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Conversational skills training for developmentally delayed board and care home residents

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CONVERSATIONAL SKILLS TRAINING FOR DEVELOPMENTALLY
DELAYED BOARD AND CARE HOME RESIDENTS

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ABSTRACT

Conversational skills training was administered to two developmentally delayed male residents of a board and care home to increase each subject's use of encouraging comments and on-topic questions during conversations with another resident. The effects of the skills training package of instructions, behavior rehearsal, modeling, and feedback were assessed in a multiple-baseline design across the behaviors of encouraging comments and on-topic questions. Training was successful in that each subject increased his use of both target conversational behaviors above criterion level. The two subjects who received training were also assessed to see if the conversational behavior generalized to a third subject. This subject was also an adult, developmentally delayed male resident of the home. The two target behaviors generalized to the third subject during a single follow-up observation session. In addition, follow-up assessments for the two trained subjects indicated that each subject's increased use of encouraging comments and on-topic questions in conversation persisted over a one-week period. The conversational skills training also resulted in an improvement in their social speech. Four judges, blind with respect to training conditions and subjects, subjectively
rated the conversational behavior of each of the subjects on a bi-polar (1 = poor, 10 = excellent) rating scale while listening to pre-training and post-training tapes. All four judges rated each of the trained subjects as a better conversationalist after training.
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Many developmentally delayed people lack the necessary skills that would enable them to converse effectively with another person. As a result, meaningful and effective conversation between developmentally delayed people rarely occurs. Murray and Cohen (1959) found an extreme low frequency of conversation or "social speech" between adult, moderately functioning clients on a state hospital ward. Although the clients possessed good vocabularies and could speak in grammatically correct sentences, they did not converse with each other. Barton (1972) and Gardner (1971) recently began the task of defining each of the component behaviors that comprised conversation, and they have developed reliable conversational skill training procedures.

Various reinforcement techniques have been used to increase the emission of conversational behavior between developmentally disabled clients. For example, Hanserman, Zweback, and Plotkin (1972) administered token reinforcement contingent on the initiation of conversation by moderately functioning developmentally disabled patients. The procedure was successful in that the rate of initiations increased, and irrelevant, off-topic verbalizations decreased as long as the external reinforcement was being delivered. However, when the token system was discontinued, the rate of verbal interaction returned to the pre-reinforcement rate. Barton
(1973) also used token reinforcement for increasing the rate of conversational exchanges between three dyads of developmentally delayed state hospital residents. The rate of social speech among the pairs of residents did increase significantly when reinforced, though generalization of the increased verbal interactions was very poor when token reinforcement was made no longer available.

Barton (1975) suggested two major drawbacks to these applications of token reinforcers to increase the rate of conversational interactions between dyads of developmentally disabled residents. The two problems are: (a) when there are no restrictions on the quality of the conversation and when the researcher's main concern is to increase the number of exchanges and the amount of words, then there is a justified concern that the subjects will say just "anything" in order to meet the contingencies; and (b) increasing a subject's rate of conversation is simply not enough because he has to learn and practice the component behaviors that make up conversation.

Although investigations in the laboratory have indicated that the number of dyadic exchanges and the rate of social speech can be increased by arranging reinforcers contingent on social responses, there is another approach for training the specific behavioral components of conversation, the combined social-skill training package. This training package has been widely used in recent years in increasing social speech skills of developmentally delayed subjects (Arnold,
Sturgis, & Forehand, 1977; Edelstein & Eisler, 1976; Gutride, Goldstein & Hunter, 1973; Hersen & Bellack, 1976). First, the experimenter defines the conversational behavior, explains the importance of the behavior in conversation, and gives oral examples of the behavior to the subject. Second, the experimenter demonstrates the behavior in sample conversations with a role model or with the subjects (i.e., modeling). The subjects then initiate and practice some of the modeled responses and generate novel responses. The experimenter provides feedback to the subjects when they engage in conversation and he tells them how well they are doing and what they need to work on.

Arnold, Sturgis, and Forehand (1977) have demonstrated the efficacy of the social skills training package to improve conversational performance. They used instructions, modeling, rehearsal, and feedback to train two component communication skills not covered in a previous study by Bellack, Hersen, and Turner (1976), encouraging comments to talk, and on-topic questions. A multiple baseline design across the skills was used on one moderately functioning developmentally delayed subject. Results of the study demonstrated that training was successful at increasing the frequency of the subject's use of on-topic questions and encouraging comments in sample on-topic dialogues with the experimenter.

