

*INCREASING VERBAL INTERACTION AMONG ELDERLY
SOCIALY ISOLATED MENTALLY RETARDED ADULTS:
A GROUP LANGUAGE TRAINING PROCEDURE*

EDWARD C. KLEITSCH, THOMAS L. WHITMAN, AND JOHN SANTOS

SHAPIRO DEVELOPMENTAL CENTER, ILLINOIS
AND UNIVERSITY OF NOTRE DAME

The present study examined the effectiveness of a group language training procedure for directly increasing and generalizing the rate of verbal interaction among four elderly, socially isolated, moderately mentally retarded men. A withdrawal of treatment design was used to examine the effect of the procedure that used verbal prompts, behavioral rehearsal, and contingent social praise. Changes in behavior were examined in two generalization settings, one similar to the training environment (Generalization I) and the other arranged as part of the subjects' daily routine (Generalization II). Baseline data indicated no verbal interaction among the subjects. During treatment the training procedure increased the rate of subjects' verbal interactions not only in the training situation, but also in the two generalization settings. An analysis of the data obtained during the Generalization II situation indicated that subjects' verbal interaction increased not only among themselves, but with nonsubject peers present in this setting. Follow-up data showed that increases in rates of verbal interaction were maintained four months after the cessation of training. The implications of the results for program generalization and work with the language deficient individual is discussed.

DESCRIPTORS: Elderly mentally retarded, social isolation, group language training, behavior rehearsal, generalization, maintenance

Intervention programs with mentally retarded persons have traditionally focused on the younger members of this population. This emphasis has probably been dictated both by perceptions of the elderly retarded as being difficult to change (Hoyer, Kafer, Simpson, & Hoyer, 1974) and limited in resources (Talkington & Chiavaro, 1969). DiGiovanni (1978) has suggested that physical and behavioral deterioration in these individuals can often be accounted for by environmental factors rather than underlying brain defects. To date, however, only a small number of research programs have been con-

ducted that assess behavioral procedures for remediating response deficits in elderly retarded subjects (Snyder & Wollner, 1974; Talkington & Chiavaro, 1969; Kleitsch & Santos, Note 1). Unfortunately, as MacDonald (1978) suggests, most of these programs have involved procedures that are impractical for existing geriatric facilities. More generally, the lack of research attempting to apply behavioral techniques with elderly mentally retarded is surprising given population trends that indicate the number of retarded individuals surviving to reach old age has increased dramatically in recent years, and in view of the fact that a significant number of elderly people are being transferred from state institutions to less-structured community living facilities where successful adjustment often depends on their ability to interact with others (DiGiovanni, 1978).

Perhaps one of the most striking deficits manifested by mentally retarded individuals, and par-

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ticularly by elderly retarded persons in institutional settings, is their low levels of verbal interaction. Although earlier and more recent research has suggested that verbal interaction among retarded children (Whitman, Burish, & Collins, 1972) and younger retarded adults (Doljanac, Schrader, & Christian, Note 2); Reeser & Reid, Note 3) can be increased, only minimal attention has been given to the development of interpersonal language among older retarded clients.

One popular method for developing and increasing conversational language among mentally retarded populations involves the use of a language group. Although some recent research has suggested the effectiveness of language groups in training mentally retarded young adults (Doljanac *et al.*, Note 2; Reeser & Reid, Note 3), only one study has examined the efficiency of this procedure with elderly mentally retarded persons (Kleitsch & Santos, Note 1). Because of design and measurement problems, all the aforementioned studies were limited in the conclusions they could make, particularly with regard to the social importance of the behavioral changes obtained. Although a substantial body of literature indicates that operant control of verbal behavior can be achieved, systematic analyses of the maintenance and generalization of verbal behavior across situations are infrequent (Campbell & Stremel-Campbell, 1982; Hester & Hendrickson, 1977). Reeser and Reid (Note 3) as well as Kleitsch and Santos (Note 1) failed to monitor the number of verbal interactions that occurred without experimenter prompts. Kleitsch and Santos (Note 1) and MacDonald (1978) relied on anecdotal reports from ward or living unit staff as substantiating evidence for a generalized increase in rate of verbalization. In contrast, Reeser and Reid (Note 2) systematically monitored the rate of verbalization outside of the training sessions and reported that generalization did occur. In this latter study, however, training and generalization sessions were conducted in the same room,

and although generalization was demonstrated across activities, no attempt was made to record subjects' rate of verbalization in different physical settings.

All the aforementioned studies used the "train and hope" (Stokes & Baer, 1977) method of producing generalization in which generalization was a welcomed, yet not explicitly programmed, occurrence. A more explicit strategy, "loose training," for producing generalization was used in a recent study by Campbell and Stremel-Campbell (1982) to increase the spontaneous use of language in two retarded boys. This strategy involved programming with little control over the stimuli presented and the correct responses allowed so as to maximize sampling of relevant dimensions for transfer to other situations and other forms of the behavior (Stokes & Baer, 1977). Although the results of Campbell and Stremel-Campbell study did suggest behavior generalization from a training to a "free-play" activity, generalization, as in the Reeser and Reid study, was not assessed across physical settings.

The general purpose of the present study was to assess the effects of a group language training procedure using verbal prompts, modeling, behavior rehearsal, and several generalization strategies on the verbal behavior of four socially isolated elderly mentally retarded men. To program generalization, a "loose training" strategy was used as well as two additional strategies discussed by Stokes and Baer (1977): "natural contingencies" and "sufficient stimulus exemplars." Specifically, intervention was conducted in a group setting in which social behavior was programmed across clients and conversational topics with social praise and conversation used as reinforcers. To address the growing concern over the issues of assessing generalization (Kendall, 1981; Rusch & Kazdin, 1981; Stokes & Baer, 1977) the training effects were examined not only in the situation in which intervention was conducted, but also in two other group situations. The data obtained during one gen-

eralization situation, which was quite physically distinct from the training situation, were analyzed to examine the effects of training on verbal interaction, not only among the target subjects, but with peers not involved in the training program. Finally, to assess the maintenance of program effects, a 3-mo follow-up was conducted.

