

Independent and Interdependent Group Contingencies: Smoothing the Rough Waters

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Skinner, C. H., Cashwell, C. S., & Dunn, M. S. (1996). Independent and interdependent group contingencies: Smoothing the rough waters. *Special Services in the Schools, 12*, 61-78.

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Abstract:

Independent and interdependent group contingencies have many applied advantages for influencing behaviors in school settings. However, there are negative side effects associated with these group oriented contingencies. A scenario is presented that illustrates some negative side effects of independent and interdependent group oriented contingencies. Specific recommendations for altering group oriented contingencies to reduce these negative side effects and increase the probability that teachers will use these contingencies to increase students' academic performance and prosocial behaviors follows the scenario.

Article:

Behavior modification is a term often used by school personnel to describe the use of contingencies to manage behaviors. Contingencies specify the dependency between behavior and its antecedent and consequent events (e.g., teacher reads word [antecedent], students write word accurately [response], teacher praises students [consequence]). Contingency managers provide access to consequent events or stimuli contingent upon responses or behaviors.

Although contingency management programs have been used to alter a variety of children's behaviors, behavior modification or contingency management is underutilized in education environments (Englemann, 1991; Forness & Kavale, 1991). In fact many teachers are opposed to using behavioral principles in their classrooms (Pumroy & McIntire, 1991). Several reasons may account for this opposition to contingency management in the classroom. Teachers, administrators, and other school personnel often lack education or training in contingency management procedures (Watson, 1994) and what training they do receive is often incorrect (Cooke, 1984). Psychoeducational fads, professional turf battles, and misconceptions about the philosophy and negative side effects of contingency management may also contribute to misuse and rejection of applied behavior analysis procedures in general education environments (Pumroy & McIntire, 1991).

Special education teachers may use more *individual* positive reinforcement programs (a contingency where a student receives access to a stimuli contingent upon their behavior and the probability of that behavior occurring in the future increases) than other educational professionals to increase academic learning rates, decrease inappropriate behaviors, and shape socially appropriate behaviors (Iano, 1987; Forness & Kavale, 1991). This may be due to training, a strong behavior analysis research base applied to students with disabilities, legal requirements for individualized education programs for students with disabilities, and additional resources available for special education (Englemann, 1991).

Regardless, the goals of education professionals across all settings typically include managing, shaping, and altering the behaviors of *groups* of students. Establishing individual positive reinforcement programs with distinct target behaviors, criteria levels, and reinforcers for each member of a group can be time and resource consuming, which may decrease the probability that both general and special educators will use individual positive reinforcement programs (Hall, 1991; Heller & Monahan, 1977; Martens & Wirt, 1988; Piersel, & Gutkin, 1983). Independent and interdependent group oriented contingencies can address some of the

procedural and managerial limitations of individual contingencies and may lead to increased use of positive reinforcement in school settings.

INDEPENDENT GROUP CONTINGENCIES

When independent group contingencies are in place the target behaviors, criteria, and reinforcers are the same for each member in the group (Litow & Pumroy, 1976, Shapiro & Goldberg, 1986). Only students who meet the specified criteria receive access to the reinforcing stimuli. Grades are an example of an independent group contingency. Each student who makes 90% or above (same criteria, same target behavior) receives an A (same reinforcer).

Perhaps the biggest advantage of independent group contingencies over individual contingencies is that keeping target behaviors, criteria, and reinforcers, equal across all students makes independent group contingencies easier to manage. Keeping these variables equal also may account for both students and teachers rating independent group contingencies as being more fair than individual contingencies (Axelrod, 1973; Grandy, Madsen, & De Mersseman, 1973). However, there are risks associated with using independent group contingencies. A scenario is used to demonstrate the limitations and negative side effects of independent group oriented contingencies. Specific recommendations involving interdependent group contingencies and randomization of target behaviors, criteria, reinforcers, contingencies, and timing designed to avoid the problems highlighted will follow the scenario.

