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GENERALIZATION OF VERBAL CONDITIONING TO VERBAL AND NONVERBAL BEHAVIOR: GROUP THERAPY WITH CHRONIC PSYCHIATRIC PATIENTS[1]

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Twelve chronic hospitalized female patients received token reinforcement contingent on two separate classes of verbalizations: (a) positive statements about optional activities available in the hospital setting, and (b) positive statements about people. Cross-class generalization of reinforced verbal responses about activities to overt behavior was tested by actual participation in activities; within-class generalization of verbal responses about people to verbalizations in another stimulus setting was assessed in a structured interview situation. A multiple baseline design with contingency reversals was employed to demonstrate experimental control of both classes of verbalizations in the group sessions. Positive statements about activities generalized to actual participation in activities, while generalization of positive statements about people to verbalization in the extra-group setting did not occur.

Traditional psychotherapies have relied extensively on modification of verbal responses on the assumption that changing what an individual says will be reflected in verbalizations and performance in the extratherapeutic situation. Evidence that verbal conditioning does occur in the therapy session has been presented by numerous investigators. The influence that therapist interest and attention can inadvertently exert upon the contents of a patient's verbalizations in the therapeutic interaction has been demonstrated (Goldiamond and Dyrud, 1968; Truax, 1966), while other researchers have intentionally increased such preselected classes of responses as self-reference statements (Rogers, 1960), feeling statements (Williams and Blanton, 1968), and emotional words (Ullmann, Krasner, and Collins, 1961), which are often presumed to be "therapeutic".

In short, a substantial body of literature indicates that operant control of verbal behavior can be achieved. However, the practical utility of obtaining such control is an issue that has received little experimental attention. This appears to be a critical area of investigation because a vast majority of psychotherapeutic interventions deal exclusively with verbal behavior and rely on a patient's verbal report of his progress to evaluate therapeutic success. Reports of generalization of verbal conditioning to the extratherapeutic situation are infrequent, and have typically consisted of changes in psychometric measures obtained before and after conditioning sessions (Rogers, 1960; Williams and Blanton, 1959). The few attempts to assess transfer of verbal conditioning to verbal behavior in another situation have produced contradictory results. Specific classes of verbal responding were increased with schizophrenic patients in a group-therapy situation, but the effects failed to generalize to another group setting (Dinoff, Horner, Kurpiewski, Rickard, and Timmons, 1960). Similarly, Liberman, Teigen, Patterson, and Baker

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(1973) reinforced the rational talk of schizophrenic patients and while some generalization to a similar interview setting occurred, this did not extend to behavior measured on the ward. Meichenbaum (1969), however, trained adult schizophrenic patients to emit "healthy talk" in an interview setting and did observe generalization to follow-up interviews and performance on other verbal tasks.

Research on the generalization of verbal conditioning to related nonverbal behavior has largely been conducted with children. Lovaas (1961, 1964) increased aggressive behavior and influenced food selection respectively by reinforcing their verbal referents, and Sherman (1964) demonstrated that reinforcing verbalizations about a particular toy subsequently increased preference for that toy in a free-play situation. Risley and Hart (1968) found that once correspondence between verbal and nonverbal behavior was established by repeated reinforcement of accurate verbal/nonverbal pairings, reinforcement of verbal behaviors alone was sufficient to increase nonverbal behaviors greatly. It has subsequently been shown that reinforcing a verbal/nonverbal sequence was more effective than a nonverbal/verbal sequence in increasing the frequency of the related nonverbal component, while reinforcing verbal behavior alone produced only slight increments in the frequency of nonverbal responding (Israel and O'Leary, 1973).

Some degree of congruence is presumed to exist in adults, as the acquisition of corresponding verbal/nonverbal sequences is theoretically an important aspect of the development process through which self-regulation is achieved by internalization of verbal commands (Luria, 1961; Vygotsky, 1962). Yet, despite the important implications for modifying behavior by verbal manipulation, virtually no attempt has been made to assess the effect of modifying verbalizations on related nonverbal behavior in adults. The present investigation sought to demonstrate operant control of two different classes of verbal response with chronic psychiatric patients in a group setting and to investigate both within-class and cross-class generalization of reinforced verbal responses to the extra-group setting.