METHOD

Residents and Setting

The target residents were four males from a geriatric living unit in a large state developmental disabilities center. The men were all over 50 yr of age (Fred, 53; Henry, 51; Charles, 57; and Ralph, 51) and each had been institutionalized for over 20 yr. On the basis of adaptive behavior and intellectual assessments as measured by the American Association on Mental Deficiency Adaptive Behavior Scale and Slosson Intelligence Test (IQs: Fred, 39; Henry, 41; Charles, 51; Ralph, 43), they were diagnosed as moderately retarded. Each of the individuals had basic self-help skills and was able to communicate verbally in short sentences and/or phrases, as determined by a speech pathologist. Although the residents were enrolled in an independent living skills program, they were described by the living area staff as almost never entering into verbal interaction with staff and other residents, and more generally, as being severely socially isolated. None of the men engaged in any maladaptive behaviors that required behavior management programming. Eight additional residents, not involved in training, resided on the same living area as the target residents. On the basis of intellectual and adaptive behavior assessment, two of these residents were mildly retarded and six moderately retarded (mean IQ 47, range 36 to 60). A speech pathologist determined all eight had well-developed expressive and receptive language functioning for all communication contexts and were not in need of speech therapy or verbal language

training. Each of the target residents had been institutionalized for over 20 consecutive years and had hearing within normal limits for everyday speech.

All training and one set of generalization assessments (Generalization I) were conducted in a 4.6 m by 7.1 m meeting room in the residents' living area. This room contained a circular table surrounded by five chairs. A second generalization assessment (Generalization II) was carried out in the living area kitchenette during daily cigarette breaks with 12 residents present (eight of whom were not involved in training sessions). The kitchenette measured 3.5 m by 4.2 m with a recessed stove and sink. Two tables with chairs were placed parallel to the wall across from the sink and across from the doorway. Both training and generalization settings had glass windows installed in the upper half of one wall.

Response Definitions

The present study used Robertshaw, Kelly, and Hiebert's (1973) general definition of a verbal response as a verbalization that is audible and understandable. A verbal response was recorded when a resident responded to a question, prompt or modeled response, or independently verbalized: (a) a word, (b) series of words, or (c) a series of sentences related to a single topic. Observers differentiated eight types of verbalization:

1. *Self-initiated toward group leader.* Resident emitted a verbalization, not preceded by a request for a verbal response (e.g., question, prompt, modeled response), directed toward the group leader. Direction of verbalization was determined by the head orientation of the speaker.

2. *Self-initiated toward resident.* Resident emitted a verbalization, not preceded by a request for a verbal response, directed toward another resident.

3. *Self-initiated toward nonresident.* Resident emitted a verbalization, not preceded by a request for a verbal response, toward a resident who was not present in the training situation.

4. *Elicited by group leader.* Resident emitted a verbalization following a direct inquiry (e.g., "How are you Joe?") from the group leader.

5. *Elicited by resident.* Resident emitted a verbalization following a direct inquiry from another resident.

6. *Elicited by nonresident.* Resident emitted a verbalization following a direct inquiry from a resident not present in the training situation.

7. *Prompted.* Resident emitted a verbalization following an instruction (e.g., "Joe, ask Bill how he feels today," or "Joe, say something to Bill.") to verbalize from the group leader.

8. *Modeled.* Resident emitted a verbalization following the group leader's demonstration of an appropriate response (e.g., "Joe, ask Bill, 'Bill, how do you feel today?'").

Rating Procedure

Three observers, seated apart from the group, recorded the occurrence of each resident's verbalizations. One observer recorded the verbalizations of two of the residents while a second observer recorded the verbalizations of the remaining two residents. For reliability assessment purposes, a third observer recorded verbalizations of the same residents on an alternating (from session to session) basis with either observer 1 or observer 2.

A partial interval response method was used in recording the residents' behavior. Observers watched and listened during a 10-sec interval and scored the occurrence of the first target behavior. One tally was marked regardless of whether the behavior occurred only once briefly, or several times during the interval. In the event that a resident emitted two different target behaviors during a 10-sec interval, only the first behavior was recorded. Because a short time interval was used, it was rare for more than one response to occur per interval. If a verbalization overlapped two or more intervals, it was recorded in all intervals during which it occurred (Bailey, 1977).

This rating system was used in the training and two generalization settings. However, only

in the Generalization II setting, did the observers differentiate between verbalizations directed toward residents present in training from other residents who were not present. Recording continued throughout the duration of the study. All sessions, with the exception of those in the Generalization II setting, were audiotaped.

Observer Training, Reliability Assessment, and Observer Bias Control Procedures

Prior to the beginning of the experiment, observers were trained by rating videotapes of residents not involved in the study in the training, Generalization I, and Generalization II situations. Videotaped resident verbalizations were scored in terms of the observational (response) code by the first author. His data were used as the scoring standard against which the observers' use of the rating system was compared. Following suggestions by Bailey (1977), training was conducted by first observing and recording one type of verbalization relevant to the observational code for approximately 2 min, after which the tape was stopped and the scoring was reviewed. Differences in the interpretation of the behavioral code were resolved by calling attention to details of the code. This procedure was repeated for each type of verbalization. Observers then simultaneously recorded each of the verbalizations in the behavioral code. All observers were brought to an 80% level of reliability on all dependent measures on two occasions prior to the beginning of the study.

Percentage of observer agreement during this training period and the study proper was calculated for both occurrence and nonoccurrence of the target behaviors according to the following formula (Hopkins & Hermann, 1977):

$$\text{Reliability Occurrence} = \frac{O_{1+2}}{T} \times 100$$

$$\text{Reliability Nonoccurrence} = \frac{N_{1+2}}{T} \times 100$$

O_{1+2} = the number of intervals in which both observers record the response as occurring;

- N_{1+2} = the number of intervals in which both observers record the responses as not occurring;
- T_O = the total number of intervals in which either one or both observers recorded the occurrence of a response; and
- T_N = the total number of intervals in which either one or both observers recorded the nonoccurrence of a response.

Reliability was assessed during the study on an alternating basis, once every other session for each observer. In all instances, reliability coefficients for each coded verbalization, in each situation, for each resident, exceeded 80%. Overall reliability coefficients for occurrence averaged 94% with a range between 80% and 100%, and for nonoccurrence they averaged 95% with a range between 85% and 100%.

Two raters also independently recorded the number of words each resident emitted per verbalization from audiotapes obtained during 11 sessions in the Training and Generalization I situations. Interrater reliability for each verbalization was computed by dividing the smaller score per verbalization by the larger score per verbalization, and multiplying by 100 to calculate the percentage of agreement. Following the calculation of a percentage of agreement for each verbalization, the values across verbalizations were then averaged for each resident for each session in each situation. Overall mean interrater reliability for data obtained from the audiotaped probe sessions was 94%, with a range of 89% to 100%.

