*GROUP CONTINGENCIES FOR GROUP CONSEQUENCES
IN CLASSROOM MANAGEMENT: A FURTHER
ANALYSIS¹*

CHARLES R. GREENWOOD, HYMAN HOPS, JOSEPH DELQUADRI,
AND JACQUELINE GUILD

UNIVERSITY OF OREGON

The relative effects of rules, rules + feedback, and rules + feedback + group and individual consequences for appropriate behavior were investigated in three elementary classrooms during reading and mathematics periods. The consequences were individual and group praise, and group activities. The total intervention package (rules + feedback + group and individual consequences) was most effective in increasing appropriate behavior. Rules + feedback produced increased appropriate behavior in two of the three classrooms. Rules alone produced no change in classroom behavior. Maintenance of appropriate classroom behavior was noted approximately three weeks after the program ended. Teacher's correct use of praise was also maintained for two of the three teachers at levels generated during the total package condition.

The frequency of studies reporting the use of group behavior management procedures (group contingencies and/or group consequences to control appropriate and inappropriate behavioral targets of individuals in groups has markedly increased in recent years. Early studies evaluated the effects of "total package" interventions combining a number of different components (Barish, Saunders, and Wolf, 1969; Bushell, Wrobel, and Michaelis, 1968; Schmidt and Ulrich, 1969; and Sulzbacher and Houser, 1968). Subsequent investigations examined the relative effects of the various components. For example, group consequence procedures have been found generally to be slightly more efficient, procedurally

and in effects, than individually scheduled consequences (Hamblin, Hathaway, and Wodarski, 1971; Herman and Tramontana, 1971; Long and Williams, 1973).

Rules and/or instructions as a contributing component to classroom management procedures have also received considerable attention. However, few studies involving group procedures have investigated the power of this condition independently of other components. Medland and Stachnick (1972) introduced rules alone after having originally paired it with group consequences. Rules have also been evaluated in conjunction with a light-feedback contingency (Packard, 1970). When rules have been evaluated independently—*i.e.*, separate from other components and immediately following the original baseline condition (Madsen, Becker, and Thomas, 1968; O'Leary, Becker, Evans, and Saudargas, 1969), results have suggested rules to be a relatively ineffective treatment procedure.

With two notable exceptions, few studies using group procedures have been concerned with generalization or maintenance of improved levels of behavior within or across settings. Herman and Tramontana (1971) found no evidence for generalization of treatment effects

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from an experimental room setting to the regular classroom. Moreover, experimental treatment, when conducted by the experimenters within the regular classroom, produced maintenance effects only slightly better than the original baseline. The authors suggested that generalization is more likely to be increased if classroom teachers are involved in the intervention program.

Hops and Cobb (1973) trained regular classroom teachers to use individual and group praise, in addition to increasing delays in group back-up consequences, as part of a total package intervention strategy. Observation data collected six weeks after the program ended indicated that the improved behavior maintained at levels equivalent to that produced immediately following the intervention.

The present study sought to evaluate the independent effect of rules, rules + feedback, and rules + feedback + group and individual consequences for appropriate classroom behavior. Using a multiple baseline design, the individual components were introduced in three classrooms in a sequential and cumulative manner until the entire package was in effect. The systematic use of contingent teacher praise and increased delays of group consequences was evaluated as part of the total intervention package. Maintenance of student and teacher behavior was investigated three weeks after the intervention program was terminated.

METHOD

Overview

The present investigation was conducted as part of a larger study designed to test the Program for Academic Survival Skills (PASS). PASS is being developed by the Center at Oregon for Research in the Behavioral Education of the Handicapped based on the work of Cobb (1972), Cobb and Hops (1973), and Hops and Cobb (1973). The double focus of the program was on training teachers in the use of group reinforcement contingencies and conse-

quences, and in the use of contingent social consequences (*e.g.*, praise and approval) to control and maintain appropriate classroom behavior.

