4) who exhibited undesirable rates of negative interactions immediately and substantially decreased these rates following their appointments as monitors. Furthermore, they generalized these improvements within settings from days in which they monitored to days in which they did not monitor. These results, in combination, provide strong encouragement for the use of peer-mediated interventions.

The order of the treatment conditions may have influenced the degree of change achieved through peer monitoring. For instance, the success and speed with which the peer monitoring condition reduced Dennis' negative interactions in the afternoon recess may have been enhanced by the earlier sequence of adult monitoring and peer monitoring conditions, implemented in the morning recess. Likewise, the successful reduction of Dennis' negative interactions during the noon recess, when Dennis was appointed to monitor Ed, may have been influenced by Dennis' prior experience as a monitored child. Additional research is needed to determine the conditions under which peer monitoring, self-monitoring, and appointment to the

Table 3
Number of Bonus Points Awarded Over Number of
Points Available

	Con- sultant	Recess supervisor	Peer monitor
Dennis			
Morning	15/46 (32%)	10/32 (31%)	101/132 (76%)
Dennis			
Afternoon	N.A.	N.A.	83/112 (74%)
Ed			
Noon	12/18 (67%)	N.A.	62/66 (94%)

role of peer monitor may constitute successful, independent interventions for the group of behaviors examined in this study. Dennis' results suggest that these interventions, at the very least, may be used to extend behavior change to new time periods (i.e., afternoon and noon recess) and to maintain behavior change in the setting originally treated by adults.

The extent to which treatment effects generalized across the three daily recess periods differed for Dennis and Ed. Dennis did not generalize his improved behavior from one recess to another; his rate of negative interactions remained high and variable in each recess until intervention in that recess. In fact, before an intervention was implemented in the afternoon and noon recesses, he was overheard remarking to a peer, "I don't need to behave now; there aren't any points in this recess." Dennis' comment and his lack of generalization across settings suggest that some form of contingency was necessary for his behavior change.

In contrast, Ed's negative interactions gradually declined in the afternoon and morning recesses, following his dramatic reduction of negative interactions during intervention in the noon recess. The extent to which the noon intervention may have prompted the generalized decline is not clear. The continued, albeit lower, rate of negative interactions in the afternoon and morning recesses suggests that Ed, like Dennis, discriminated the recess periods in which the intervention was in effect from

those in which it was not. Perhaps passage of time influenced Ed's behavior change somewhat. Ed transferred to the class shortly before his involvement in the study; some of the generalized improvement may have been a function of his adaptation to the new setting. Or, perhaps the peer monitoring, conducted with Dennis during the morning and afternoon recesses, became a cue for Ed to behave more appropriately in these settings.

Follow-up data, collected in September of the new school year, show an increase in Dennis' and Ed's rates of negative interactions. Although negative interactions increased well above treatment rates, these increases remained below the preceding year's baseline averages for the most part. The change in peer group, location, teachers, and passage of summer vacation may have contributed to the lack of maintenance. Research by Paine *et al.* (1982) suggests that booster sessions may be needed to maintain the treatment gains initially obtained with the RECESS program.

Follow-up observations were not possible during the new school year with the five children who served as Dennis' peer monitors. Data samples collected with the monitors during the afternoon recess suggest that the monitors' behavior change was durable, at least for the short term. The children, who each monitored approximately once a week, improved their behavior on afternoons in which they monitored and extended these improvements to the intervening afternoons in which they did not monitor. Further research, however, is needed to determine if these effects would endure over longer periods of time.

The behavioral improvements observed in the children who assumed the role of peer monitor were perhaps the most interesting benefit observed in this study. These positive results provide strong encouragement for the use of peer appointments; and in fact, they suggest that peer appointments be considered as a therapeutic intervention for the child receiving the appointment. Several factors that may have influenced the monitors' behavior during their appointments merit attention. For instance, the appointment to monitor may have restricted

the monitors' social circle to the child whom they were monitoring. Given that the monitored child was playing appropriately, the monitors might have few opportunities to engage in negative behavior. Data should be collected on playmate selection in future investigations, to determine the extent to which the monitor and monitored child played together.

Program contingencies may also have influenced the monitors' behavior change. Instructions from the consultant on how to monitor and praise for good monitoring may have cued and reinforced the monitors' appropriate play behavior. Likewise, the monitors' active participation in the group contingency may have affected their rate of negative interactions. During recess, the monitors wore a string of point beads which they used to count point awards and fines for their monitored peers. These points by the monitor were exchanged later for the daily small group reward and weekly class reward (in which the monitors participated). The beads and the act of awarding points may have consistently cued the monitor to model good behavior and to refrain from negative interactions. Additional research is needed to determine which if any of these program elements were responsible for the unexpected improvements exhibited by the peer monitors.

Finally, the consistent differences between the adult monitors' and peer monitors' use of point fines and point awards should be addressed. The adult monitors withdrew points more consistently following Dennis' and Ed's negative interactions or rule infractions than did the peer monitors, who rarely withdrew points from the boys. Peers indicated reluctance to withdraw points by their low rate of point withdrawals (24 point fines for 220 episodes of negative interactions or rule infractions) and by their negative ratings of point fines on the biweekly consumer satisfaction scale. (Peer monitors consistently rated their task of point fines as "not liked," but rated all other aspects of their monitoring role as "liked.") The relationship between the point fines and the reduction in Dennis' and Ed's negative interactions was not assessed sys-

tematically; point fines were simply one element in a complex treatment package. Even so, the results of this study caution that response cost procedures be initiated by adult monitors and not by peer monitors. Interestingly, the peer monitors awarded bonus points more frequently than did the adult monitors. Again, the relative influence of point awards in maintaining treatment gains was not assessed. Future research is warranted to determine the role that point awards played in maintaining treatment gains; perhaps the companionship and feedback of a peer "buddy" would be sufficient to maintain already reduced rates.

In summary, adaptation of the RECESS program for partial implementation by peers produced benefits both for the children receiving the treatment and for the children dispensing consequences. Strain et al. (1981), Greenwood (1981), and Greenwood and Hops (1981) have enumerated the potential risks and benefits for children involved as behavior change agents. Several are worth discussing with respect to this study. The risk that peers might use the point system and their appointment status irresponsibly was minimized by providing feedback at the conclusion of each recess regarding their monitoring behavior and by the presence of the consultant during many of the intervention recesses. The risk of peer pressure from children not directly involved in the program was minimized by the inclusion of a group contingency. Members of the class not included as monitors or target children still participated in a weekly reward. When enough points were not collected for the weekly reward, the reward simply was postponed until criterion was reached; it was never withdrawn. Discomfort resulting from appointment to monitor was routinely assessed. Monitors consistently indicated on a consumer satisfaction scale that they liked being a monitor, liked giving points, but did not like withdrawing points.

Finally, the behavioral improvement observed in the children who assumed the role of peer monitor was perhaps the most interesting benefit observed in this study. Future researchers might examine the generality of this effect as a potential intervention strategy.

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