METHOD

Setting and Subjects

Twelve inpatients at Greystone Park State Psychiatric Hospital, New Jersey served as experimental group members. All were female, ranging in age from 39 to 64 yr, with a mean age of 52 yr; length of hospitalization ranged from six months to 35 yr, with mean of 14 yr. Subjects were randomly chosen from a behavior modification ward without regard to diagnostic classification, although all but one had been previously labelled psychotic. A token economy program was in operation on the residence ward that allowed the use of tokens as tangible reinforcers in the experimental group setting. Group meetings lasted 45 min and were held twice a week for an 11-week period in a meeting room apart from the residence ward.

Procedures

A multiple baseline design was employed. Baseline data were obtained for two response classes: (a) positive statements about optional activities available to the patients within the hospital setting; *e.g.,* "I had a very nice time at the dance" or "I like occupational therapy"; (b) positive statements about people; *e.g.,* "I like her" and "You look very nice today" (these statements were not restricted to persons subjects came into contact with). The frequency of any positive statement freely emitted by these patients before intervention was very low, with virtually all interactions consisting of negative or abusive statements. These two classes of responses where chosen for reinforcement because they were considered therapeutically relevant and afforded an opportunity to monitor their behavioral referents (generalization). The experimental phases were as follows: Prebaseline training, Baseline I, Activity I (reinforcement of positive statements about activities), People (rein-

forcement of positive statements about people), Activity II, Baseline II. A continuous generalization check was maintained on actual participation in activities, and on positive statements about people on the ward as obtained in a structured interview.

Therapists

A male and female cotherapist team (the first two authors) jointly conducted the group sessions, alternating every two sessions as group leader or group reinforcer. This ensured that responding in the group was independent of a particular style of leadership and that those responses judged reinforceable were not continually biased by one individual's subjective criterion. Both therapists were clinical psychology graduate students with strong backgrounds in the theory and practice of behavior modification, and were rated by the clinical faculty as having outstanding therapeutic abilities.

The group leader was responsible for leading the discussion, which covered such topics as activities within the hospital, occurrences on the ward, individual progress towards discharge from the hospital, and topics of general interest such as television programs and current events. The group reinforcer was responsible for reinforcing (during training phases) those statements by patients that met the criteria of the effective contingency.

Independent Raters

In addition to the group leader and group reinforcer, an independent rater was present at each session. Two undergraduate psychology students served as independent raters. The raters alternated, each rating one session per week. This ensured that the same group reinforcer was not continually paired with the same independent rater.

Observation Procedures and Reliability

At each session a group leader, group reinforcer, and an independent rater were present. The group leader initiated and led the discussion while the group reinforcer and the independent rater recorded the occurrence of both classes of statements on data sheets. Each 45-min session was divided into three 15-min periods. Both the group reinforcer and the independent rater recorded each subject's response individually and the time period in which the response occurred. Responses were also rated as to the class of response (positive statements about activities or people), and as being either prompted (in reply to a question by the group leader) or spontaneous (positive statements not emitted in response to a question by the group leader).

Reliability between the group reinforcer and the independent rater was monitored continuously throughout all phases of the study. Each response was coded on four dimensions: subject responding, time period, class of response, and as being either prompted or spontaneous. The independent rater and group reinforcer had to have identically coded each element of the response before they were considered to be in agreement. Reliability was calculated by the total number of agreements divided by agreements plus disagreements.

A continual reliability assessment may be peculiar to this investigation, as the authors are aware of no other study in which reliability was assessed for all training sessions and all baseline periods. Recent investigators have suggested that reliability assessment is a reactive process, such that reliability measures (observational accuracy) tend to be higher when observers are aware that reliability is being monitored and lower when they believe that reliability is not being assessed (O'Leary and Kent, 1973; Romanczyk, Kent, Diament, and O'Leary, 1973). These authors have suggested that employing a continuous assessment is one, albeit costly, procedure to reduce the reactive effects of reliability measurement—thereby enhancing observational accuracy.

Experimental Phases

Prebaseline. (four sessions) These were training sessions during which independent raters

and group reinforcers were trained to a reliability criterion of 85% and subjects were familiarized with the group situation. No reinforcement was given during these sessions, the leader responding in a socially appropriate manner to subjects' verbalizations.

Baseline I. (four sessions) The baseline period was a continuation of prebaseline procedures. Both response classes were recorded by the independent rater and the group reinforcer.