Three participating teachers were enrolled in a 3-hr practicum course in classroom management offered by the first author. As part of the course, the teachers and two consultants met in four 2.5 hr meetings after school to read, discuss, and role play various management procedures involved in the PASS program before they were implemented in the classroom setting. During the meetings, teachers were exposed to four personalized instructional units dealing with (1) the academic importance of appropriate attentional and work behaviors, (2) the specification of classroom rules and related appropriate classroom behaviors, (3) procedures for recording appropriate classroom behaviors, and (4) the identification and use of positive social and nonsocial reinforcement. In conjunction with the four after-school meetings, the consultants met with the teachers in their classrooms for approximately 30 school days to record and support the implementation of the group management procedures.

Subjects and Setting

The study was conducted in a single elementary school in a district of approximately 20,000 students. Three regular classroom teachers and their first-, second-, and third-grade classrooms participated. The self-contained classrooms were composed of 28, 20, and 20 students, respectively.

All three teachers were experienced, cumulatively accounting for 63 yr of service. Teachers had taught for 5.5, 6, and 5 yr respectively at the present school before the investigation.

Daily classroom schedules were idiosyncratic and consisted of various curricular activities ranging from reading and mathematics to arts and crafts. The group behavior management procedures were carried out during the daily reading and mathematics periods. During reading period, each teacher had divided her class into two reading groups (Reading I, II) based

upon the teacher's subjective impressions of slow and fast readers and behavioral compatibility at the beginning of the school year. Each teacher met with one of the groups for 40 to 45 min while the other group was elsewhere in the school engaged in another academic activity. When the second group returned for 40 to 45 min of reading instruction, the first group left the classroom to engage in another academic activity. Mathematics instruction in each class, however, was carried out with the entire class present. Mathematics periods were 20 min long for the first grade, 45 min for the second, and 60 min for the third grade.

All teachers used the Reading 360 Series (Clymer, 1969) as the basic text for reading instruction and the Elementary Mathematics (Eicholz and O'Daffer, 1971) text for mathematics. In addition, teachers used teacher-prepared supplementary materials in reading and math in the form of dittoed work sheets, games, *etc.* The basic curriculum activities consisted of traditional small reading groups (individuals read from the text and teacher asks questions), seatwork in the form of handout materials or blackboard work, and problems from the textbooks.

Apparatus

Each teacher was trained to use a modified version (Cobb and Hops, 1973) of Packard's (1970) clock-light apparatus. The present model consisted of an ordinary nightstand alarm clock (Westclox, 115 V ac, 60 cy) and a 15-W white light connected in a series circuit with a hand-held remote switch. The white light was screwed into a plastic base and placed in a section of the room visible to the entire classroom. The switch was connected to the apparatus *via* a 15-ft cord allowing teacher movement about the room.

Dependent Variables

Appropriate classroom behavior. The classroom teacher served as the primary observer for recording appropriate classroom behavior dur-

ing the daily reading and mathematics periods using the clock-light apparatus. As part of the second teacher-training meeting, each had developed a set of classroom rules or definitions of appropriate behavior based upon those suggested by Hops and Cobb (1973). During the third meeting, they were taught to use the clock-light to record appropriate behavior according to their own definitions. The teachers read about and discussed the recording procedure and role-played recording components with the consultant.

The teachers were trained to (1) set the clock hands at the 12:00 position—an arbitrary zero point, (2) write in a designated area on the front blackboard the start time of the session, (3) move the switch to the "on" position, turning on the clock and S^D light whenever *all* subjects in the classroom were complying with the teacher's classroom rules for appropriate behavior, (4) move the switch to the "off" position whenever *one or more* children were not complying with the rules, resulting in the termination of the clock-light signal (S^A), (5) note carefully the ending time of each session, and (6) calculate a per cent-appropriate classroom behavior score by dividing the time to the nearest minute on the clock (the number of minutes the entire class demonstrated appropriate behavior) by the total session time (end time minus start time) times 100. A minutes-to-per cent conversion table was provided for the teacher, limiting the calculations required to arrive at a per cent score. The per cent score was graphed daily by the teacher and constitutes the dependent variable. During follow-up, the consultant's per cent score was used as the dependent variable because the teachers were no longer using the clock-light apparatus.