In an attempt to control for observer drift, bias, and influence, some suggestions offered by Kazdin (1977a) were followed. Observer drift was controlled throughout the investigation by continued retraining of observers together. They met as a group once every 10 sessions, scored behavior from the training videotapes, and received immediate feedback on the accuracy of their observations relative to the predetermined scoring standard. In order to control for observer bias, the experimenter did not provide feedback

to observers about changes in the residents' behavior. To minimize observer influence on resident behavior in the training setting, observers were unobtrusively located in a corner of the room 2.5 m away from the residents' group leader. In the Generalization II setting, observers monitored residents' behavior by looking through a large window while standing outside the room in which residents were gathered. Staff routinely observed residents in this situation prior to the initiation of the study and could easily hear their verbalizations through an open doorway next to the window. In examining the influence of reliability assessment on observer behavior, Reid (1970) and Romanczyk, Kent, Diament, and O'Leary (1973) found that observers showed substantially higher agreement when they expected their evaluations would be checked. Following Kazdin's (1977a) recommendation for ameliorating this problem, observers were led to believe that all observations were being monitored and were in fact intermittently monitored by the experimenter in both the training and generalization situation.

Design

A withdrawal of treatment design (ABAB) was used with the intervention simultaneously introduced across residents. The effects of the intervention were monitored in the two generalization situations as well as the training setting. In one of these situations (Generalization II), residents' verbal interactions with each other as well as with eight other residents were monitored. Data were also obtained in the training and generalization situations during an eight-session maintenance period. Finally, follow-up data were obtained during a 4-wk period immediately after the maintenance condition in both generalization situations and then 3 mo later but only in the Generalization II setting.

Procedure

Baseline I. Prior to introducing the intervention, baseline data were obtained in the training situation. During baseline (sessions 1 through

5), the group leader (a graduate student) told the group he would be with them while their regular group leader (a living area attendant) took a break. He then told them that they could talk if they wished while he did some work. The group leader then proceeded to read some medical charts and did not look up for the next 15 min. After 15 min had passed, the leader looked at his wristwatch and said that he had to leave and he would get the regular group leader. He then told them while they were waiting they could have a cigarette and again mentioned they should feel free to talk with each other. Cigarettes were made available. The group leader then left the room and the Generalization I assessment was carried out. The regular group leader entered the room 10 min later, and observer recording ceased. Within the next hour, data were again collected on the four residents' verbalizations during a daily, late afternoon cigarette break (Generalization II). These breaks, a part of the residents' daily routine, occurred in a kitchenette within the living area. No structured activities were in effect during this break period. They always lasted a minimum of 10 min, with data being collected only during the initial 10 min of this break. All sessions, with the exception of those in the Generalization II setting, were audiotaped.

Treatment I. During sessions 6-13, after the residents and group leader were seated, the same substitute group leader again indicated that he would be with them while their regular group leader took a break. As during baseline sessions he suggested to the group that they might use the occasion to talk with one another. If a resident emitted a self-initiated verbalization and another resident responded to this verbalization, the group leader smiled and looked at them during the interchange, interjected relevant responses into the discussion and praised the group members for conversing. However, in the event that no resident spoke within a 10-sec interval, the group leader asked again if anyone would like to try to talk. If no one talked, the group leader said, "Why, I can think of a lot of things

that we can talk about. We can talk about (e.g., the weather, what we did today, or what holidays are coming up"). He introduced a minimum of three topics for discussion. If no one spoke within approximately a 10-sec interval, the group leader then instructed one resident to talk to another (e.g., "Joe, try talking with Bill."). After this occurred, if the second group member to whom the comment or question was directed failed to respond, the procedure was repeated with a general verbal prompt to talk given (e.g., "Bill, can you answer Joe's question?"). If after 10 sec following a prompt, the residents failed to respond, the group leader was instructed to model an appropriate response (e.g., "Bill, say to Joe 'Joe, I am feeling fine today.'"). However, the need to use the modeled response did not arise during the study. Following the final interchange between residents (a 10-sec period without any resident verbalizing), the group leader looked at both residents, smiled, made a relevant response and praised them for verbally interacting. After this procedure had been completed with two residents, it was repeated until every dyadic combination of residents interacted at least once during the session. In general verbal prompts were given only when necessary.

Fifteen minutes after the beginning of the session, the group leader looked at his wristwatch and said, "It's time for me to leave now. I've really enjoyed this conversation. It's great when people talk with one another. I'll get (name of regular group leader)." The observers then ceased recording. "While you are waiting, you may have a cigarette. Feel free to continue to talk with each other while you are waiting." Cigarettes were then made available to group members. The group leader left the room and the observers resumed recording (Generalization I). Ten minutes later, the regular group leader entered the room and recording ceased, after which the residents were escorted from the room. Within the next hour, Generalization II assessments were initiated as during the baseline condition.

Baseline II. During sessions 14-18 the train-

ing procedure was discontinued and the baseline procedure was reinstated.

Treatment II. During sessions 19 through 27, training was reinstated. However, prompts to talk were gradually faded, so that by the 25th session, they were no longer given.

Maintenance. Beginning with session 28, the group leader began to interject relevant statements and social praise less frequently following residents' verbal interaction. By session 35, his participation was completely faded with the exception of the statements made at the beginning and end of each session. At this point, training sessions were discontinued.

Follow-up I and II. During Follow-up I, sessions continued daily as before in Generalization I and II situations for 4 wk. However, only one probe session was observed and recorded each week. During Follow-up II, 3 mo later, three probe sessions were conducted during 1 wk in the Generalization II situation.

RESULTS

The percentage of intervals in which the different categories of verbalizations averaged across residents occurred in the Training Situation is presented in Figure 1. The percentage of intervals in which verbalizations occurred for each resident in the Generalization I situation is presented in Figure 2 and in the Generalization II situation in Figures 3-6.

Baseline I

Baseline assessment of the residents' frequency of verbalizations in all three situations (Training, Generalization I, and Generalization II) corroborated the living area staff's description of the residents as being severely socially isolated. None of the residents verbalized during any of the baseline sessions (see Figures 1-6).

Treatment I

Training situation. Figure 1 indicates that with the initiation of treatment, residents' ver-

balizations increased most markedly in the self-initiated to subject category. Relative to baseline, mean increases occurred across all other categories. However, as shown in Figure 1, the extent of increase was quite small. Analysis of individual subject plots of these same data (not presented here) basically reflect the same trends with the exception of Charles who showed an initial increase in self-initiated verbalization and a subsequent decline to near baseline levels. However, Ralph and Henry showed a higher frequency of self-initiated verbalization than Fred.

Generalization I. After the initiation of treatment in the Training situation, all residents except Fred showed a reliable increase in self-initiated verbalization in the Generalization I situation. Fred, while showing a slight mean increase in this type of verbalization, was still near baseline level. Charles and Ralph also demonstrated an increase in verbalization elicited by other group members. Henry is the only resident who consistently produced self-initiated to subject verbalizations at a frequency greater than his elicited by subject verbalizations. Moreover, the percentage of intervals in which Henry exhibited self-initiated verbalizations was markedly greater than that of any other resident (Figure 2).