Activity I. (six sessions) A reinforcement contingency was introduced during this phase. At the beginning of the session, subjects were told that the group reinforcer would ring a bell and place a chalk mark after the subject's name on a chalk board visible to group members each time a "good comment" was made. Each mark was redeemable for one token at the end of the session. Subjects were not told what constituted a "good comment". The group reinforcer also provided social reinforcement; *e.g.,* "Very good Eileen" throughout the session for any spontaneous statements belonging to the response class under reinforcement. During the first 15 min of each training session, statements about activities were prompted by the group leader by general questions directed to the group; *e.g.,* "What did you do over the weekend?". Positive statements about activities (either prompted or spontaneous) (*e.g.,* "The movie was very good," or "I enjoyed the dance") were reinforced with the bell and chalk-mark procedure. No social reinforcement was provided for prompted statements. An effort was made to maximize the opportunity for each member of the group to receive reinforcement at least once during the prompting period. During the last two 15-min periods, the group leader did not attempt to focus on activity related issues but moderated a discussion of topics raised by group members. Only spontaneous positive statements about activities were reinforced during the last two periods.

All positive statements of both response classes (activities and people) were recorded by the group reinforcer and the independent rater on standardized data sheets. The only responses marked on the chalk board by the group reinforcer were those responses deemed reinforceable (prompted positive statements during the first 15-min period and positive spontaneous statements throughout the session for the response class under reinforcement).

People. (four sessions) The experimental procedure remained identical during this phase but the contingencies were reversed. Reinforcement was withheld for statements about activities, while positive statements about people (*e.g.,* "I think Miss D. is very nice" or "Violet has on a pretty dress") were reinforced in the manner described above. During the first 15-min prompting period, statements about people were elicited by the group leader by general questions such as "How are you getting along on the ward?" or "How do you feel about the nursing staff?". Positive statements were reinforced with the bell and chalk-mark procedure, while spontaneous positive statements received social reinforcement in addition. During the last two 15-min periods, the group leader led a general discussion and only spontaneous positive statements about people were reinforced.

Activity II. (two sessions) The conditions of Activity I were re-instated.

Baseline II. (two sessions) Reinforcement was withheld for both response classes (activities and people).

Generalization Tests

Activities. The number of activities available to the patients each week remained constant and at no time during the study was activity participation reinforced in the token economy program.

The ward staff was instructed to keep a record of all activities in which the patients participated. The staff did not know what purpose this information would serve nor were they informed of the nature of the study. This procedure was facilitated by a hospital regulation that an escort slip be filled out in duplicate each time a patient left the ward to attend an activity.

For the purposes of data collection, 12:00 a.m. Monday marked the beginning and end of each week. This test provided a measure of the effect that verbal behavior, acquired in the group sessions (positive statements about activities), had upon related nonverbal behavior in the extragroup setting.

People. Each patient on the ward was asked the question, "How do you feel about the other people on the ward?" during a previously established time for daily token economy progress reports. An undergraduate psychology student volunteer or ward staff member (both of whom were unaware of the experimental conditions) recorded the answers *verbatim* in the patient's folder. The answers were classified by two additional independent raters (clinical psychology graduate students, blind to the experimental conditions) as being either positive, negative, or neutral. The criteria for evaluation were as follows: positive—any statement expressing affection, approval, or liking toward fellow patients or ward personnel; negative—any statement expressing dislike, disapproval, or negative feelings toward fellow patients or ward personnel; neutral—statements not containing any emotional tone and not classifiable in either of the other two categories. The interrater reliability was calculated as the number of agreed-upon classifications divided by the number of agreements plus disagreements. This test assessed the effect of the verbal conditioning procedure on verbal behavior in the extragroup situation.

RESULTS

The overall reliability for the 18 group sessions was 86% (range from 70% to 90%). The reliability for the first and second baseline phases was 88% and 84%, respectively. The reliability for the response classes when being reinforced was 87% and 79% when not under reinforcement. The high level of reliability between the group reinforcer and the independent rater was observed throughout the investigation despite the complexity of the target behaviors and the requirements of the coding procedure. Although the independent raters were trained to a high level of reliability (85%) before reinforcement procedures were instituted, and were instructed to make independent judgements about each statement without being influenced by the reinforcement procedure (bell and chalk mark), the possibility of bias must be acknowledged. However, the observation that the overall reliability on statements of the response class not under reinforcement was 79% suggests that the independent rater and group reinforcer were able to classify responses reliably without the cueing provided by the reinforcement procedure.

