FEEDBACK TO ATTENDANTS AS A REINFORCER FOR APPLYING OPERANT TECHNIQUES^{1,2}

MARION PANYAN, HOWARD BOOZER, AND NANCY MORRIS

STATE HOME AND TRAINING SCHOOL,
WHEATRIDGE, COLORADO

After varying lengths of baseline, initiation of a feedback system increased the daily use of operant training methods by non-professional hall personnel in a state institution for retarded children.

Mothers (Zeilberger, Sampen, and Sloane, 1968) nurses (Ayllon and Michael, 1959), undergraduates (Davison, 1965), teachers (Hall, Lund, and Jackson, 1968), and therapists (Sloane and MacAulay, 1968) have successfully applied operant techniques in their respective areas of interest. One commonly held explanation for the continued performance of various non-professional personnel is that the subject's progress rewards the trainer. This explanation seems most tenable in the acquisition of skills such as speech or walking, or in the rapid reduction of a severe behavioral disorder.

Some behaviors, such as self-help skills in severely and profoundly retarded children, are acquired very gradually. In these cases, reinforcement for the trainer's behavior in terms of the subject's progress is often delayed. Therefore, the performance of personnel who work with institutionalized retarded children might require special reinforcers. Examples of such reinforcers are trading stamps, video-tape records, and comments about appropriate training behaviors. Contingent application of a combination of these reinforcers increased the amount of interaction by attendants with

institutionalized retarded children (Bricker, Morgan, and Grabowski, 1968). Millenson (1967, p. 276) suggested that feedback resulting from an individual's response can at times be considered a reinforcing stimulus. The reinforcing properties of one type of feedback were investigated in the present study by introducing a feedback procedure in an attempt to maintain the daily use of operant training methods by non-professional hall personnel.

METHOD

Each staff of 11 living units in a state institution for retarded children received a separate four-week course in operant conditioning. On termination of formal classroom training, the staff returned to their halls to incorporate operant training methods in their daily routine. Training sessions in self-feeding, handwashing, dressing, bathing, and toileting were divided equally among the hall staff. Two residents were trained in each self-help area so that 10 children were being trained at any one time on a given hall. The same resident was not in two or more training programs simultaneously. Sessions were assigned to a specific attendant designated by name. For example, Tommy J. in dressing and Mary T. in handwashing might be assigned to an attendant during his five days of duty. One attendant on each shift was assigned to fill in on the other members' regular days off and sick days so that residents could receive training seven days a week. Each attendant continued his assigned sessions until the resident had successfully completed the skill. At that point the attendant began training another resident in the same self-help skill. A list of the steps in the

¹The authors wish to express appreciation to Dr. Kayo Sunada, Director of the State Home and Training School, Wheatridge, Colorado, and to Mr. Richard Mason, Assistant Director. The encouragement and assistance of Robert Colvin, R. Don Horner, Dan Sheehan, George Kemper, and Gary Hodson is gratefully acknowledged. The hall personnel deserves special credit for their continued cooperation. Reprints may be obtained from Marion Panyan, Psychology Department, State Home and Training School, 10285 Ridge Road, Wheatridge, Colorado 80033.

²This study was conducted under a Hospital Improvement Program grant from the Department of Health, Education and Welfare: 1-R20-MR-02129-02.

successive approximation procedure in developing each self-help skill and the recording sheets used are presented in Horner, Panyan, Porter, and Sheehan's (1969) report.

The staff was instructed to conduct the sessions and to keep daily performance records on each child in training. No contingencies were in effect if the staff failed to conduct or record a session, other than verbal requests from the unit psychologist to "do better". An exact time to conduct training sessions was specified but variations occurred due to the programs of other departments within the institution, trips, and other competing activities. The number of training sessions and attendants assigned to a hall was constant between baseline and feedback conditions. Competing activities such as custodial and management duties were present under both of the conditions.

Results from four of the 11 halls whose attendants have been trained are included in this report. Hall E housed 32 profoundly and severely retarded males between the ages of 7 and 16 yr. Seven staff members were on Hall E. Hall O had 26 profoundly retarded males between the ages of 16 and 53 yr. A staff of nine members were trained on Hall O. Hall C had 26 profoundly and severely retarded males and females between 3 and 9 yr old with a staff of nine. Twenty eight profoundly retarded females between the ages of 9 and 17 yr were on Hall R with a staff of nine.

Each Monday, a research assistant collected the 10 recording sheets from the previous week's sessions on each hall. As many as 21 sessions were represented on one recording sheet, for example, in feeding. These sheets served as the behavioral measure of the number of sessions conducted.

On 24 occasions (12 during baseline and 12 during feedback) a psychologist observed a training session and made an independent recording of the current step of the resident. The psychologists' observations were later checked against the step recorded by the attendant for the same session. There was 96% agreement between these two observations. Agreement on the level of advancement within the successive approximation procedure was possible only if prior sessions had been conducted. Thus, the number of sessions recorded was considered to be an accurate reflection of the number of sessions conducted.

During baseline, the data from the recording sheets were compiled to show the percentage of sessions conducted, but were not delivered to the hall staff. During feedback conditions, the percentage of sessions conducted in each self-help area was written on a feedback sheet and given to the attendants. The baseline procedure of collecting the week's data without subsequent delivery of feedback lasted for four weeks on Hall E, eight weeks on Hall O, 38 weeks on Hall C, and was never in effect on Hall R. Hall R was the first of seven halls in which the feedback system began one week after completion of class. As an experimental design for analyzing the role of the feedback, varying lengths of baseline were used as an alternative to the reversal design (Baer, Wolf, and Risely, 1968) to avoid possible interruption of the training sequence.