THE SCENARIO

Joe, a school social worker, worked tirelessly to arrange a field trip (canoeing) for a class of students with behavior disorders. The goal of the trip was to build group cohesion and cooperation. Arranging the trip was very difficult. Administrators were concerned about students stealing, fighting, and possibly getting injured or injuring someone else. Joe told the administrators that only students who had no unexcused absences and did not engage in any major school or classroom rule violations within a 3 week period prior to the trip would be allowed to participate. Joe successfully recruited sufficient support staff, respected members of the community, and professional river guides to donate their time as chaperons for this canoe trip.

The teacher appreciated Joe's efforts. Joe's enthusiasm for the canoe trip was contagious and the contingency he established with the children seemed fair. However, two students, Bob and Ken, were caught stealing from the school cafeteria 2 weeks before the canoe trip, Ken was very excited about the canoe trip and had been doing well (academically, emotionally, and socially) for the past three months. Both students became very upset when they were told they could not go on the trip. For the next 2 weeks, Ken and Bob experienced significant depreciation in the behavioral, academic, and emotional gains they had made.

Joe and the teacher had trouble finding someone to supervise Ken and Bob while the class was on the canoe trip and were concerned that the trip might have to be canceled. Further, the teacher was upset because she believed that Bob coerced Ken into breaking into the cafeteria. The teacher, Joe, and all the students in the classroom considered it unfair to exclude Ken from the trip because his academic performance and social behaviors had been stronger than any other students' over the past 3 months. Particularly upset was Ken's best friend, Ben. Ben was somewhat withdrawn, had no other friends in the class, was often picked on by other students, and was initially worried about going on the canoe trip. However, Ken had convinced him how great it would be and they had already asked the teacher if they could share a canoe. During the 2 weeks prior to the canoe trip, Ben became even more withdrawn and failed to complete many of his academic assignments. Also, the teacher believed that Bob was anxious about the canoe trip and intentionally got caught stealing to avoid going.

Despite all these problems, the group goes on the trip. Ken and Bob go to another classroom where they are given a stack of independent seat work to keep them busy throughout the day. Bob takes one look at the stack of work and throws it across the room. This is just the beginning of a long and horrendous day for the supervising teacher and Bob. Ken's day goes much better. After getting the independent seat work he begins to cry and his temporary teacher feels sorry for him. Therefore, she helps Ken complete his work quickly and then allows him

to run errands for her the rest of the day. Meanwhile on the river, things are not going well for Joe, the teacher, the volunteers, or the students. Tasks like carrying the canoes from the trailer to the water, preparing the lunch, keeping the canoes together, and carrying the canoes across low water require the students to cooperate. Unfortunately the students work very poorly together and spend much of the trip fighting, bickering, accusing, and tattling on each other.

THE PROBLEMS

Joe used an independent group contingency. It was a group contingency because each student had the same target behaviors, (major rules violations and truancy), criteria for earning rewards, (zero levels for 3 weeks), and reward (canoe trip). It was independent because each student earned access to the reward contingent upon their own behavior (Litow & Pumroy, 1975; Turco & Elliott, 1990). Many of the problems presented in the above scenario were caused by Joe's contingency. After discussing these problems and their relationship to contingencies, some specific procedures that may help avoid these problems will be described.

Some Win Some Lose

Often when individual or independent group contingencies are used, some group members earn access to reinforcers and others do not. Withholding reinforcers from some group members can, (a) limit the pool of available reinforcers, (b) cause legal and ethical problems, (c) reduce the strength or quality of reinforcers, and (d) establish or support a class system within the group.

Limited pool of reinforcers. Individual and independent group contingencies tend to limit reinforcers. Although teachers and parents may object to the use of tangible reinforcers (O'Leary, Poulos, & Devine, 1972), because reinforcers such as food or tokens are easier to deliver to some students and not others tangible reinforcers are often used in individual and independent group contingencies. Students, teachers, and parents may rate activity reinforcers, especially educational activities, as more acceptable than tangible reinforcers but they are often difficult to deliver to some group members and not others (Sulzer-Azaroff & Mayer, 1986). When activity reinforcers require students to move to a different environment and some students earn access to the reinforcing activity and others do not, the teacher is still responsible for supervising students who do not earn reinforcers. A solution is to place the students who do not have access to the activity in another room and have another teacher supervise the students. Supervising teachers may have trouble managing the temporary students. Some may go to great lengths to make this environment punishing. In our scenario, a power struggle developed in the supervising teacher's classroom as Bob displayed high rates of misbehavior and the supervising teacher attempted to make Bob's time in her classroom as aversive as possible. Supervising teachers may also display a compensatory reaction and try to make students' time in their classroom as pleasant as possible because they feel sorry for the students who did not earn the activity reinforcer. This is how the teacher reacted with Ken to compensate for the "unfair treatment" he received. This compensatory reaction can become a serious problem because students who do not earn access to the reinforcing activity may actually get placed in a more reinforcing environment than the students who earned the reinforcing activity. Therefore these students may actually be reinforced for inappropriate behavior. Finally, supervising teachers may have trouble with temporary students because they are often less familiar with the students and the students are less familiar with the teacher, the other students in the classroom, and the manner in which the classroom is managed.