The results of the group verbal-conditioning sessions are presented in Figure 1. All group verbal-conditioning data represent the positive spontaneous responses that were agreed upon (identically coded by both the group reinforcer and the independent rater). The verbal-conditioning procedure was a treatment package including both prompts and reinforcement designed to facilitate rapid experimental control of the target verbal behavior in order to evaluate generalization to the extratherapeutic situation. The relative contribution of prompts and reinforcement to the acquisition of the target verbal behavior cannot be assessed, as the number and nature of therapist prompts were not recorded. Spontaneous positive statements about activities averaged 1.25 per session (over four sessions), and mean positive spontaneous statements about people were 2.6 (over 10 sessions) before reinforcement was instituted, indicating a low free-operant rate for emission of these two classes of verbalization. The number of both responses increased substantially during their respective reinforcement periods. Control over group responding by the reinforcement procedure was demonstrated by the contingency reversals.

The data on participation in activities off the ward by the group members are presented in Figure 2. Each data point represents the combined individual number of participations in ac-

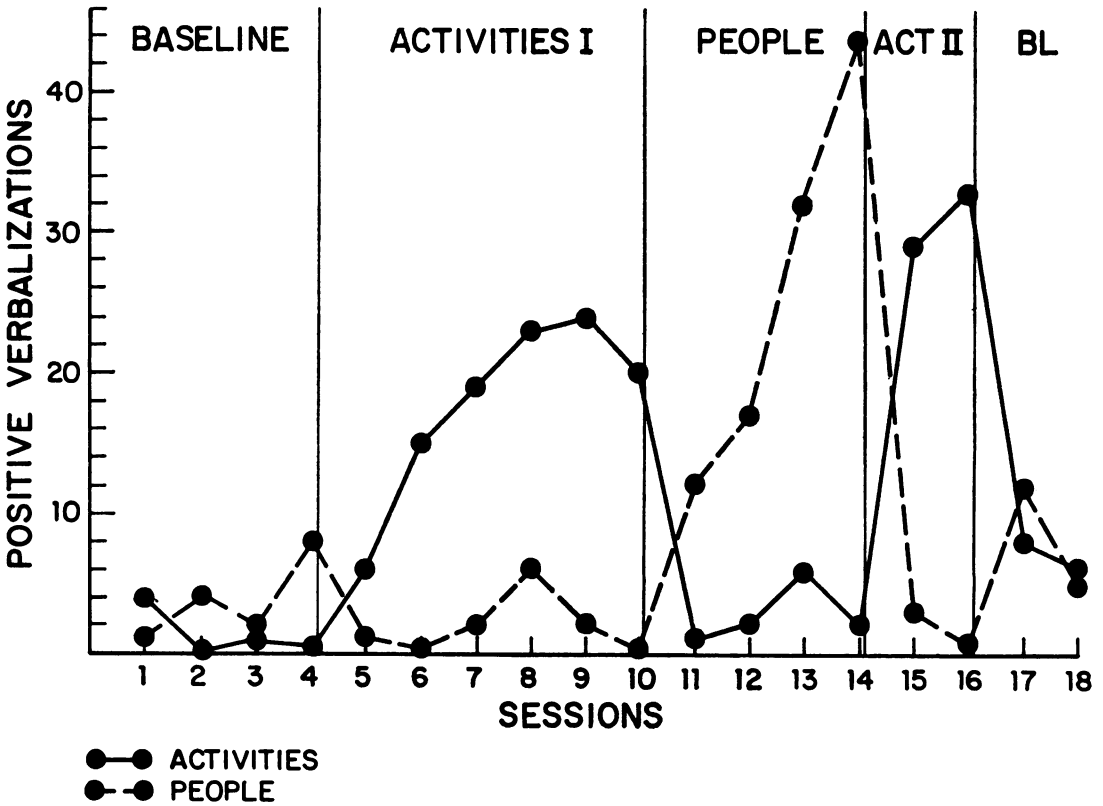

Fig. 1. Positive spontaneous verbalizations in group sessions about activities and people during the baseline and training phases.

tivities by the group members for one week. This information was compiled from daily records the ward staff was instructed to keep.

The group verbalizations about activities (shown in Figure 1) are also presented in Figure 2. The two weekly verbal-conditioning sessions correspond to one week of activity participation. When verbal responding about activities (during the group sessions) increased, the number of activity participations also increased; when verbal responding declined, the activity attendance also declined. The results clearly indicate that reinforcing verbal behavior *alone* substantially increased a general class of related nonverbal behaviors, since activity attendance never received direct token reinforcement. Spontaneous positive statements concerning activities were not classified according to the specific activity content verbalized (*i.e.*, movies, dances), precluding comparison of positive verbalizations about a specific activity and subsequent participation in that activity.