Generalization II. In the Generalization II situation, all four residents showed an increase in self-initiated verbalizations, with Henry again displaying the greatest increase. All residents but Henry showed a small increase in verbalization elicited by other group members. Although small, all group members also displayed at least slight mean increases in self-initiated to nonsubject and/or elicited by nonsubject verbalizations (Figures 3-6).

Baseline II

When treatment was withdrawn in the Training setting, all four residents immediately ceased to verbalize in all three situations (Training, Generalization I, and Generalization II). (See Figures 1 through 6.)

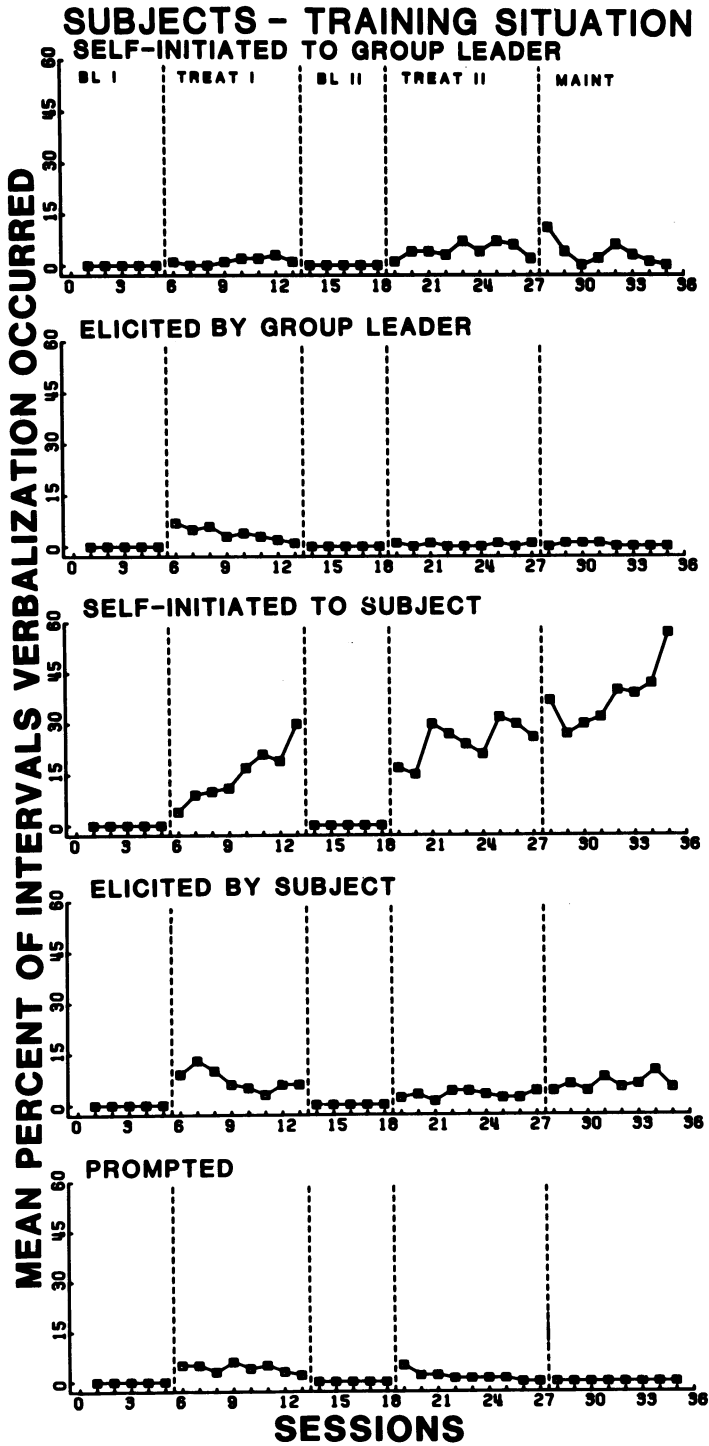


Fig. 1. Mean percentage of intervals verbalization occurred in training situation.