Legal and ethical problems. Legal and ethical problems can arise when educational activities are used for reinforcers. It is illegal to deny students with disabilities access to educational opportunities based solely on their disabilities (Turnbull, 1990). If a student with a learning disability or mental retardation does not meet an educational target criteria (e.g., complete their independent seat work science assignment at 80% accuracy) it may be in violation of Individuals with Disabilities Education Act (IDEA) to deny access to an educational activity reinforcer, (e.g., going outside to collect insects). Similar problems arise when students with behavior or emotional disabilities behave inappropriately and do not earn access to educational activities.

One of the objectives of the canoe trip was to build group cohesion and cooperative behaviors. The students who were not allowed to go because they stole may have needed this social skills learning experience more than

those who attended the canoe trip. Therefore, even when excluding children from educational activity reinforcers is legal, denying students important educational experiences may be unethical or, at the very least, poor educational practice.

Reduction of reinforcer quality. Sometimes excluding particular group members makes an activity less reinforcing for the rest of the group. In our scenario, the quality of the reinforcer, the canoe trip, may have decreased considerably for Ben because he could not engage in the activity with his only friend in the group. Therefore, the consequence for Ken's behavior impacted Ben's behavior because the reinforcer was weakened.

Class system. Because criteria to earn reinforcers is the same across all group members, independent group contingencies may promote a class system in schools. "Smart" and "well behaved" children get access to reinforcers and students whose academic performance and social behavior are below specified criteria do not. These classification systems tend to discourage, rather than encourage group cohesion and further divides the students into reinforcer "haves" and "have nots" (Slavin, 1977). Because being a member of a peer group is important, the reinforcer "have nots" may form their own group where members reinforce inappropriate rather than appropriate behaviors within the group. The independent group contingency employed by Joe was inappropriate because it promoted this class system and circumvented the objective of building group cohesion.

Reactions to Not Meeting Criteria

When Ken and Bob were informed that they did not get to go on the trip, they reacted inappropriately but not unexpectedly. Informing children that they do not get access to reinforcers can serve as a discriminative stimuli which can occasion inappropriate behaviors (Hayes, 1976). The probability of this inappropriate behavior may be greater when very desirable reinforcers are used.

In our scenario, Joe established the individual contingency 3 weeks before the scheduled trip. Unfortunately, Ken and Bob were caught stealing, thereby losing their opportunity to go on the trip after only 1 week. In addition to the initial negative reactions from Bob and Ken, the teacher had two students in her classroom for the next 2 weeks who were not only angry and upset but also did not have a reason to behave. Both the initial reactions and Ken and Bob's knowledge that the independent group contingency no longer applied to their behaviors may have increased the probability of Ken and Bob misbehaving. During the next 2 weeks, the rest of the class had to spend school time preparing for the trip. These activities may have served as additional discriminative stimuli for Ken and Bob to misbehave. The teacher could have excluded Bob and Ken from these preparation activities. However, this would have encouraged their classification as reinforcer "have nots" and the teacher would have had to plan other activities for Ken and Bob that were less preferable than the preparation activities.

One solution to these problems would have been to allow Ken and Bob to perform some sort of restitutive behaviors. However, altering contingencies results in mixed messages being sent which is poor practice, particularly when students have behavior disorders (Wielkiewicz, 1986). Altering contingencies after they are established can reduce the effectiveness of future contingencies (Sulzer-Azaroff & Mayer, 1986). Another problem with altering the independent group contingency is that students are likely to consider it very unfair when contingencies are broken some of the time and not others. Therefore, contingency managers may increase inappropriate behaviors when they allow students to perform restitution in some instances and not others.