The feedback sheets were delivered to the halls each Wednesday or Thursday by the unit psychologist. This procedure resulted in approximately the same number of contacts made by the psychologist as in baseline, only now the contacts were on a systematic basis. The feedback sheet listed the total possible sessions for each skill, the number of sessions recorded and conducted, and the names of the staff members who conducted the sessions. The hall percentage was computed by dividing the total possible sessions in all self-help areas into the number of sessions conducted. Percentage of sessions conducted by each hall was reported in rank order on the feedback sheets so that each hall could compare its performance with the other halls. The unit psychologist reviewed the information on the feedback sheet with the attendants on duty and then posted the sheet in a conspicuous place on the hall.

RESULTS

Hall E

The percentage of sessions conducted during the first four weeks on the hall after class dropped from 63% to 20%. An increase to a maximum of 99% of the sessions conducted occurred after the weekly feedback sheets were delivered (Fig. 1).

Hall O

The baseline data in Fig. 1 represent the first eight weeks after formal training. In the

Fig. 1. Per cent of requested training sessions conducted by the staff on Halls E, O, C, and R.

absence of weekly feedback sheets a sharp decrease in the percentage of sessions conducted was observed. Upon initiation of the feedback system, the percentage increased and was maintained at a high level.

Hall C

Figure 1 shows the first and last six weeks of a 38-week baseline period during which the percentage of sessions conducted ranged from 8% to 79%. After the weekly feedback sheets were delivered, a marked increase to a maximum of 100% for six consecutive weeks was observed.

Hall R

The percentage of sessions conducted over 34 weeks of feedback ranged from 69% to 100%.

DISCUSSION

The weekly delivery and posting of feedback sheets increased the percentage of training sessions conducted by the staff of three halls. The passage of time itself did not have much effect, since the increase occurred after 4, 8, and 38 weeks respectively. In fact, the data suggest that the longer the hall staff operated in the absence of the reinforcement contingency, the longer it took for that staff's performance to be changed by the contingency. Halls E and O, which had four and eight weeks of baseline respectively, responded to the reinforcement contingency more rapidly than Hall C, which had 38 weeks of baseline. The data from Hall R suggest that initiating the feedback procedure as soon as possible after formal training is an effective means of maintaining high performance levels.

The data from Halls E, O, and C further suggest that the behavior of the staff's superiors and co-workers operated as a more powerful reinforcer than the behavior of the children in training. The feedback system was extended to seven halls not reported here, and the data from Hall R are typical of those halls. Thus, the feedback system is one economical method whereby the performance of attendants can be maintained in the absence of daily supervision.

Comments made by supervisors and unit leaders to the attendants when they see the posted sheets may enhance their reinforcing

value. Other alternatives suggested by Ayllon and Azrin (1968) such as salary increases, vacations, and holiday or work shift preference could also be arranged on a contingent basis for those attendants who had conducted 90% or more of their assigned training sessions. The feedback system could be extended to include a monthly list of the residents who had successfully completed training. This extension of the feedback system might result in an increased number of residents trained, as well as an increased number of sessions conducted.

REFERENCES

- Ayllon, T. and Azrin, N. H. *The token economy: a motivational system for therapy and rehabilitation*. New York: Appleton-Century-Crofts, 1968.
- Ayllon, T. and Michael, J. The psychiatric nurse as a behavioral engineer. *Journal of the Experimental Analysis of Behavior*, 1959, 2, 323-334.
- Baer, D. M., Wolf, M. M., and Risley, T. R. Some current dimensions of applied behavior analysis. *Journal of Applied Behavior Analysis*, 1968, 1, 91-97.
- Bricker, W. A., Morgan, D., and Grabowski, J. Token reinforcement of attendants who work with low-functioning children. *Abstracts of Peabody Studies in Mental Retardation 1965-1968*, 1968, 4, No. 2.
- Davison, G. C. The training of undergraduates as social reinforcers for autistic children. In L. P. Ullman and L. Krasner (Eds.), *Case studies in behavior modification*. New York: Holt, Rinehart & Winston, 1965. Pp. 146-148.
- Hall, R. V., Lund, D., and Jackson, D. Effects of teacher attention on study behavior. *Journal of Applied Behavior Analysis*, 1968, 1, 1-12.
- Horner, R. D., Panyan, M., Porter, W., and Sheehan, D. J. *Attendant application of behavior modification techniques with mentally retarded children*. Paper presented at the American Association of Mental Deficiency meeting, San Francisco, 1969.
- Millenson, J. R. *Principles of behavioral analysis*. New York: MacMillan, 1967, p. 276.
- Sloane, H. N. and MacAulay, B. D. (Eds.). *Operant procedures in remedial speech and language training*. Boston: Houghton Mifflin, 1968.
- Zeilberger, J., Sampen, S., and Sloane, H. N. Modification of a child's problem behaviors in the home with the mother as therapist. *Journal of Applied Behavior Analysis*, 1968, 1, 47-53.

Received 5 November 1969.

(Revised 13 February 1970.)