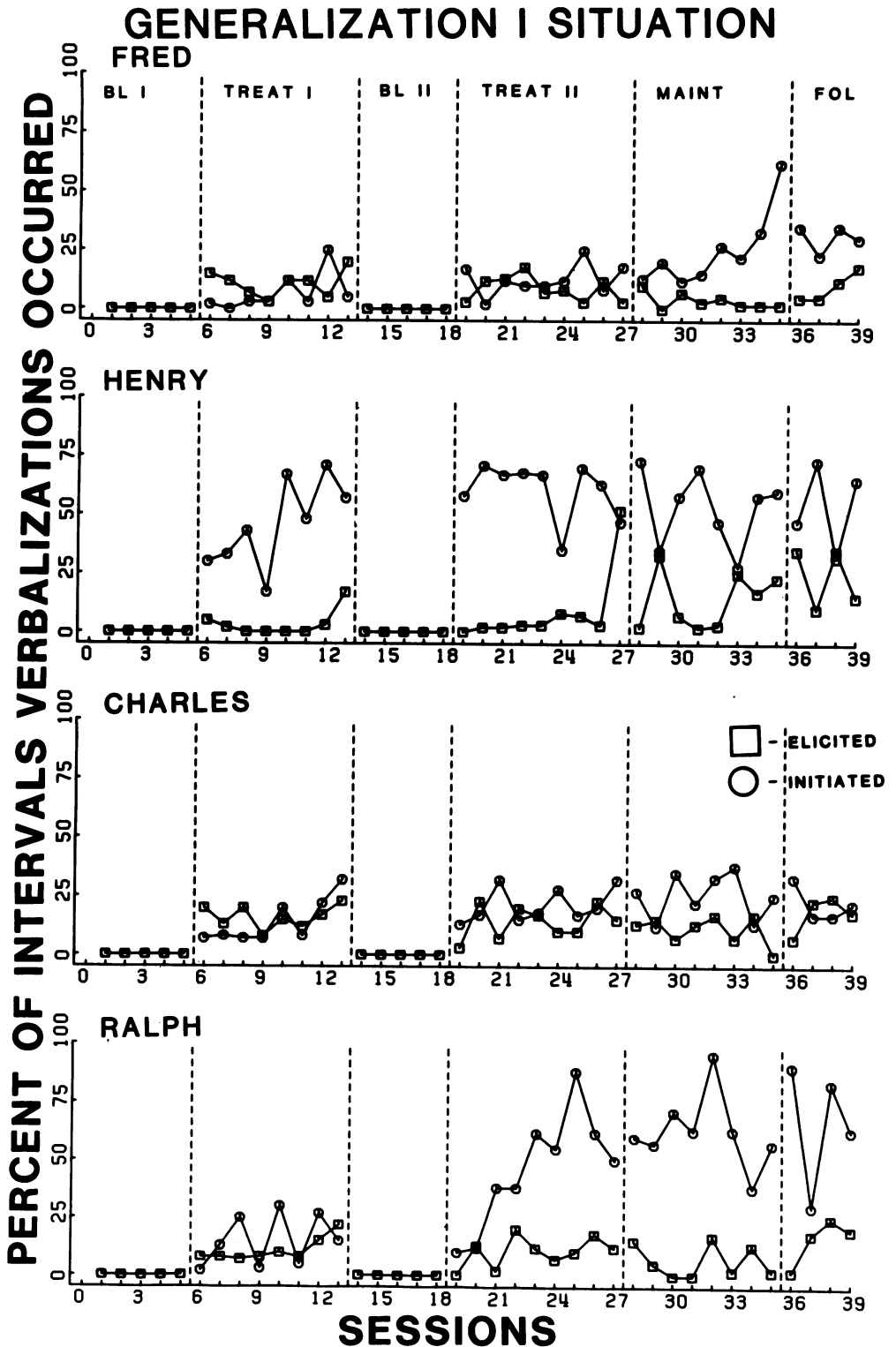


Fig. 2. Percentage of intervals verbalization occurred in Generalization I situation.

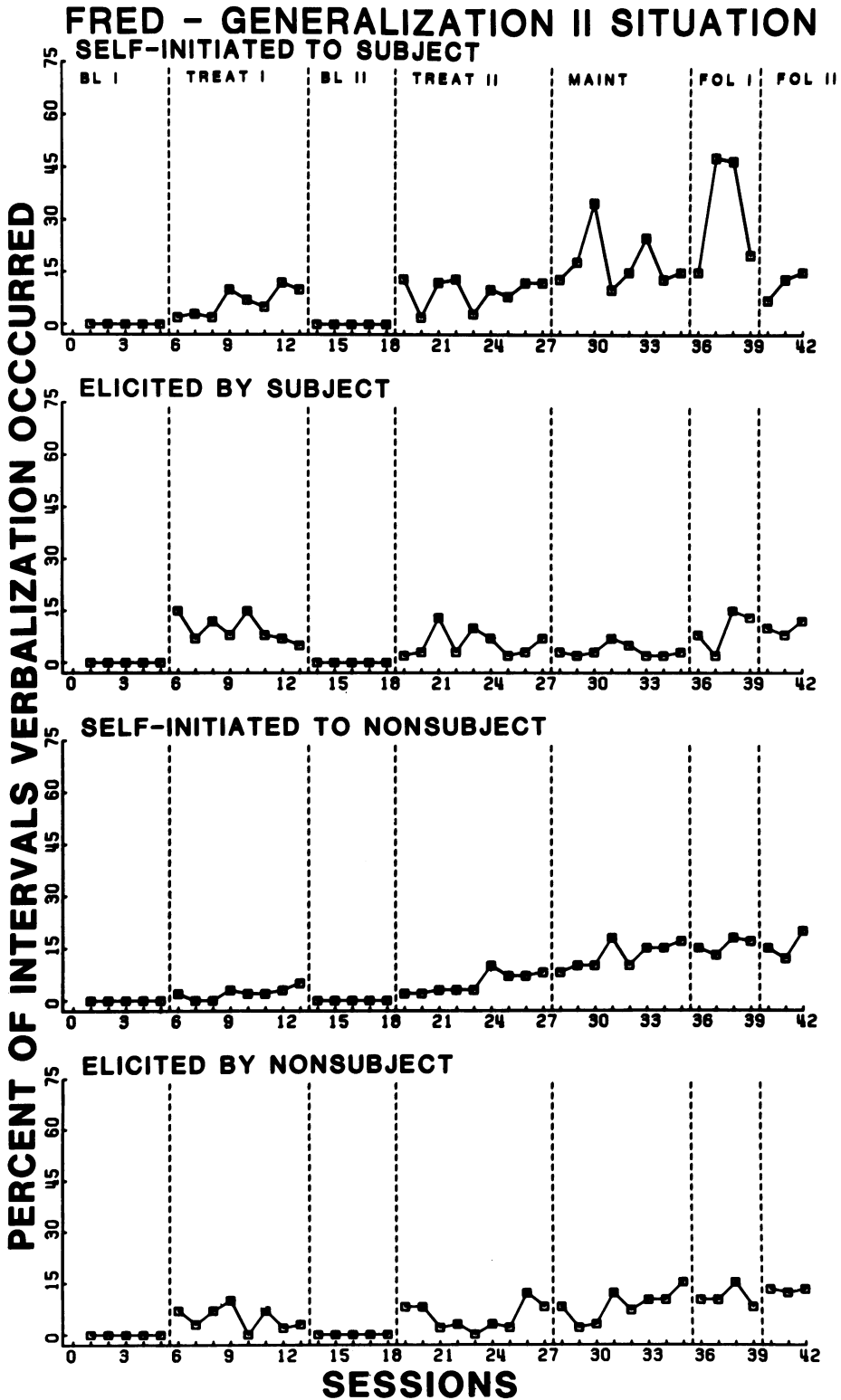


Fig. 3. Percentage of intervals verbalization occurred in Generalization II situation—Fred.