Teacher social consequences. Data were collected daily in reading and mathematics periods by the consultant on two dichotomous forms of teacher social consequences. Consequences were defined as *correct* or *incorrect*, depending upon (1) the particular type of consequence dispensed and (2) the individual or classroom response

upon which the consequence was made contingent. All positive teacher social consequences were scored correct if they occurred contingent (within the next 5 sec) upon appropriate individual or group responses. These included all forms of verbal praise or approval, positive physical contact such as pats, touches, smiles, gestures, and positive feedback as to the correctness of an academic response.

Incorrect teacher social consequences consisted of two types: teacher praise or approval contingent (within the next 5 sec) upon inappropriate classroom behavior (*e.g.*, smiling at a student after he had been looking out the window during study time) and all negative statements including verbal disapproval, reprimands, threats of aversive consequences, and all negative physical contact such as hitting, spanking, or pulling.

During each period in which the consultant observed the teacher operate the clock-light apparatus, the frequencies of correct and incorrect teacher social consequences were tallied. At the end of each observation period, the consultant calculated the rate of each type of consequence by summing the number of events and dividing by the total observation time.

Reliability

Teacher-consultant reliability. Consultants checked agreement on teacher estimates of appropriate classroom behavior during the two or three daily periods in which the program was in operation in each classroom. Consultants observed simultaneously for 10 to 20 min using a stopwatch to record appropriate behavior while the teacher used the clock-light instrument. Pearson *r*'s between teacher and consultant estimates of appropriate behavior were 0.90 ($N = 55$ score pairs) between Teacher A and Consultant I, 0.97 ($N = 56$ pairs) between Teacher B and Consultant II, and 0.87 ($N = 71$ pairs) between Teacher C and Consultant I. In calculating the reliability coefficients, it was noted that all three teachers tended to overestimate the per cent appropriate behavior scores when compared to consultant's estimates.

Teacher A overestimated 46% of the checks, agreed 40%, and underestimated 14%. Teacher B overestimated 75% of the checks, agreed 20%, and underestimated 5%, while Teacher C overestimated 42%, agreed 45%, and underestimated 13%. Teacher A, B, and C's tendency to overestimate the consultant's levels of appropriate behavior suggested that caution must be observed when interpreting changes in classroom appropriate behavior when switching from consultant to teacher-collected data (at follow-up only), measures of appropriate behavior recorded by consultants being the more conservative estimate.

Consultant-consultant reliability. As part of an earlier investigation, the two teacher-consultants were trained to record correct and incorrect teacher social consequences to a high degree of reliability ($r = 0.89$).

Similar estimates of reliability were obtained between consultants during the present study. Sampling the behavior of the three teachers during each of the experimental conditions, the consultants made 15 simultaneous observations. The correlation coefficients produced were 1.00 for correct teacher consequences and 0.92 for incorrect teacher consequences.

During the final follow-up condition, consultants made four checks between themselves on classroom appropriate behavior, as the teacher had discontinued recording procedures at this time. A Pearson *r* using four score pairs indicated a correlation of 0.87 between consultants' estimates of appropriate behavior at follow-up.

Procedures

The teachers were exposed to the first three units of the PASS program in three consecutive afternoon sessions before the initial teacher baseline condition. Next, each of the treatment procedures was introduced into the first-, second-, and third-grade classrooms, respectively, in multiple baseline fashion, with approximately a two-day delay between classrooms. Each day consisted of two reading periods and one mathematics period per classroom. The

reading periods, however, were treated as a single session by combining the scores for both periods. Thus, on each day, there were two experimental sessions, reading and mathematics. The entire program was in effect for approximately 30 school days. Follow-up data were collected approximately three weeks after the procedures were terminated.