Another solution would have been to set a more mild criteria that students would surely meet. This strategy has probably been tried many times by many teachers only to find that their judgements are often inaccurate. It is difficult to set a criteria level that every student will meet and, if the criteria is set too low, the contingency will not alter target behaviors. A related strategy would be to use individual contingencies by setting different target behaviors and criteria levels for each student based on their past behaviors. As with independent group oriented contingency, no matter how skilled (or lucky) the contingency manager is, it is likely that one or more of the students will not meet their goal. These individual contingencies also take more time and effort to manage and students may consider them unfair (Axelrod, 1973). Students with more stringent criteria who do not earn

access to the reinforcer are likely to react negatively if other students whose performance or behaviors are worse receive access to the reinforcer. In our scenario, Ken may have regressed even more if Bob broke five major school rules and was allowed to go on the canoe trip, but Ken broke only one rule and could not participate. This reaction can also carry over to other staff. In our scenario, the supervisor teacher delivered reinforcers to Ken because he/she felt sorry for Ken. This may have been more likely to occur if other students who broke more rules than Ken were allowed to go on the trip.

Reinforcers for All

One disadvantage of using independent group contingencies as opposed to individual contingencies is that some events serve as strong reinforcers for some students but for other students they are weaker reinforcers, neutral stimuli, or even punishers (Hayes, 1976). In the above scenario, the teacher was concerned that Bob may have intentionally got caught stealing in order to avoid going on the canoe trip because he was scared. Therefore the consequent stimuli (access to the canoe trip) may be a punisher for Bob. Because the consequent stimuli may be a punisher for Bob, his behavior may have served an escape avoidance function because it allowed him to avoid contact with an aversive stimuli. Consequently, Bob's stealing behavior may have been negatively reinforced as opposed to punished.

SOLUTIONS

One simple solution for some of the problems in the scenario would be to allow or require all students to go on the field trip and avoid using any type of contingency. This solution would reduce the problem of finding someone to supervise Bob and Ken, reduce the reinforcer "haves" and "have nots" class structure, and eliminate the antecedent stimuli that preceded Bob and Ken's inappropriate behavior. However, such an approach underutilizes positive reinforcement procedures which have been shown to be effective for increasing learning (both social and academic) rates (Sulzer-Azaroff & Mayer, 1986). Next, procedures and techniques designed to reduce the problems in the scenario will be described which still allow one to use group oriented positive reinforcement to improve students' social and academic behaviors.

Interdependent Group Contingencies

In the scenario, the goal of the canoe trip, to build group cohesion, could not be met if all members of the group did not participate in the activity. Therefore, a contingency where the entire group either earns or does not earn the reinforcer would be more appropriate than individual or independent group contingencies. When interdependent group oriented contingencies are employed, the entire group (e.g., class) is allowed access to reinforcement contingent upon some aspects of the groups behaviors (Litow & Pumroy, 1975). Averages, (mean spelling test score over 85%) minimums (all must get above 70%), highs (if any three students get above 95%) and other group oriented criteria levels can be set and either all or none of the group receives access to the reinforcer if the group meets the criteria.

Interdependent group contingencies have several other advantages over individual contingencies and independent group contingencies. Interdependent group contingencies can be easier to manage and more cost and time effective than independent group contingencies (Lew, Mesch, Johnson, 8c Johnson et al., 1986; Pigott, Fantuzzo, & Clement, 1986; Salend, Reynolds, & Coyle, 1989; Turco & Elliott, 1990) because record keeping may be easier (Greshatn & Gresham, 1982), and administering rewards can take less time when the same reinforcer is delivered in an all or none fashion (Axelrod, 1973). Interdependent group contingencies may also increase prosocial cooperative behaviors, sharing of resources, and social contacts among students (Gamble & Strain, 1979; Lew et al., 1986; Salend et al., 1989; Slavin, 1987; Speltz, Shimamura, & McReynolds, 1982).