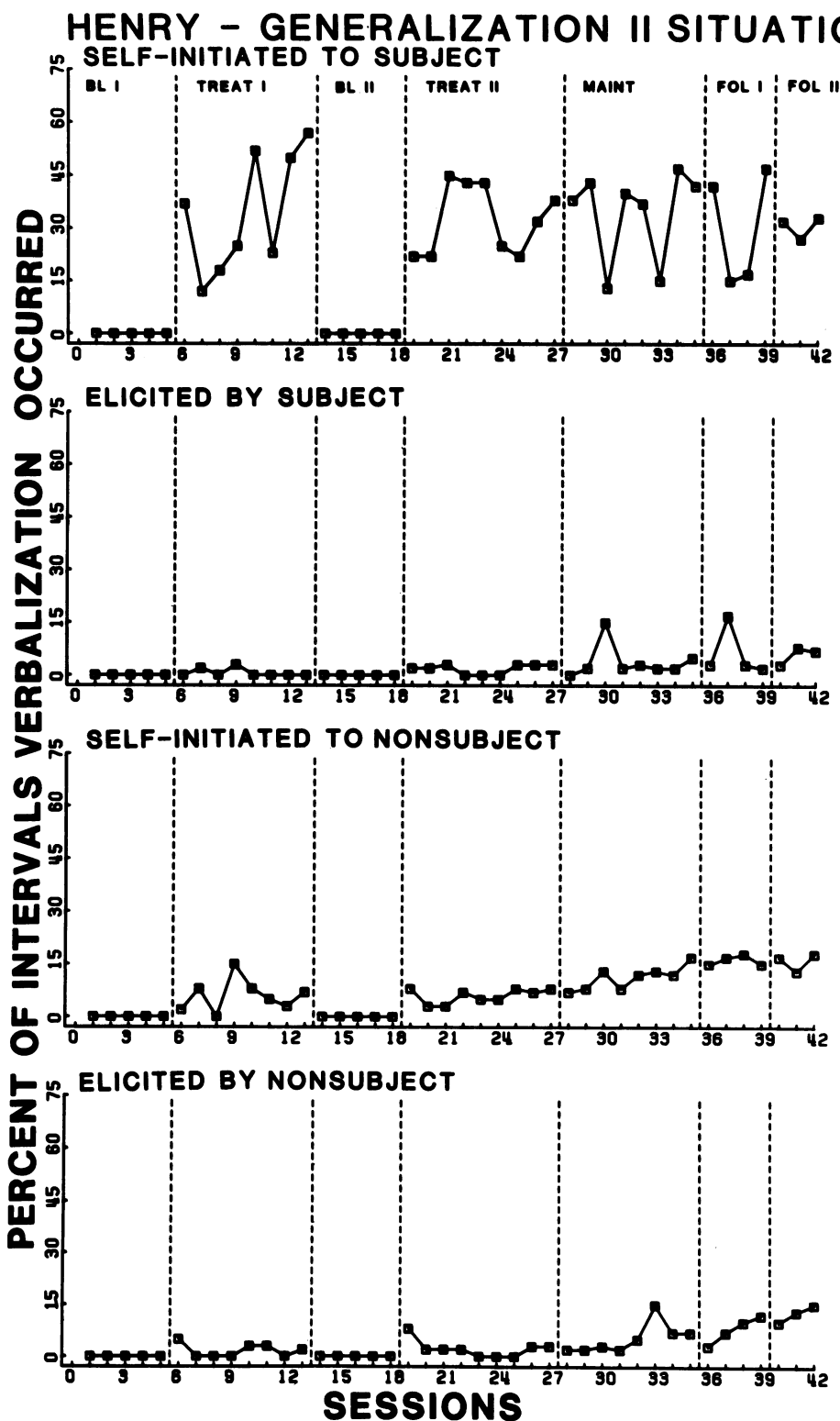


Fig. 4. Percentage of intervals verbalization occurred in Generalization II situation—Henry.

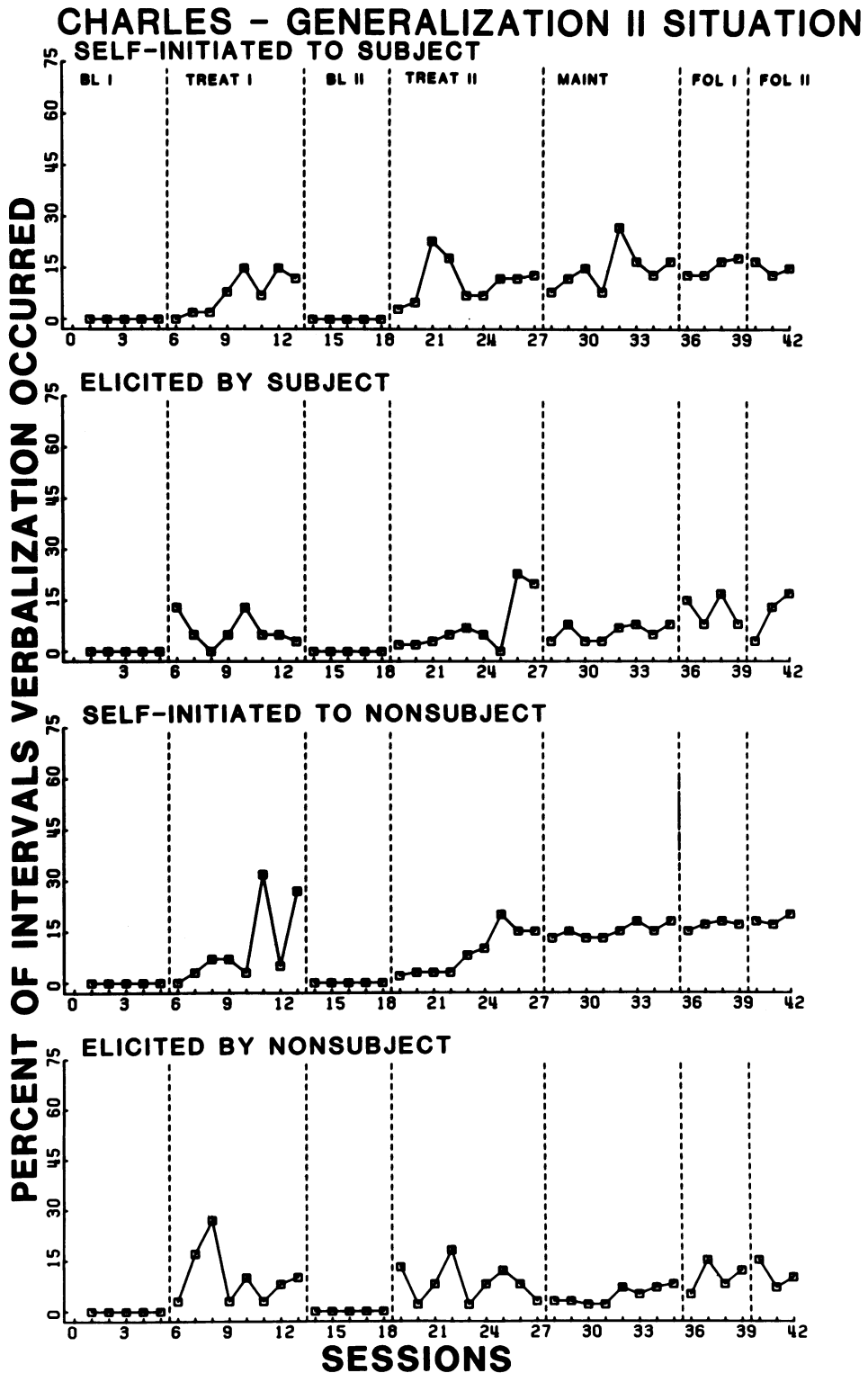


Fig. 5. Percentage of intervals verbalization occurred in Generalization II situation—Charles.