Teacher baseline (7 to 12 sessions). In the first session of this condition, the teacher and consultant set up the clock-light apparatus in preparation for teacher recording of appropriate behavior. The teacher's formulated rules for appropriate classroom behavior were readily available on a 5 by 7 in. (12.5 by 17.5 cm) card, but were not displayed to the class. Questions about the clock-light were handled by announcing to the class that an explanation would be given later. Subsequent questions about the apparatus were ignored.

Teachers were directed to look up and scan the classroom frequently as each taught their daily lessons and recorded classroom appropriate behavior. As long as *all* the children in the classroom were demonstrating appropriate behavior (following rules) the teacher let the light remain on and the clock running. As soon as one student was observed not following the rules, the teacher de-activated the switch terminating the clock and light. Consultant feedback to the teacher was provided after each period concerning (1) the teacher's scanning and tracking behavior, and (2) teacher-consultant agreement on estimates of classroom appropriate behavior computed as a percentage (larger number of minutes divided into smaller number of minutes times 100). Throughout the study, less than 80% agreement served as the criterion for providing feedback to the teachers about scanning and agreement. If teacher-consultant agreement dropped below this level during a particular session, the consultant spent time with the teacher discussing definitions and specific disagreement instances while praising (Cossairt, Hall, and Hopkins, 1973) instances in which the teacher performed correctly or in

agreement with the consultant.² No praise or feedback was given to teachers concerning the use of social consequences during this phase.

Rules (six sessions). The teacher-developed list of appropriate classroom behaviors was presented on a 24 by 36 in. (60 by 90 cm) poster board and displayed on a bulletin board to the entire classroom until removed at follow-up. Examples of the rules produced by the teacher included (1) "Look at the teacher when she talks or is giving directions", (2) "Follow directions", (3) "Work quietly on assignments", (4) "Raise hand when you would like to talk or need help", (5) "Take turns during discussion", (6) "When your work is completed you may (a) read a book, (b) do a puzzle, (c) take a turn at the projector, or (d) do activities teacher provides".

In explaining the rules, no reference was made regarding the relationship between rules and the teacher's contingent operation of the clock-light instrument. The teacher told the class that the consultant would be working with the teacher to "help everyone learn better", and that better learning could be achieved by following the classroom rules. The teacher first read the rules, one by one. The consultant demonstrated each rule; then a student was asked to demonstrate the rules as the teacher read them. Finally, the entire class performed instances of the rules.

During the remainder of the first rules session, the teacher continued planned curriculum activities while operating the clock-light and the consultant walked around the classroom telling individual students that they were either (1) complying with the rules or (2) not complying with the rules. No feedback or praise was given by the consultant during the remaining five sessions of this phase.

Rules + feedback (9 to 10 sessions). Two types of response feedback were provided class-

²To ensure independence of the teacher data used in the study, no discussions about agreement between teacher and consultants' observations occurred until after each session.

room students during this condition. The teacher first explained to the class the relationship between the classroom rules and the clock-light from a prepared text of instructions. The teacher explained further that (1) the simultaneous operation of the clock and light was dependent upon the position of the switch controlled by the teacher; (2) when all students were following the rules, the clock and light remained on and when one or more children were not following the rules, both clock and light would be turned off; and (3) at the end of the period the teacher would calculate a per cent score telling the class how they had performed. During each period (Reading I, II and Math) in this phase, the light provided minute-by-minute feedback to the class regarding their rule-following behavior. At the end of the period, the second type of feedback was provided by the teacher. The teacher recorded the classroom per cent appropriate score on the blackboard and on a bar graph posted in the front of the class. The per cent score for each period (Reading I, Reading II, and Math) was calculated and posted by the teacher during this condition.