Activity participation and verbalization data for individual subjects and group means are presented in Table 1. As might be expected, individual differences in number of activity participations and verbalizations were observed. However, most patients followed the group trend—increased verbalizations under contingent reinforcement resulted in increased activity attendance. Withdrawal of reinforcement was associated with a decrease in verbalizations about activities and a corresponding decline in participation.

The generality of the reported group effect among individual subjects is suggested by the number of instances in which the direction of the effect for individual subjects is the same as that of the group mean. This can be seen by comparing subjects' mean verbalizations and ac-

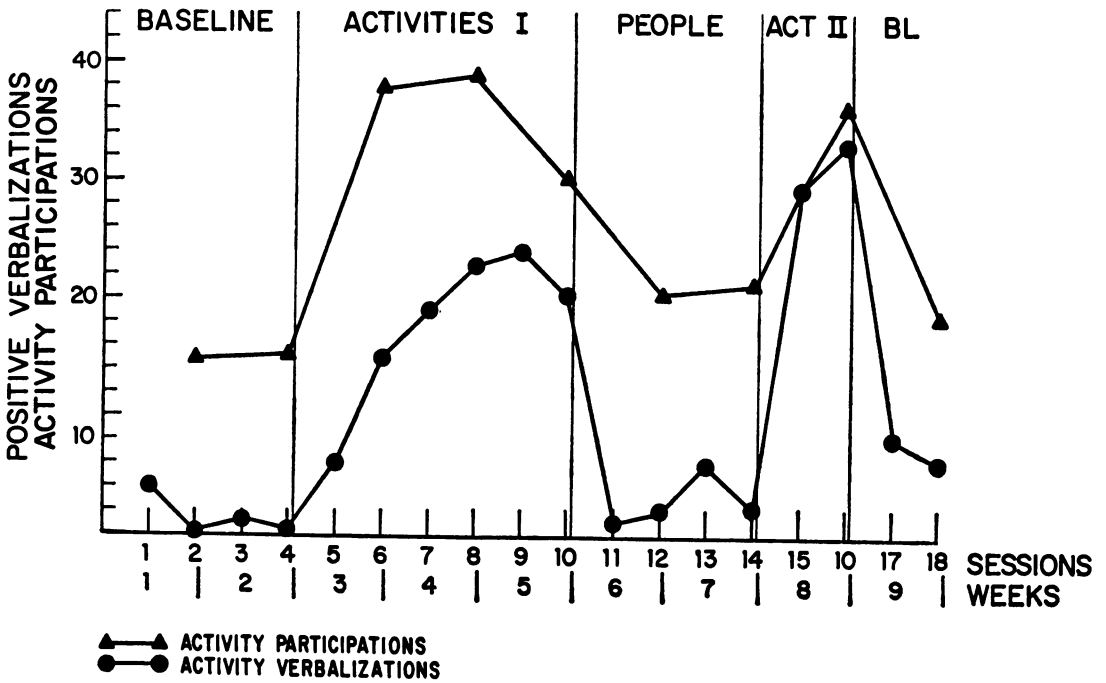

Fig. 2. Positive spontaneous verbalizations about activities during group sessions and weekly participation in activities by group members.

tivity participation in each experimental phase to their mean in the subsequent experimental phase and determining if it follows the trend for the group mean. Table 2 shows the number of individual subjects in each experimental phase whose data changed in the same direction as that of the group mean.

Verbalization data indicate that of a possible 48 change scores (12 subjects × four experimental phase comparisons), 35 (73%) were

Table 1

Weekly mean of positive spontaneous verbalizations (V) about activities and participation (P) in activities for the group and each individual subject.

	Baseline I		*Activities I*		*People*		*Activities II*		*Baseline II*	
	V	*P*	*V*	*P*	*V*	*P*	*V*	*P*	*V*	*P*
Group Mean	*0.21*	*1.25*	*3.03*	*2.97*	*0.46*	*1.71*	*5.17*	*3.00*	*1.17*	*1.50*
Subject Number										
1	0.00	0.50	1.67	1.33	0.00	1.00	2.00	2.00	0.00	1.00
2	0.00	2.00	1.67	5.67	0.00	2.50	0.00	3.00	0.00	2.00
3	0.50	0.50	4.33	1.67	0.00	1.00	21.00	6.00	2.00	3.00
4	0.00	2.00	0.00	3.67	0.00	1.50	0.00	2.00	0.00	1.00
5	0.00	0.50	0.00	2.33	0.00	3.00	0.00	3.00	0.00	2.00
6	1.00	1.50	11.33	4.33	2.00	2.00	16.00	5.00	6.00	4.00
7	0.50	2.50	6.67	5.33	0.00	2.50	0.00	1.00	0.00	0.00
8	0.00	0.50	2.00	2.33	0.00	0.50	3.00	2.00	0.00	0.00
9	0.50	1.00	4.67	3.00	1.50	1.50	5.00	4.00	2.00	3.00
10	0.00	1.00	1.00	3.00	0.00	2.00	4.00	3.00	3.00	2.00
11	0.00	1.00	1.67	3.33	0.00	1.50	1.00	2.00	1.00	0.00
12	0.00	2.00	1.67	2.67	1.00	1.50	11.00	2.00	0.00	0.00