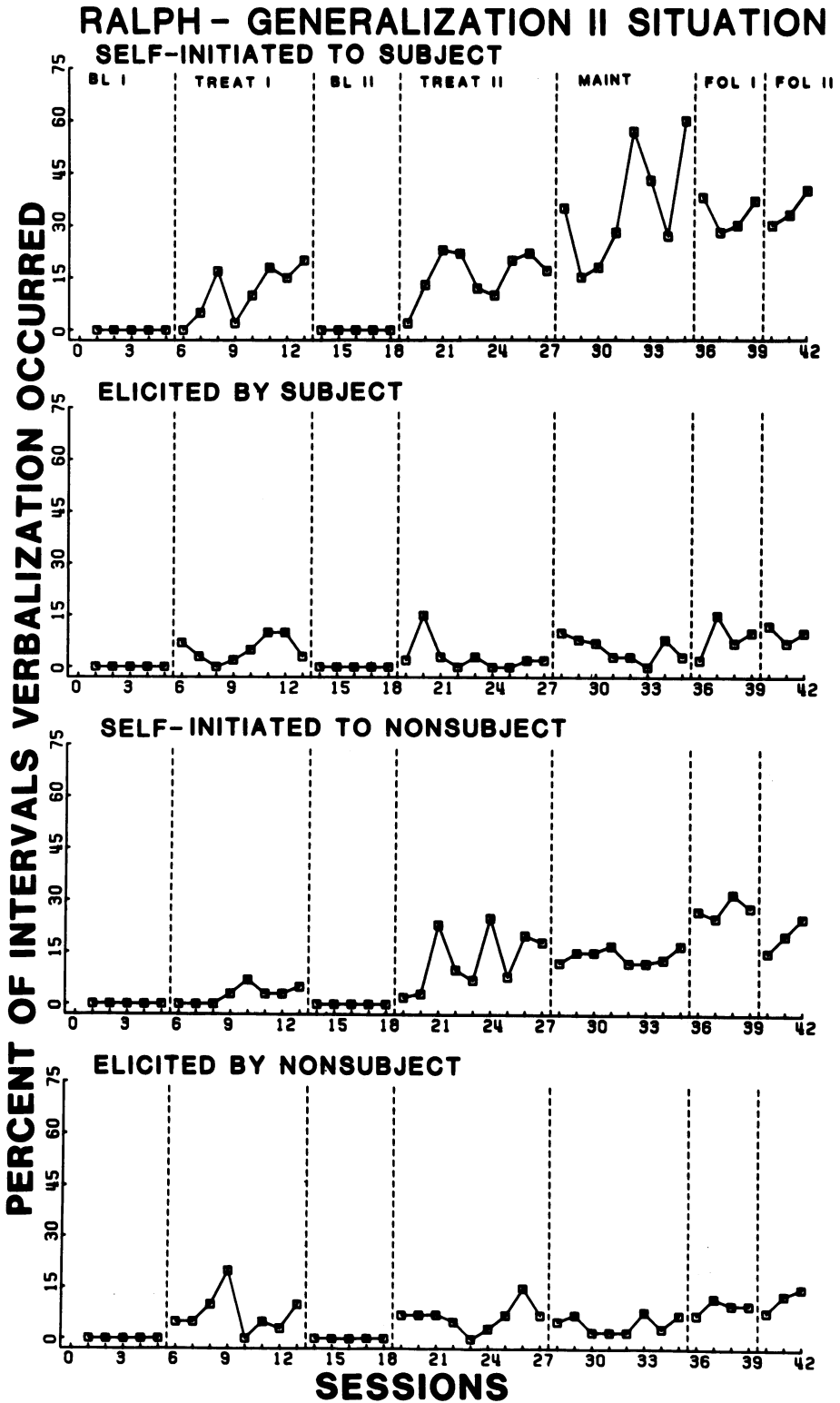


Fig. 6. Percentage of intervals verbalization occurred in Generalization II situation—Ralph.

Treatment II

Training situation. With the reinstatement of training, self-initiated to subject verbalizations occurred at frequencies equivalent to or greater than that at the end of Treatment I, with the other response categories near zero levels of occurrence. Analyses of individual resident data reflect this trend with all residents showing self-initiated verbalization typically in 15% or more of the rating intervals each session (see Figure 1).

Generalization I and II. In the Generalization I situation, with the exception of Ralph, the response patterns of the residents during Treatment II were similar to those observed during Treatment I. Ralph showed a much higher frequency of self-initiated verbalization. Fred, as during the Treatment I condition, displayed the lowest level of verbalization and Henry remained quite vocal. (See Figure 2.) In the Generalization II situation, levels of responding were also similar to those observed during Treatment I. However, Ralph, and to a lesser extent, Fred, showed more self-initiated verbalization to nonsubjects (see Figures 3-6).

Maintenance

Although group leader participation was completely faded by session 35, an increase in self-initiated verbalization in the training situation was displayed during maintenance (see Figure 1). Examination of individual subject plots revealed trends across subjects. In the Generalization I situation, Henry, Charles, and Ralph maintained their level of self-initiated verbalization while Fred showed an increase (see Figure 2). In the Generalization II situation Ralph increased in self-initiated verbalization whereas the other residents showed levels of responding similar or slightly higher than those displayed during the Treatment II condition (see Figures 3-6).

Follow-up I and II

Data collected in the Generalization I and II situations generally showed that each resident's

verbalization patterns were sustained during the 4-wk Follow-up I period (see Figures 2-6). The Follow-up II data also indicate that 3 mo after the complete termination of training, residents were engaging in verbal interaction with other residents and nonsubjects in the Generalization II situation at levels comparable to those displayed during Treatment II (see Figures 3-6).

Mean Length of Utterance

The average number of words spoken per verbalization during daily sessions in the training and Generalization I situation varied from 1.99 to 5.80 and the range varied from 1 to 25 words for individual verbalizations. No consistent trends in these data occurred across conditions for the four residents. The data, however, did suggest that Henry and Ralph's utterances were generally longer than those of Fred and Charles. Pearson product moment correlations, computed between each resident's frequency and length of utterance across sessions, indicated that no significant relationship between the number of words spoken per utterance and number of utterances (verbalizations) made by a resident.