Package (rules + feedback + group and individual consequences—34 to 36 sessions). Social praise and group consequences (activities) were added to the rules and feedback components of the previous condition. In the fourth teacher-consultant meeting, teachers were exposed to a personalized instructional unit on the function and identification of positive reinforcers in the classroom. As a result of this meeting, teachers had (1) produced a list of potential activities to be used as group consequences and (2) role played the use of four specific types of social consequences to be used contingent upon classroom improvement in appropriate behavior. Teachers were taught to dispense callout praise to individuals and the group, to give private, individual praise, and to use a callout praise to a student on-task as a prompt to an off-task child.

The teacher began the condition by explaining that the class could earn their choice

of three activities immediately following the first daily period (Reading I, II or Math) if the group could meet or surpass the mean level of appropriate behavior (average per cent score) obtained during the previous condition for that period. The teacher wrote three activities on the board (*e.g.*, 7-Up, free time, extra recess, *etc.*) and asked the class to vote for the one they preferred. The selected activity was posted on the board near the average per cent score from the previous condition that the students were to exceed. Then, the teacher briefly reviewed the rules and began the scheduled academic activity while recording with the clock-light.

Early in this phase, the consultant interacted with the teacher during each session, pointing out instances and opportunities to praise the class or individuals for complying with the classroom rules. This type of interaction was gradually faded out after the fourth or fifth consecutive period, depending upon the behavior change demonstrated by the teacher. After each period, if the teacher maintained or increased the previous day's correct praise rate, the consultant presented the data and delivered approval statements (Cossairt *et al.*, 1973). Specific examples of correct praise usage by the teacher were pointed out, *e.g.*, "Yesterday in this session your rate was .05/minute and today in math, it was more than 1.0/minute", "You were really effective when you praised the children for playing quietly during free time", *etc.* If the rate fell below the previous day, the consultant merely indicated that rate when reporting to the teacher. No formal criterion was stated for teacher improvement, but each teacher was encouraged to increase his rate of correct social consequences while decreasing the rate of incorrect social consequences to near zero per minute.

At the end of each period (Reading I, II and Math) in this phase, the teacher calculated the appropriate classroom behavior per cent score as in the previous condition, graphed the score, then reported to the class whether or not criterion had been met and group reinforcement

was forthcoming. The teacher and the consultant encouraged the class to applaud themselves if improvement had been demonstrated, and praised the class for their performance. For periods in which the class did not obtain the criterion, the teacher announced the score without criticism and proceeded to the next regularly scheduled activity, *e.g.*, "We needed 54% today in this period, but we only earned 52%. I'm sure we will make it during reading. Everyone take out your reading book, please, *etc.*".

Teachers scheduled group consequences (activities) for the class based upon a shifting-criterion schedule. The schedule was designed to provide group reinforcement of classroom appropriate behavior after each reading period and the math period during acquisition until the class had demonstrated maintenance at the 80% level for three consecutive periods. Each class was required to match or exceed the level produced in the previous day's period (Reading I, Reading II, and Math) until the three periods at 80% were reached. During acquisition, the two reading groups received reinforcement for meeting criterion independently of each other; during mathematics, the behavior of the whole class determined the provision of a reinforcer. Group activity consequences were provided immediately after the classroom goal was reached. This procedure was continued until all periods were functioning at 80% appropriate. When this occurred, the reinforcement schedule was changed to establish maintenance of the acquired behaviors in the following ways. First, the scores in the reading periods I and II were combined, requiring an overall score of 80% to meet the criterion for the entire class. Thus, reading was now tallied and reported by the teacher as a single session. Secondly, a delay in the group consequence was introduced. Each class was now required to meet the criterion (80%) for two of the next three consecutive sessions (alternating mathematics and combined reading sessions). When this was achieved, the criterion increased systematically in a step-by-step fashion. As success was achieved at each

level, the criterion shifted upwards from three of four consecutive sessions at 80%, then four of six, six of eight, eight of 10, until a maximum of 10 of 12 sessions delay in the group consequence was attained.