Minkin, N., Brauhmann, Minkin, B., Timbers, G., Timbers, B., Fixsen, Phillips, and Wolf (1976) also employed a multiple baseline design across the conversational behaviors of encouraging
comments and conversational questions. They used instructions, modeling, rehearsal, and feedback in this training package. However, the subjects were "normal" women of high school and junior high school age. Following training, in an experimenter-subject dyadic context, the subjects were placed in conversations with previously unknown adults and evaluated on the target skills. Results were that training did increase the subject's usage of both component behaviors. In addition, Minkin et al. (1976) had observers, blind to the training conditions, rate a sample of pre-training and post-training conversations of each subject. Conversational abilities were rated substantially higher after training as compared to baseline, suggesting that the two conversational behaviors were socially important aspects of conversational ability.

In summary, behaviorally-based programs to teach conversational skills and to enhance conversation among developmentally delayed persons usually employ token or artificially-contrived reinforcement rather than rely on the reinforcement inherent in conversation (Barton, 1973; Hanserman, Zwebach, & Plotkin, 1972). Also, these programs have provided training where the experimenter or another "normal" adult is one of the persons in the conversational dyad (Arnold, Sturgis, & Forehand, 1977; Minkin et al., 1976). Third, most work with the conversational skills of developmentally delayed has been in institutional or

This study, in general, replicates the Minkin, et al. (1976) study. Whereas Minkin et al. (1976) worked with "normals" of junior high and high school age, the subjects in this study were developmentally delayed. Also, since most conversational work with the developmentally delayed has been in state hospital or laboratory settings the present program trained residents who lived in a board and care home setting. Finally, the present research attempted to improve the generalization of the trained conversational behaviors to other residents by training them in a resident-resident dyadic context.

In the present study, the effects of a social skills training package of instructions--modeling, rehearsal, and feedback--on increasing the usage of encouraging comments and on-topic questions were assessed in a multiple-baseline design across the behaviors in two adult developmentally delayed residents. The two subjects who received training were also placed in conversational situations with a third "control" subject in an attempt to determine if generalization of the trained skills occurred. In addition to evaluating generalization, a one-week follow-up was conducted with the subjects to assess for durability of the results.

As a check to see if the usage of questions and positive comments by the trained subjects actually resulted in an improvement in their social speech, an additional
validation procedure from Minkin et al. (1976) was employed. Judges who were blind with respect to training conditions and subjects, subjectively rated the conversational abilities of each of the subjects while listening to pre-training and post-training conversational tapes.

The training program was designed to increase the quantity and quality of conversations between residents in the home, and to improve communicative ability and thereby to enhance the residents' ability to make friends outside the home.

Method

Subjects. Three developmentally delayed residents of the board and care home "Our House" (located in Stockton, California) volunteered to participate when asked by the experimenter. All of the subjects were in the moderate range of functioning (I.Q. 45-65), and none of them had hearing, sight, or speech disorders that would have impaired their ability to benefit from training. All of the subjects possessed the ability to listen and respond cooperatively to instructions.

Subject A was a 33-year-old male who had cerebral palsy. Due to this physical problem he tended to speak in a slow, deliberate fashion, but his enunciation was clear and distinct. He was temperamental and verbally aggressive with his peers at times, and he had a history of difficulty in interpersonal situations.
Subject B was a 34-year-old male who had Down's Syndrome. He was very friendly with the only major problem being that he had no teeth. Not having any teeth tended to make him sound somewhat "babyish," but he was still very easy to understand.

Subject C was a 28-year-old male who had cerebral palsy. The cerebral palsy affected his ambulatory capacity but had no effect on his speaking abilities. He was a shy person who interacted minimally with his peers, both at school and the group home.

From the baseline measurements it was ascertained that Subject B emitted on the average a greater amount of encouraging comments and on-topic questions than did either Subjects A or C. Thus, since A and C were in much more need of developing these skills, they were chosen to undergo training. Subject B was designated as the "control" subject, and he was observed later to assess for generalization across people during the post-training period.

Setting. All of the pre-training, training, and follow-up sessions with the subjects were conducted in the living room of the board and care home "Our House." The room was well lit, had wall-to-wall carpeting, contained several pieces of comfortable furniture, and measured a spacious 4.5 m x 7.5 m. For each session the subjects were seated in comfortable chairs directly facing one another, and spaced approximately four feet apart. A small hassock with
a cassette audio tape recorder on top was always placed between and slightly off to the side of the chairs where the subjects were sitting. For every session the recorder was never more than 1.2 m away from the either subject. To assure high quality audio recording the living room was kept free of noise such as that caused by a T.V., radio, or dishwasher. In addition, the only people present in the living room during a training session were the two subjects participating in the conversation and the experimenter. Neither of the other two staff members of "Our House" was ever present at any of the sessions in the study.