Table 2

Number and percentage of subjects in the group whose verbalization (V) and participation (P) data changed in the same direction as the group mean in each experimental condition.

	Number of agreements/Number of group members				
	Baseline I — —	*Activities I*	*People*	*Activities II*	*Baseline II*	*Total*
V	— —	10/12 = 83%	10/12 = 83%	8/12 = 67%	7/12 = 58%	35/48 = 73%
P	— —	12/12 = 100%	11/12 = 92%	10/12 = 83%	12/12 = 100%	45/48 = 94%

in the same direction as the group trend. Participation data for individual subjects corresponded to the group trend for 45 of the 48 comparisons (94%). Using this method to examine individual subjects' performance across experimental phases yields eight comparisons with the group mean trend for each subject (four verbalizations and four participations). This permits evaluation of the consistency with which each subject responded to the experimental conditions (Table 3).

Subjects 1, 3, 6, 8, 9, 10, and 12 responded in the appropriate direction for every comparison. Subjects 11, 2, and 7 responded in the appropriate direction for 7, 6, and 5 of the possible eight comparisons, respectively. Subjects 4 and 5 were not consistent with the group trend, exhibiting only four and two agreements, respectively, with the group trend. A closer examination of the data reveals that Subjects 4 and 5 did not acquire the target verbal response. It is interesting to note, however, that although these group members never received reinforcement for spontaneous positive statements concerning activities, their activity participation still followed the group trend (Subject 4 = 4/4; Subject 5 = 2/4).

Results of the generalization test for positive statements about other people are presented in Figure 3. These data represent responses to the standardized question, "How do you feel about the other people on the ward?", asked during the daily checkout procedure. The reliability with which the two independent raters classified the response as being either positive, negative, or neutral was 81%. The graph indicates the percentage of answers by the group members that both independent raters scored as containing a positive statement about another person (s) on the ward. The data are graphed as percentages, as there were several mornings when all group members were not on the ward when the question was being asked. Each data point represents the per cent of positive statements during a one-week period.

Figure 3 also presents the data on verbalizations about people during the group training

Table 3

Number of experimental phases in which individual subject's verbalization (V) and participation (P) data changed in the same direction as the group mean across experimental conditions.

	Number of agreements/Number of experimental phase comparisons				
	V	*P*		*V*	*P*
Subject Number			Subject Number		
1	4/4	4/4	7	2/4	3/4
2	2/4	4/4	8	4/4	4/4
3	4/4	4/4	9	4/4	4/4
4	0/4	4/4	10	4/4	4/4
5	0/4	2/4	11	3/4	4/4
6	4/4	4/4	12	4/4	4/4