If a class failed to reach criterion at any level (*e.g.*, failing two of three sessions at 80%), the teacher recycled the class back to their previous successful level of the schedule. Throughout this leaning of the reinforcement schedule, the consultant's role in the classroom became one of feedback and observation. In fact, during the final five days, the consultants faded their monitoring and presence from the classrooms completely.

Follow-up (four sessions). Three weeks after the package condition was terminated and *all* program materials removed (*e.g.*, clock-light, group consequence schedule, rules, consultant, *etc.*), the consultants returned to the classrooms to collect follow-up measures on the level of classroom appropriate behavior (using a stopwatch) and the rate of teacher correct and incorrect social consequences. They returned without any prior appointments for doing so by simply meeting the teacher before the first session and asking permission to observe for the next two days. Teachers had no previous expectations that follow-up would be carried out.

RESULTS

Appropriate Classroom Behavior

The data for appropriate classroom behavior are presented graphically in multiple baseline fashion in Figure 1. The per cent scores are based on the teacher's recordings using the clock-light apparatus, except during follow-up when the consultant's data are presented. For reading, the per cent scores were the summation of the number of minutes recorded for Reading I and Reading II divided by the total session time for both periods times 100. Classroom appropriate behavior scores for math were based on a single teacher observation for each math session; *e.g.*, number of minutes recorded divided by the total session time $\times 100$.

Baseline. The mean levels of classroom appropriate behavior during the teacher-collected baseline condition shows Classroom B ($X = 60.1$) considerably higher than Classrooms A ($X = 47.0$) or C ($X = 29.7$).

Overall, Classroom A showed gradual declining trends and Classroom C remained low and variable, while there was an accelerating trend in Classroom B. Scores in reading periods were systematically higher than those in math in two classrooms, A and C.

Rules. Introduction of classroom rules for appropriate behavior produced no systematic improvement in appropriate behavior for any classroom. In fact, Classroom B appeared adversely affected by the rules condition, dropping

from a mean of 60.1% to 49.0% under rules. In Session 24 in Classroom C, a jump in appropriate classroom behavior to 68%, higher than any previous session, was noted. However, a marked decline over the next four sessions indicated no systematic effect.

Rules + feedback. The rules plus feedback condition increased appropriate behavior for two of the three classrooms with Classroom B reaching its highest mean level at 70.6%. Moreover, both Classrooms A and B show variability reduced by 50% or more when compared to previous conditions.

Package. Implementation of the total intervention package produced systematic changes in classroom levels of appropriate behavior for

Fig. 1. Per cent classroom appropriate behavior for three classrooms over experimental conditions and stimulus conditions (reading and math).

all three classrooms. The package condition produced mean levels of appropriate behavior of 81.2, 84.6, and 74.2% for Classrooms A, B, and C. Classroom B appeared most responsive to the treatment package, reaching criterion at the 80% level immediately. Classrooms A and C were less responsive, taking eight sessions and six sessions to reach the 80% level. Classroom C took 11 sessions to reach the 80% level in math. Change time from introduction of the package to reaching the 80% criterion appeared inversely related to level of appropriate behavior in the previous condition.

Follow-up. Consultant-recorded follow-up indicated mean levels of appropriate behavior maintaining at 86.3, 76.5, and 75.0% for Classrooms A, B, and C, respectively. Appropriate

classroom behavior appeared more variable for Classroom A during follow-up than during the previous package condition.

Teacher Social Consequences

Baseline. The data for teacher correct and incorrect social consequences are based on the consultant observations and are plotted in Figure 2. Each data point represents the rate (number of consequences/total time) of each consequence type recorded per session. During the teacher-collected baseline, Teacher A demonstrated the highest mean rate of correct social consequences at 0.28 per minute, while Teachers B and C were considerably lower at 0.05 per minute and 0.04 per minute. All teachers had relatively high rates of incorrect social conse-

Fig. 2. Rates of teacher correct and incorrect social consequences for three teachers over experimental conditions and stimulus conditions (reading and math).

quences with the rate of correct to incorrect strikingly in favor of incorrect for Teachers B and C.