Delivering reinforcers to all or none of the group members may reduce several of the problems highlighted in the scenario. The legal limitations associated with withholding educational experiences from students with disabilities may be resolved because other students will not receive access to educational opportunities that are denied to students who do not earn access based solely on symptoms of their disability. However, ethical problems may be exacerbated when educational activities are withheld from the entire group of students.

Because everyone in the group either receives access or does not receive access to reinforcers, interdependent group contingencies do not establish a class system within the group based on reinforcer "haves" and "have nots." Increased tolerance, understanding and cooperation among diverse students is a goal in most school systems. Students and adults have a tendency to form social peer groups based on common characteristics such as race, SES, etc. By giving everyone in the group a common goal, interdependent group contingencies can increase students' interaction with each other in order to help meet the group goal (Gresham & Gresham, 1982). FOT example, in one classroom a teacher gave every student a different social goal based on individual problems they were having. One student's goal was to engage in group activities with other students during free time. Because reinforcers were delivered to the entire group based on how many students met their individual goal, many members of the class would encourage the student to join in their games during recess. This increased interaction among students may increase respect for individual differences and cooperation levels across diverse students.

Interdependent group contingencies increase the pool of available reinforcers. Rather than delivering tangibles, teachers can deliver activities. For example Greene, Bailey, and Barber (1981) improved students' bus riding behavior by using an interdependent group contingency based on noise levels. As long as students stayed in their seats and kept the noise down, the bus driver played music. If an independent or individual group contingency was used, separate radios would have had to be supplied to each student based on their individually monitored behavior. The bus driver could not measure each students' contribution to noise levels and deliver the reinforcers to each student based on these measures and still drive the bus.

As previously stated, some reinforcing activities are more reinforcing when all or specific members of a group are also engaged in the activity. In our scenario, Ben lost interest in going on the trip and regressed socially because Ken was not going on the canoe trip. Reduction of reinforcer quality caused by excluding some group members is also resolved when interdependent group contingencies are employed.

Randomize Contingency Components

Some problems described in the above scenario are not resolved with interdependent groups contingencies and other problems may arise through the implementation of interdependent group contingencies. Bob and Ken reacted negatively when they were informed that they did not earn access to the reinforcer. When an interdependent group contingency is being used and an entire group is told that they did not earn access to a reinforcer, the entire group may have similar reactions. Students who were meeting expectations and behaving well may become even more upset because they may perceive that they are being punished for other students' behavior (Stewart & McLaughlin, 1986). When this occurs, students may feel they are being treated unfairly and may be more likely to misbehave. One or two students' misbehaving is a bad situation, but an entire group of students engaged in similar behaviors at the same time can be a dangerous situation. Also, students may address their frustrations at the student or group of students who caused them to fail to earn their reinforcers (Hayes, 1976). Blaming behaviors can escalate into a group of students becoming aggressive towards the scapegoat.

A related problem is one of sabotage (Barrish, Saunders, & Wolf, 1969). Suppose, for instance, in the scenario an interdependent group contingencies was in place. Now Bob's misbehavior could cause the entire group to lose access to the reinforcer. This is especially likely to happen when a stimuli or event is reinforcing for some group members and punishing for others. Token economies control for this problem because students can exchange tokens for different reinforcers. Although giving students choices of reinforcers solves the sabotage problem it also makes it difficult to use activities as reinforcers, increases the probability of token or reinforcer stealing, and requires teachers to spend much of their time delivering tokens to students based on their own behaviors and managing a store rather than instructing students (Hall, 1991).

Many of the problems left unresolved by the interdependent group oriented contingencies can be reduced by randomizing contingency components (Skinner & Watson, 1995). Contingencies appear to be rather simple tools describing if-then relationships: if you do this, then you get that. However contingencies require subjects,

antecedents, target behaviors, criteria, and consequences, which all occur within a temporal context. By randomizing these variables the negative side-effects associated with interdependent group oriented contingencies that occur when students do not earn access to reinforcers may be reduced.

Bob and Ken reacted negatively when they were informed that they did not earn access to the reinforcer. Although powerful reinforcers are more likely to occasion target behavior change (Neef, Shade, & Miller, 1994), they may also be more likely to occasion inappropriate behavioral or emotional outburst when students learn that they did not earn access to these reinforcers. A related problem was that after Bob and Ken lost their opportunities to earn the reinforcer their behaviors were no longer under the control of the contingency. These problems may have been avoided with consistent use of interdependent contingencies and randomizing contingency components with a lottery system.