DISCUSSION

Language disorders and deficits have been cited as major problems among the institutionalized mentally retarded, including the elderly members of this population, and as having important implications for the development and maintenance of their social interactive skills. The present study evaluated an easy to administer group language training procedure for dealing with social isolation in four socially isolated, elderly, mentally retarded men. The present results suggest that this procedure was effective in increasing the overall rate of residents' verbalization not only in the training but also in two generalization situations. The data from the Generalization II situation indicated that the rate of verbalization increased among the target residents and between the target residents and untrained peers. As group leader participation

was gradually faded during the maintenance phase, the residents continued to verbalize at high levels among themselves across situations and with untrained peers present in the Generalization II situation. No decrement in verbalization from trained levels was seen to occur in either this phase or in the Follow-up I or II phases, which were conducted 4 wk and 3 mo, respectively, after the maintenance phase was completed. The demonstration of change in the Generalization II situation is of special importance because past research dealing with the social interactive behavior of the mentally retarded has examined the occurrence of generalization only in the same physical setting (room) in which the training was conducted (Wheeler & Wislowski, 1977; Whitman et al., 1972; Reeser & Reid, Note 3).

An interesting suggestion that may help to account for the rapidity and extent of generalization in this study comes from the work of Bandura (1969) and Stokes and Baer (1977). Bandura notes that persons who occupy a prestigious position in a social group normally serve as major sources of social behavior for other members. Consistent with this proposition, the behavior of Henry may have been instrumental in bringing about the training and generalized changes in the other residents' behavior. During Treatment I phase, Henry's rate of self-initiated to subject verbalizations markedly exceeded those of the other residents in the Training and the Generalization I and II situations. He was also the only one whose frequency of self-initiated to subject verbalizations consistently exceeded his verbalizations elicited by other subjects. Therefore, Henry may have served as a "catalyst," at least initially, in stimulating verbal interaction among other members of the group when the leader was absent. Other researchers or clinicians using the present language group procedure obviously may not have a Henry to serve serendipitously as a catalyst for verbal interaction. It might be possible, however, as in the study by Dy, Strain, Fullerton, and Stowitschek (1981), to select group members who can serve

as a catalyst within a verbal training group.

Another explanation for the generalization effects in this study relates to the training strategies used. In the present study, each resident was provided with three stimulus exemplars (Stokes & Baer, 1977), in that they were trained to interact verbally with three other peers. This may account for the increase in responding of the residents with peers not involved in training. Another strategy involved the use of naturally occurring contingencies. Bandura (1969) and Stokes and Baer (1977) concluded that established patterns of behavior maintain their strength after specially arranged consequences are discontinued, provided that behavior is brought under the influence of favorable contingencies within the individual's social milieu. In the present study, residents were also taught to provide such a contingency by verbally responding to each other. The main purpose for the use of social praise following resident verbal interaction was to develop and sustain the residents' verbal interactions to the point that the individual could make successful contact with a natural community of reinforcement. As the locus of reinforcement shifted from the group leader to the residents' peers, the residents became more prominent agents in their own behavior change. That is, they learned to verbalize with their peers and to receive reinforcement in the form of a verbal response.

A final factor possibly accounting for the response maintenance and generalization in the present study is also described by Stokes and Baer (1977). They suggested that to promote generalization one should "train loosely" with relatively little control over stimuli presented and correct responses allowed, so as to maximize sampling of a relevant dimensions for transfer to other situations and other forms of behavior. Although the literature contains few studies that deal with this type of training, Schroeder and Baer (1972) successfully used a "loose" training technique and achieved greater generalization to vocal imitation problems than did a method that emphasized tight restrictions of

the vocal skills being learned. Campbell and Stremel-Campbell (1982) also used this type of technique to program spontaneous use of language. The present study's procedure allowed residents to initiate verbalizations with any other resident on any topic desired, thereby allowing them to learn to respond to a variety of verbal interactive stimuli.

Given the extensive generalization and maintenance of responding that was obtained in this study, the complete cessation of verbalization in the second baseline condition is somewhat surprising. A decline of verbal interaction was expected after training was terminated abruptly, but such an immediate cessation was surprising. This may have been due to overly precise stimulus control that developed during the early training sessions when residents rarely responded until the group leader made prompting statements. In contrast, the fact that verbal interaction continued across situations during the latter part of the Training II and maintenance conditions might be accounted for by the fact that prompts and reinforcement were gradually faded rather than sharply removed, with the consequence that stimulus control was gradually transferred to the residents themselves.

In the present study, no marked increase in the mean length or range of verbalization was exhibited by any of the residents, thus indicating that training failed to increase the number of words spoken per verbalization over time. The average number of words per verbalization was relatively low (ranging from a rounded average of 2 to 6 words per resident per session); however, the range was relatively large (1 to 25 words). The range data reveal that the residents did not always speak in short utterances, but occasionally spoke in relatively long sentences. Although this study did not attempt to increase the residents' length of verbalization, this could have been easily accomplished with a shaping technique. However, a problem related to the use of such a training strategy is that it is not known what average length or range of verbalization is appropriate for either mentally

retarded peers or "normal" individuals in group settings similar to those in the present research. In order to determine this, it would be advisable that future researchers working in this area obtain social comparison data (Kazdin, 1977*b*). For example, the residents' performance could be compared with retarded peers and individuals of "normal" intelligence who were not socially isolated. In addition, subjective evaluations of the residents' verbal behavior by individuals in the natural environment could be solicited. These data might also be used to establish a normative standard of the percentage of a time interval that a person is expected to engage in verbal interaction.

Future research should also investigate further the occurrence of "spillover" treatment effects such as those reported in the social interaction training literature (Strain, Shores, & Kerr, 1976; Whitman *et al.*, 1972). Although the present study did examine the effects of training on residents' verbal interaction with nontrained peers in the Generalization II situation, the nontrained peers might also have been monitored to determine if a detectable change occurred in their pattern or quantity of speech. The existence of spillover effects offers the possibility that a relatively large group of socially isolated individuals might be effectively and efficiently influenced by training a smaller group of their peers. Additional research is also needed to examine the utility of the present group training procedure in dealing with social isolation in other subjects of both subaverage and normal intelligence. Social isolation for the residents in the present study was presumably associated primarily with a performance rather than a learning deficit. That is, the residents knew how to talk, but, for whatever reasons, failed to do so.

In conclusion, this study adds to the growing literature directed at developing an effective technology for programming generalization and maintenance and at increasing adaptive behavior in a population, elderly retarded people, whose problems are often exclusively conceptualized

and treated within a medical framework. Consistent with the results of previous speculation, the present study suggests that the behavior deficits of the elderly retarded may be due to environmental factors and can be reduced through behavioral programming. Because of the general lack of research in the area and given the striking increases in the number of elderly people, considerably more attention needs to be given to program development and evaluation with this population.

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