Rules. When rules were introduced, Teacher A increased her use of correct social consequences to 0.60 per minute, *versus* 0.28 per minute in the previous condition. Teachers B and C, however, continued stable rates of incorrect consequences three to six times greater than their rates of correct dispensing.

Rules + feedback. During the rules plus feedback condition, Teacher A decreased her use of correct consequences to previous levels. Teachers B and C remained relatively unchanged from the previous condition.

Package. Comparing teacher social consequences during the rules plus feedback condition to the entire package condition suggested that the teachers' use of correct consequences was under consultant instructional and reinforcement control. The teachers met with the consultants for a final training meeting before Session 21 during the rules plus feedback condition. Teachers read about and role played dispensing individual and group correct social consequences contingent upon appropriate classroom behavior. They were then instructed to continue teaching as before until new instructions were delivered. The data were clear indications that the rate of correct consequences did not reliably change until the package condition was introduced, when teachers were directed by the consultants to increase their respective rates, and were praised for doing so. Correct rates of social consequences increased to 2.28 (Teacher A), 0.88 (Teacher B), and 1.62 (Teacher C), three to 80 times greater than the rates during any previous condition. Rates of incorrect consequences decreased to 0.02, 0.10, and 0.01 for Teachers A, B, and C, respectively, 8% to 50% of that of the lowest previous conditions.

Follow-up. Follow-up observations showed that Teachers A and B maintained correct consequence rates at 2.02 (Teacher A) and 0.76 (Teacher B), approximating those generated in later sessions of the previous package condi-

tion. Teacher C, however, showed a marked reduction in correct praise rate to 0.35 per minute, but still remained above prepackage conditions. Rates of incorrect dispensing remained near zero for all three teachers at 0.01 per minute, 0.05 per minute, and 0.06 per minute.

DISCUSSION

The results of this study clearly replicate prior research using "group procedures" to the extent that teachers can reliably record levels of classroom group behavior and that a group package condition containing elements of rules, feedback, and group and individual consequences will produce reliable, stable improvement in classroom appropriate behavior. The present components analysis yielded additional support for the fact that rules alone produce no effect on levels of classroom behavior, in agreement with previous findings of Madsen *et al.* (1968) and O'Leary *et al.* (1969). Contrasting the present results during the rules + feedback condition to Packard's "instructions only" condition (Packard, 1970), containing similar components, the present rules + feedback condition produced increases in appropriate behavior for two of three classrooms, in agreement with the effects reported by Packard.

The package condition in the present investigation differed from that used by Packard in that procedures for maintenance of program effects were included. Teachers were taught to praise students individually and as a group for complying with the classroom rules (Hops and Cobb, 1973). During the package condition, delays between classroom performance and access to group activities systematically increased. Teachers A and B were most successful in delaying group activities, completing six of eight (Teacher A) and eight of 10 (Teacher B) consecutive sessions at or above 80%. Teacher C had the most difficulty increasing the delay, recycling back to remedial levels of the schedule three times. Follow-up data collected three weeks (15 consecutive school days) after termi-

nation of the program and removal of all program components (clock-light, rules, graphs, etc.) indicated that improved levels of classroom appropriate behavior had been maintained. It is important to note that two of the three teachers maintained high rates of correct social consequences while all three maintained low, near-zero rates of incorrect social dispensing. Both sets of data are especially noteworthy in the light of previous investigations demonstrating the difficulty in maintaining gains made during the treatment conditions (Herman and Tramontana, 1971; Kazdin and Bootzin, 1972). It is not known if teachers continued to use contingent group consequences after the program was removed. However, in October of the following school year, 1973-74, it was noted that all three teachers had established the clock-light program with their new students independent of any contact with the experimenters.

Specific causal statements concerning the relative effects of teacher social consequences and delays in group consequences on maintenance of appropriate behavior cannot be made from the present data. The results must be interpreted as a product of the total package. A components analysis of maintenance procedures awaits subsequent research.