In our scenario, early in the school year the teacher could have employed contingency lotteries (Skinner & Watson, 1995). Materials needed for these procedures are simple. For example, the teacher could have used four plastic containers labeled reinforcers, target behaviors and criteria, contingency, and students.

The container labeled "reinforcers" could contain many slips of paper with a group reinforcer or reinforcing group activity written on each slip of paper. The activities could be generated by the students and teacher throughout the school year. Some activities that require little time to prepare (e.g., listening to music during independent scat work or playing educational games) could be delivered immediately. Although immediate reinforcement is stronger than delayed reinforcement (Neef et al., 1994), students also must learn to work for delayed reinforcers (Wielkiewicz, 1986). Therefore, other reinforcers including activities that take more time to prepare and plan for, such as the canoe trip, should also be included.

With this reinforcer lottery, antecedent conditions are changed because students are no longer working for a specific reinforcer (Slavin, 1987). Therefore students may be less likely to sabotage a program because they do not like a reinforcer or have strong emotional reactions when they fail to earn a very powerful reinforcer because antecedent conditions never establish the specific reinforcer.

The container labeled "behaviors and criteria" could contain slips of paper reading "80% on spelling test, zero trancies over the past week, zero trancies over the last month, no fighting over last two weeks, no fighting on Friday." By randomizing target behaviors and criteria, student behaviors could always be under contingency control because students, or anyone else, could never evaluate their behaviors and determine that they have failed to meet criteria levels.

Slips of paper in the "contingency" container papers would have information such as "group average, group high, group low, group minimum, or individual student written" on them. Therefore if "80% on spelling test" was drawn and then "group average" was drawn the teacher would merely look at the group's average on the last spelling test to determine if the group met the criteria. If the group met this criteria then the teacher or a student would draw a reinforcer from the appropriate container. If "individual student" was drawn, then the teacher would have to draw a student's name from the "student" container and determine if the group gets access to the reinforcers based on that particular student's last spelling test.

One author used this technique in order to occasion other children to praise an unpopular child. This student had childhood schizophrenia, lacked social skills, and did not fit in well with the other students. When the teacher drew "95% on the history test" from the first container and "individual student" from the second container all students were hoping that the unpopular student's name would be drawn because they knew he was the only one to get such a high grade. When the unpopular student's name was drawn he received high levels of sustained social praise from his peers (a long and loud round of applause). Although readers may view this applause as just another positive side effect of the contingency management program, for this student this peer praise was a rare and therefore important event.

It may also be better to avoid determining when these drawings would take place. Teachers may want to wait until someone has a good day or did something exceptional before running the lottery. Students often tell teachers when other students perform poorly or misbehave. This tattling behavior often annoys teachers and hinders cooperative behaviors and the development of group cohesion. However, if teachers conduct the lottery when students perform well the entire group of students may be more likely to notice and bring to the teachers attention another students strong performance because this may result in another run at the contingency lottery.

RECOMMENDATIONS AND CAUTIONS

The more target behaviors included in behavior management programs, the less likely the contingency is to be effective for any one specific behavior (Mace, Brown, & West, 1987; Slavin, 1987). Therefore, teachers who have several target behaviors that are major problems may want to start with a limited number of target behaviors set at different criteria. Another strategy would be to increase the probability of drawing these priority target behaviors by putting more slips with those behaviors into the pool. As student behaviors begin to improve, shaping programs can be implemented by adjusting the criteria levels or including more distinct target behaviors.

Interdependent group oriented punishment procedures should *never* be used. Students generally find interdependent group positive reinforcement fun but less fair than independent group oriented contingencies (Stewart & McLaughlin, 1986). Interdependent group punishment is likely to be perceived as extremely unfair and may occasion more students to engage in higher rates, stronger intensity, and longer durations of inappropriate behaviors.