The entire resident population of "Our House" consisted of the three subjects who were in the study. Whenever two residents were about to engage in a dyadic conversation session the other resident was politely asked by the experimenter to please go to his own room and shut the door. In the few minutes that the subject was asked to stay in the privacy of his own room he could do such things as listen quietly to the radio, watch T.V., perform arts and crafts, or sleep. The important point was that the resident who was in his own room could not hear the dyadic training discussions. To assess the effectiveness of this procedure, the experimenter and another staff member listened to discussions in the living room, while sitting in each of the private rooms with the doors closed. Talking from the living room was not discernible at all from the closed private rooms. For a diagramatic lay-out of "Our House" see Appendix A.
The observers were never present at any of the sessions in the study. Instead, they rated and scored all of the session tapes at another location and time. Throughout the research the experimenter was present at all sessions.

**Equipment and materials.** A high quality cassette tape recorder was used to record the conversations. Thirty blank 60-minute cassette tapes were used to record all of the audio portions of the conversation sessions. The observers were given pens and data sheets to record the conversational behaviors. A Casio-card time electronic calculator was used to mark the intervals for the observers. A sonar SX-70 Polaroid camera was used to obtain clear, concise photos in as brief a time as possible. 8.75 cm x 10 cm SX-70 color photos were used to stimulate conversation between the subjects. There were three parameters under which the pictures fell. First, to ensure freshness of recall the pictures were taken within 48 hours of when the conversation session occurred. Secondly, the picture presented for discussion always contained the two people who were going to do the talking. This parameter was chosen under the assumption that if the developmentally delayed subjects were in the photos, they would more easily identify with what was going on in the picture, and would be more willing to converse about their own experiences. Finally, the two subjects were always involved in some activity in the picture. They were "action photos," not still portraits.
of the subjects. Pictures were taken of the subjects engaging in a wide variety of activities. This was done to keep the conversational sessions interesting and lively, and from getting too boring. Also, it was beneficial for the subjects to get experience talking about a wide variety of day-to-day activities.

The pictures that were taken of the subjects contained activities in roughly six areas of everyday life: (a) social activity pictures, which showed the subjects for example on field trips, going to the movies, going shopping, in the mall, eating out at a restaurant, and dancing; (b) outdoor recreational activities, which showed the subjects for example playing softball, throwing the football, and playing frisbee; (c) indoor recreational activities, which showed for example the subjects playing checkers, playing cards, or watching T.V.; (d) home chore activities, which showed subjects clearing dishes, cooking dinner, mowing the lawn, and vacuuming; (e) educational activities, which showed the subjects looking at pictures in books, listening to the newspaper being read, and watching educational T.V.; and (f) arts and crafts activities, which showed the subjects playing the guitar, singing outside on the house lawn, drawing, coloring pictures, whittling with knives, sewing, and making costumes to wear.

**Design.** The experimental design consisted of a multiple-baseline across the conversational behaviors of encouraging
comments and on-topic conversational questions. During the study an effort was made to train two developmentally delayed subjects to increase their usage of each of these behaviors in conversations with each other. The research consisted of the following sequence of conditions: (1) baseline, (2) training of encourages, (3) training of encourages and questions, (4) post-training, and (5) one-week follow-up.

In order to assess for trained skill generalization across people a pretest-posttest control design was utilized. That is, before any training started for the Subjects A and C they were each placed in pre-treatment conversations with the "control" subject (Subject B). Also, after all of the training and post-training sessions had been completed between Subjects A and C, they were once again placed in dyadic conversational situations with control Subject B.

Procedure

Informed consent. Before the study started all of the three residents were asked to sign consent forms that explained to them the purpose of the research, informed them of the basic procedures that were to be used and guaranteed their anonymity (see Appendix B). Due to the moderate mental functioning status of the residents, they were not expected to fully comprehend the variety of potentially advantageous alternate procedures for training conversation skills. Therefore, the owner and operator of the care home was informed and made fully cognizant of other types of training. Also,
the owner of the care home was daily informed of training procedures and client reactions.