A methodological problem in the present study that must be considered when interpreting the data is the possible biasing of consultants' records of appropriate classroom behavior. Due to the on-off light signal provided by the clock-light instrument, it was possible for consultants' recordings to be influenced. However, the teachers' tendency to overestimate consultants' estimates of classroom appropriate behavior would suggest that consultants were minimally influenced by the on-off signal, given the hypothesis that perfect agreement would result if consultants were discriminating their recording on the light signal rather than classroom behavior.

It is clear that future research should investigate components of group procedures that are effective in producing maintenance of treatment effects within and across classroom settings. Fur-

ther research into the development of "group management" program packages such as the "good behavior game" and the "clock-light procedure" in this study is certainly warranted, and a wider distribution of these workable techniques to elementary teachers seems highly desirable.

It was apparent when reviewing the "group contingency" literature that the term has been used rather confusingly to describe various token programs utilizing group procedural components. The following is an attempt to clarify this matter.

Studies utilizing token procedures can be viewed as being composed of three essential program components: (1) the application of behavioral criteria (terminal performances), (2) point dispensing and/or recording procedures, and (3) backup consequences. Each of these can be established for individuals or groups of individuals in a particular setting; e.g., classroom. The lack of clarity presently in the literature stems from the failure to discriminate adequately among these program components when reporting experimental procedures—essential to adequate replication and communication among behavioral researchers.

Table 1 summarizes the possible component combinations, ranging from the completely individualized program (e.g., *individual* behavioral criteria, *individual* dispensing and/or recording, and *individual* backup consequences) to the completely group-focused program (e.g., *group* behavioral criteria, *group* recording and/or dispensing, and *group* backup consequences).

For example, Bushell, Wrobel, and Michaelis (1968) described a "group contingency" program where (1) *group* behavioral criteria were applied to a group of students, (2) points were dispensed to *individual* students and (3) backup consequences were available to *individual* students. Cell 5 of Table 1 describes this combination of procedures. In the "good behavior game", a group procedure applied to disruptive classroom behavior (Barrish, Saunders, and Wolf, 1969; Harris and Sherman, 1973;

and Medland and Stachnick, 1972) employed (1) a uniform behavioral criterion in the form of rules for the *group*, (2) the recording of points removed contingent upon *individual* disruptive performances (Barrish *et al.*, 1969), and (3) the administration of *group* consequences contingent upon the collective performance of the group. These procedures are expressed in cell 6 of Table 1.

Table 1

Possible combinations of token procedural components.

		Behavioral Criteria Established for			
		Individuals		Group	
		Dispensing and/or Recording for		Dispensing and/or Recording for	
		Individual	Group	Individual	Group
Backup Consequences for	Individual	1	3	5	7
	Group	2	4	6	8

Another procedure using a recording apparatus—*e.g.*, decibel meter (Schmidt and Ulrich, 1969), clock-light (Cobb and Hops, 1973; Hops and Cobb, 1973; Packard, 1970) and used in the present study applied a (1) *group* criterion in the form of classroom rules, (2) recorded the behavior (duration) of the entire *group*, and (3) provided a *group* backup dependent upon the collective performance of the group. These procedures are represented by cell 8.

To make a complex issue even more so, it would even appear possible to have a concurrent set of procedures in operation; *e.g.*, cell 1 and cell 7 (Hamblin, Hathaway, and Wodarski, 1971). In this study, (1) behavioral criteria were established for both *group* and *individual* performances on mathematics materials, (2) *in-*

dividual and *group* recording procedures were employed, and (3) *individual* backup consequences purchased.

In future studies using combinations of individual and group procedures, it would certainly appear helpful if researchers would relate their procedures clearly in terms of the behavioral criteria established, the process of recording and/or dispensing conditioned reinforcers, and the method of determining and awarding backup consequences. In this manner, procedural ambiguity in the literature can be minimized.

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