One of the goals of randomized interdependent group contingencies is to increase student cooperation. Students may blame, threaten, or even attack their fellow students who, cause them to fail to earn a particularly strong group reinforcer (Bear & Richards, 1980). In order to prevent this from occurring, teachers should draw the "target behavior and criteria," "contingency," and "student" slips of paper from the container and the information provided on these slips of paper should not be made public unless the group earned the reinforcer. Similarly, reinforcers should never be selected unless it has been determined that they were earned (Skinner & Watson, 1995).

Several things can be done to make interdependent group oriented contingency more salient, and therefore stronger (Nelson & Hayes, 1981). It may help to have reminders of the contingencies and reinforcers plainly visible. Keeping the containers on the teacher's desk or a list of available reinforcers posted on a bulletin board may serve as a discriminative stimuli for students. Having the group add to the reinforcers and adjusting the criteria and target behaviors frequently may also increase the salience of the contingency. During a mathematics lesson on probability one teacher had students calculate the probability of drawing specific reinforcers. In addition to serving as a meaningful application of probability, this lesson also increased the salience of the contingency lottery. It may also help to make a big production over the drawings. When a criteria has been met, allowing a particular student to draw the reinforcer may serve as an incidental reward.

If students misbehave when they do not earn the group reinforcer, you should remind them that drawings can be held at anytime and misbehaving immediately following the drawing is unlikely to occasion another lottery run. From the beginning, teachers should also establish their right to occasionally choose the reinforcer. This can allow teachers to plan educational activities in advance.

While it is important to never rig the system for a loss, occasionally it is appropriate to rig the system for a win. Even if students figure this out they are unlikely to complain. In the example with the unpopular student who scored well on history tests, another student who was popular approached the teacher and told the teacher that he figured out that the teacher was rigging the system. More importantly, the student told the teacher that he knew why the teacher was rigging the system, so that the unpopular student would have his moment in the sun. Most importantly, without prompting, this popular student befriended the unpopular student.

Some teachers object to interdependent group contingencies because students who have performed poorly can still receive access to the reinforcers. We see this as a strength rather than a drawback. School should be fun for all students. But some students rarely earn reinforcers in school environments because of the over reliance on independent group contingencies. We recommend that teachers occasionally draw straight from the reinforcer container, by-passing the target behavior and criteria, contingency, and student containers altogether, particularly when a student performs exceptionally or the entire class has had a run of strong performances. Occasionally by-passing the criteria and target behavior and contingency components may improve the attitudes, behaviors, and learning rates in students who rarely receive reinforcers in school (Lew et al., 1986). This is how Joe could have handled the canoe trip. After arranging for the trip he could have stated that he was so proud of the class for X that he was going to draw a reinforcer. Then by palming the reinforcer saying "canoe trip" he would have achieved his goal of getting every student to go on the trip, while still using group oriented contingencies throughout the school year to reduce students' inappropriate behaviors and occasion and reinforce their prosocial cooperative behaviors academic performance.

CONCLUSION

The one problem that was described in the scenario but not addressed is the students' lack of cooperative behavior on the canoe trip. Cooperation is a skill that students must learn. Like any skill, students need opportunities to practice cooperative skills before they are required to use them in a pressure situation, such as a canoe trip. Nobody would send someone into a boxing ring to face a highly skilled opponent without first supplying that person with some skills of their own. Similarly one should not expect students, especially young students or students with underdeveloped social skills, to be able to automatically display high levels of cooperation without any training.

One way to increase cooperative skills is to teach them directly (Gresham, 1995). However, students also need an opportunity to practice and refine those skills across situations. Interdependent group contingencies have been shown to increase incidental levels of social interaction and cooperative behaviors among students (Lew et al., 1986; Speltz et al., 1982). If students are to master, maintain, and generalize the prosocial behaviors it is essential that teachers monitor and reinforce these prosocial behaviors when they occur (Stokes & Baer, 1977). Teachers who use peer-tutoring or cooperative learning strategies frequently in their class-rooms provide students with an opportunity to practice and refine these skills (Slavin, 1991). Without focusing specifically on these structured activities, we have attempted to demonstrate how interdependent group contingencies could be integrated into almost any classroom environment without requiring much teacher time and effort. Through the use of these contingencies teachers can occasion, reinforce, and shape cooperative pro-social behaviors among diverse classmates which may increase group cohesion and the probability that the students would cooperate under a high pressure situation, such as a canoe trip.

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