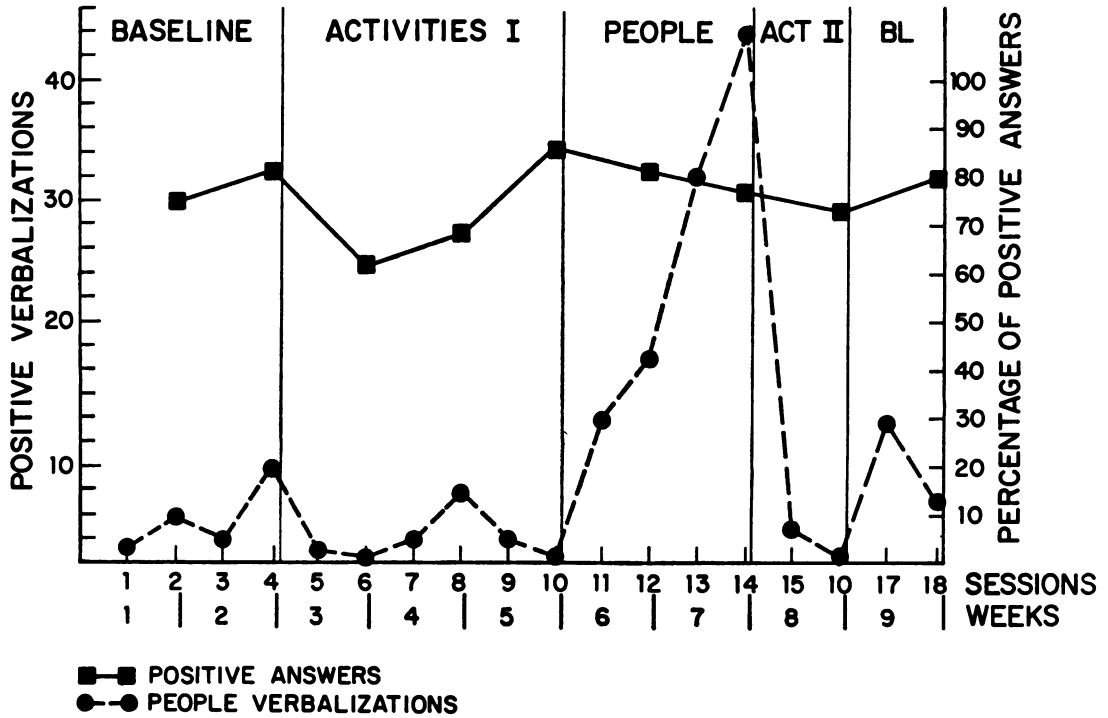

Fig. 3. Positive spontaneous verbalizations about people during group sessions and the percentage of answers that contained a positive statement about another person(s) on the ward.

sessions that were shown in Figure 1. A corresponding increase in the percentage of positive statements about people on the ward was not observed when the related class of verbal behavior was reinforced in the group sessions. No systematic relationship was observed between the two measures of verbal behavior. Verbal behavior (responses about people) acquired within the group sessions failed to generalize to a different setting. The individual data are presented in Table 4.

DISCUSSION

Experimental control of verbal responding in the group sessions was clearly demonstrated. Both verbal-response classes increased sharply while the reinforcement contingencies were in effect and declined to baseline levels when reinforcement was withdrawn. The rapid control exhibited was probably facilitated by the multiple cues (audio, visual, and social) employed to aid subjects in the discrimination of the desired verbal-response class. Modelling may also have been a factor, since in the prompting period of each session, all group members were exposed to several verbal transactions resulting in reinforcement, providing an opportunity for vicarious learning to occur even if reinforcement was never directly received. Similarly, Hauserman, Zweback, and Plotkin (1972) found that psychotic group members in a no-reinforcement condition tended to increase verbalizations when they observed other group members receiving contingent reinforcement for verbal responses.

Reversals in positive statements about activities were closely followed by corresponding changes in activity participation, indicating that control of verbal behavior in the group setting resulted in related extratherapeutic behavior change. Since activity participation never received direct reinforcement, alternative explanations of these results—that activities were intrinsically reinforcing once sampled, or that group participation resulted in a generally increased level of activity—are unlikely, since participa-

Table 4

Weekly mean of positive spontaneous verbalizations (V) about people and the percentage of answers that contained a positive statement (ps) about another person on the ward for the group and each individual subject.

	Baseline I		*Activity I*		*People*		*Activity II*		*Baseline II*	
	V	*ps*	*V*	*ps*	*V*	*ps*	*V*	*ps*	*V*	*ps*
Group Mean	*0.63*	*0.78*	*0.31*	*0.69*	*4.33*	*0.78*	*0.33*	*0.74*	*1.50*	*0.80*
Subject Number										
1	0.00	0.50	0.00	0.80	1.50	1.00	0.00	0.60	0.00	1.00
2	0.50	0.83	0.00	0.80	0.00	1.00	0.00	0.66	0.00	0.80
3	2.00	0.83	0.67	0.33	13.50	1.00	1.00	1.00	4.00	1.00
4	0.00	0.66	0.00	0.44	0.00	0.20	0.00	0.00	1.00	0.00
5	0.00	1.00	0.00	1.00	1.50	1.00	0.00	1.00	0.00	1.00
6	2.00	0.17	1.67	0.00	15.00	0.00	1.00	0.25	5.00	0.50
7	0.00	0.83	0.67	0.63	6.00	0.56	0.00	0.75	1.00	0.75
8	0.50	0.71	0.00	1.00	1.00	0.89	0.00	1.00	2.00	1.00
9	1.00	1.00	0.67	0.91	5.00	0.89	2.00	0.80	2.00	1.00
10	0.50	1.00	0.00	0.78	3.50	1.00	0.00	1.00	2.00	1.00
11	1.00	1.00	0.00	1.00	3.50	1.00	0.00	1.00	1.00	1.00
12	0.00	0.83	0.00	0.33	1.50	0.44	0.00	0.66	0.00	0.33

tion declined abruptly when positive verbalizations about activities were no longer reinforced.