**Observer training, recording, and reliability.** Two adult females were chosen to be the observers in the study and were trained. The two observers met with the experimenter for an orientation during which they were told about the study and motivating them to be part of a research team.

The observers were given a written definition of each of the conversational behaviors, and were asked to memorize them. The observers were then given various oral statements by the experimenter and asked to quickly recognize and identify if that statement fitted into one of the two memorized behavioral categories. Next, they were given interval data sheets (see Appendix C) and instructed on their use.

Observation training was accomplished through the use of audio tapes consisting of pre-baseline dyadic conversations between the residents. Tape #1 depicted a conversation between the residents of Dyad I (Subjects A and B); tape #2 consisted of a conversation between Dyad II residents (Subjects A and C); and tape #3 contained a conversation between Dyad III residents (Subjects B and C). These audio tapes and three others containing conversations of the three dyads, were made by the experimenter prior to any baseline or training sessions.

An interval procedure was used to record conversational questions and encouraging conversational comments. Each 10-second interval juncture was signalled by the time card
tone and the experimenter announced the number of the appropriate interval. This insured that both observers would be recording behavior in the same interval. The observers were instructed to score an occurrence in each 10-second interval in which the behavior being observed occurred at least once. For example, if Subject A emitted an encouraging remark and asked an on-topic question in a 10-second period the observer would record an "encourages" and "questions" in the appropriate interval box. If a subject did not emit either of the verbal behaviors in an interval, then the observer recorded "0" for that behavior during that interval. If an observer was unable to make an observation in a 10-second period, she was to mark the interval box number with a slash mark and wait for a rerun of the tape. To ensure that on a rerun the same intervals would be being observed, a telltale cue sound was placed at the beginning of every tape, which allowed the experimenter to synchronize the time card with the conversation tape.

Once the observers were familiar with the definitions and scoring system they were trained to identify each subject's voice on the training tapes. After learning to identify each subject's voice, the observers observed one behavior of one subject for a minute or two, then stopped the tape and reviewed their scoring. They discussed differences in interpretation of the observation code with the experimenter and with each other.
Tape #1 was used in training the observers on how to record both of the social speech behaviors until 80% or greater reliability (Bailey, 1977) was reached for each behavior for both subjects, for two consecutive runs of tape #1. Observer training on tape #2 continued until 80% or greater reliability was obtained for each of the behaviors for each of the subjects, for two consecutive runs of tape 2. The same procedure was used in the training of tape #3. Training progress was also periodically assessed through "probes" in which the accuracy of each observer was checked on taped material which had not been used for training purposes (e.g., segments of the three previously unused pre-baseline tapes).

After the observers were recording at 80% or better reliability for each behavior of each subject on every training tape, the experimenter made two consecutive reliability checks with each observer, using portions of the tapes that had not been used for training purposes. The reliability checks each had to be at a 80% or better agreement before moving on to baseline. The observer training ended after meeting 80% criteria with the other observer and the experimenter.

Inter-observer reliability checks were computed for every session throughout the experiment. In order to help preserve the accuracy of the observers a one-hour retraining session (using the training tapes) was conducted after baseline was completed and again immediately before the
posttraining phase. As an attempt to counteract observer drift, reliability assessments were conducted by the experimenter on every observation session. The observers were given feedback on daily ratings.

As a control for observer bias the observers were encouraged to be as rigorous as possible when taking the data. Second, the behavioral definitions employed were "tightened up" so that the observers would not make undue inferences. Third, three previously novel baseline tapes were used to assess the accuracy of the observers by disguising one tape as a treatment condition tape and the other two as posttraining tapes. Not until after the data was collected were the observers informed that the tapes were made during baseline (see Appendix D).

Three types of reliability computations were used (Bailey, 1977): nonoccurrence, occurrence, and occurrence-nonoccurrence. Agreement as to occurrence was calculated by the formula:

\[
\frac{\text{agreements on occurrence}}{\text{agreements and disagreements on occurrences}} \times 100
\]

Agreement as to nonoccurrence was calculated from the formula:

\[
\frac{\text{agreements on nonoccurrences}}{\text{agreements and disagreements on nonoccurrences}} \times 100
\]

Occurrence-nonoccurrence agreement was calculated by the formula:

\[
\frac{\text{total number of intervals of agreement}}{\text{total number of intervals of agreement and disagreement}} \times 100
\]
The two conversational behaviors recorded by the observers were: (1) Positive conversational encouraging comments, which were defined to include all articulate verbal interjections (four words or less) by a subject that indicated approval for what his partner just said, interest and enthusiasm for the matter being discussed, and/or let his partner know that he understands what has just been said. Examples would include statements such as "That's really fantastic," "I'll bet," "Super," "Swell idea," "Right on," "Great," etc.; and (2) Conversational on-topic questions, which were defined as any interrogative response by a subject that elicited a response from his partner, and/or requests additional information or clarification of what the partner just said or he just said. For example, such remarks as "Why did you do it?" "What is here?" "When did he go?", etc. would be included.

Social validation of conversational behavior. Four normal speaking persons from U.O.P. volunteered to serve as judges (two males, and two females). The first group of two judges were placed in two different rooms at "Our House" and asked to observe and rate the conversational abilities of each subject from selected sample baseline and posttraining conversations as was done in Minkin et al. (1976). Before listening to any of the tapes, each judge was given a rating form (Appendix E) and instructed on the use of the ten-point bi-polar scale, with the poles labelled "excellent" and
"poor." To reduce rater bias, the judges were kept blind with respect to training conditions and subjects.

Eight tapes (four baseline, and four follow-up) from all three dyads were randomly selected for judging. The eight conversations were randomly sequenced and numbered 1-8. The group of two judges came to "Our House" on two different days. The first group consisted of judges #1 and #2. Judge #1 rated the conversations in an order from one to eight. Judge #2 rated the conversations in a counterbalanced order; first conversations 5-8 were observed, then conversations 1-4. The second group of judges (#3 and #4) that came the next night rated the conversations according to the same counterbalanced procedure, with judge #3 listening in the same sequence as judge #1 and judge #4 in the same way as judge #2.

For each tape the judges were asked to rate on a ten point bi-polar scale (1 = poor, 10 = excellent) the conversational ability of each subject in that session. Conversational ratings were accomplished by having the judges listen to one baseline and one posttraining tape from each of Dyads I and III. The judges listened to two baseline and two posttraining tapes of Dyad II.

When tabulating the results, the listed conversational ratings from Dyad I and III were simply absolute ratings, and the ratings for Dyad II were obtained by averaging together the two ratings made at each of the baseline and posttraining phases in order to get mean baseline and mean
posttraining ratings.

**Baseline period.** Sessions were scheduled daily with each one lasting about 15 minutes. Baseline was divided into three segments: First, Dyad I (Subjects A and B) had five sessions of baseline taken; secondly, Dyad II (Subjects A and C) went through five baseline sessions; and finally Dyad III (Subjects B and C) were placed in five baseline sessions. The first baseline session tape of each dyad was not played to the observers during the baseline period, but instead was saved to be played at a later date in another phase of the experiment (control check on observer bias). The observers recorded data on four baseline sessions for each of the dyads during baseline. All three dyads followed the same procedure. At each baseline session the experimenter would greet the two residents, ask them to be seated, and turn the tape recorder on. Then, he would present an 8.75 cm x 10 cm SX-70 color photo and ask the subjects to look at the picture and discuss the pictured situation. The same picture was never used more than once in the entire experiment; that is, a new picture was used to stimulate conversation for each session in the study. The subjects were told that the conversation was to be tape recorded. Next the subjects were presented with the photo and then they were read this statement by the experimenter: "I want you to look at this photo, and observe the situation in the picture. Look at your partner and talk to your partner about what you are doing in the photo and also what related
items of interest this picture may remind you of. You will be asked to converse for ten minutes. I will tell you when it's time to stop. Go ahead!" At the end of the ten-minute session, the subjects were asked to stop and thanked for their cooperation.

In the Minkin et al. (1976) study the experimenters trained "normal" junior high school and high school girls until the percentage of 10-second intervals that contained at least one conversational question and the percentage of 10-second intervals that contained at least one instance of a positive encouraging comment, increased from near zero rates in baseline to an average of 65% of the intervals in a session. Since this study was dealing with a developmentally delayed population the experimenter chose to train his subjects to a criterion level one-half that of Minkin et al. (1976). That is, the target criterion was for each subject to emit encouraging comments in 30% or more of the intervals and on-topic questions in 30% or more of the intervals. Since every conversation in the experiment was composed of 60 ten-second intervals (ten minutes) the number of intervals needed to reach criterion was determined to be 18 (60 X .30 = 18).