Unlike Risley and Hart's (1968) findings, which indicate that transfer of verbal conditioning to overt behavior is minimal unless correspondence *per se* is reinforced, the results of the present study demonstrate that reinforcement of verbal responding can produce related change in overt behavior. This finding may be explained in part by the fact that whereas Risley and Hart (1968) tested children, the present study used an adult population in whom some degree of existing correspondence between verbal and nonverbal behavior can be assumed. In addition, group pressure may have functioned to promote correspondence. Group members were aware of which patients actually attended activities, so that the demand to report truthfully those behaviors engaged in was present. To the extent that correspondence between verbal responding and performance existed, subjects who had learned the contingencies operative in the group session may have perceived attendance at activities as a prerequisite for subsequent verbalization about this participation and resultant reinforcement. Increased discussion about activities in the group may also have served as prompts reminding patients of alternatives and options in their daily routine.

Positive responses about people obtained during the ward generalization check remained fairly constant across all experimental phases and showed no relation to verbal responses about people in the group sessions. The failure to demonstrate within-class generalization of verbal responding from one stimulus situation to another may be accounted for, in part, by the nature of the generalization check employed. The necessity to test generalization in some standardized fashion resulted in creation of an artificially structured situation. The demand characteristics of the setting in which the standardized question was asked may have resulted in an inflated baseline. In addition, since the same question was asked each day at approximately the same time for the duration of the study, habituation may have occurred.

Another factor mitigating against within-class generalization was the circumscribed nature of the generalization check employed, which was limited to positive statements about persons encountered in the ward setting. In the

group sessions, positive statements about any person were reinforced. A much broader class of responses was thus conditioned than the generalization check provided for. Also, unlike activity participation, which provided opportunity for subsequent verbalization and reinforcement, positive responses at the verbal generalization check were never followed by reinforcement. Although generalization failed to occur, it was the authors' impression that increasing the frequency of positive statements in the group setting resulted in more appropriate social interaction among the patients.

The specificity of the verbal response reinforced may well be of crucial importance in modifying behavior in different situations. Reinforced responses about activities corresponded closely to the actual behavior tested in generalization—the verbalization had a specific behavioral referent. Both response classes, verbalizations about activities and participation in activities, were discrete and specific. Conversely, postive statements about people reinforced in the group was a broad, nonspecific response class, and generalization to the discrete response class failed to occur. This suggests that when therapeutic intervention centers on alteration of verbal responding as the chief means of effecting behavior change, care should be taken to ensure that the verbalizations reinforced have specific behavioral referents if related performance change is to occur.

Group verbal-conditioning therapy, seldom a treatment of choice with psychotic, hospitalized populations, may have several important advantages. Even nonverbal group members may benefit from structured group interactions in which they have the opportunity to observe more responsive group members being reinforced for appropriate behaviors. Two subjects (4 and 5) never directly received reinforcement for activity verbalizations, but nonetheless increased their activity participation, suggesting the importance of vicarious reinforcement and modelling. In terms of cost effectiveness (permitting a more efficient use of therapist time), it should be noted that two 45-min group meetings per week over a nine-week period were sufficient to modify activity attendance substantially. The verbal mediation of this class of nonverbal behavior has important practical and theoretical implications, despite the fact that it may be argued that increasing activity attendance could have been as readily achieved by direct token reinforcement. Group verbal-conditioning therapy may be appropriate for the modification of a wide variety of behaviors (*e.g.,* desirable verbal skills and interpersonal behavior patterns) that may be less amenable to direct token reinforcement even within the controlled hospital environment. However, restoring patients as functioning members of the community is often the long-term goal of residential treatment facilities. Verbal reinforcement and mediation, as opposed to extrinsic tangible reinforcers, may be more fundamental to this treatment process, as the regulation of behavior in the extra-institutional setting is often verbal in nature. An important direction for future research is the specification of those conditions under which the modification of nonverbal behavior through verbal intervention will occur.

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