Training period I. Training was conducted with Subjects A and C and the behavior to be trained was positive conversational encouraging comments. The first step in training was instructing the subjects as to what encouraging comments were, and giving them the rationale for using this verbal behavior.
This required the experimenter to define "encourages" for the subjects, to give oral examples of the behaviors, and to explain why the behavior is important (e.g., help you make friends, lets your partner know that you are listening, etc.). The subjects were then each asked to repeat the definition for "encourages" and the rationale for its use.

The next step was for the experimenter to model various types of encouraging statements for the two subjects. The subjects were each asked to repeat the modeled "encourages." Then the experimenter would take turns with subjects in giving them a simple statement and asking the subject to generate an "encourage" in response to it. For example, the experimenter might say "I like to play golf," and the subject responds "I like golf too." After each of the subjects successfully generated an encouraging comment to eight consecutive statements from the experimenter, he was asked to practice the same procedure with his partner. That is, one subject would make a statement and his partner would respond with an encouraging comment. This continued until each of the subjects had generated eight "encourages" with his partner. While the subjects were completing this phase of training the experimenter gave feedback as to the goodness of their encouraging comment or how they could have improved it, if necessary. The subjects were taught to incorporate a wide variety of encouraging comments in their repertoire.
The next step in training encouraging comments was similar to baseline in that a photograph of the subjects was presented to them to stimulate conversation. They were given the same instructions as in baseline that they were to look at their partner and talk to their partner about what was going on in the picture, for the next ten minutes. The tape recorder was turned on and the subjects conversed. Unlike baseline sessions, as the subjects conversed, the experimenter gave immediate feedback on their use, or lack of use of encouraging remarks. When the ten minute training session ended the tape recorder was turned off and the experimenter critiqued each subject's performance in relation to encouraging comments. After about 45 minutes the subjects were thanked politely and told the training session was over.

Every training session was conducted with the same procedure, and the sessions continued until each of the two subjects met the experimenter-established criterion (18 intervals or more than contained 'encourages') in each of three consecutive ten minute conversations. Seven training sessions were required before both subjects maintained 'encourages' above criterion level for three consecutive conversations. Once this happened training for conversational questions began.

Training period II. The procedure for teaching on-topic questions was identical to that employed in the training of
encouraging comments: (a) instructions with rationale were given and the behavior defined; (b) the experimenter would model various types of questions; (c) the subjects were asked to initiate and practice some of the responses modeled with the experimenter; (d) the subjects were asked to practice on-topic questions with their partner and were given feedback by the experimenter; (e) the subjects were asked to engage in conversation using a picture as stimulus material, as they did in baseline sessions, and immediate feedback was given by the experimenter during the conversation to tell them how well they were each doing and what they needed to work on.

In addition to training questions, the procedure for "encourages" was also reviewed at every session. These sessions continued until each of the two subjects met the criterion, such that each subject emitted encouraging comments in 18 or more of the intervals and on-topic questions in 18 or more of the intervals for three consecutive sessions. Nine training sessions were needed before both subjects maintained encouraging comments and on-topic questions above the criterion level for three consecutive conversations.

After Subjects A and C had met criterion through the two training phases, then the posttraining phase was initiated.

Posttraining. The procedure for all posttraining sessions was exactly the same as baseline. Three posttraining
sessions were conducted with the training dyad (Subjects A and C). Then the subjects from the training dyad were each placed in three dyadic conversations with Subject B, the control subject, in an attempt to assess whether any generalization of the trained skills occurred. There were nine post-training sessions in all, three sessions for each dyad.

Follow-up. Finally, a one-week follow-up was conducted to see if the target behaviors maintained at all over time. Two sessions were conducted with Subjects A and C, and one each with the generalization dyads, I (Subjects A and C) and III (Subjects B and C).

Results

The results of the multiple baseline analysis for Subject A (Figure 1) and Subject C (Figure 2) indicated that the targeted behaviors changed rapidly and positively as a function of treatment.

In the top panel of Figure 1 Subject A rapidly increased his use of encouraging comments during training period I, while his emission of on-topic questions stayed at baseline levels. At the onset of training period II there was a drop in his use of encouraging comments, but it was only temporary and by the end of this period the subject was emitting encouraging comments and on-topic questions at a rate above criterion level. The posttraining performances of Subject A were also very positive as both conversational behaviors maintained at a level approximately obtained
Figure 1. The number of 10-second intervals that contained at least one encouraging comment (upper panel) and the number of 10-second intervals that contained at least one conversational on-topic question in conversations with Subject A in Dyad II (with Subject C).
Figure 2. The number of 10-second intervals that contained at least one encouraging comment (upper panel) and the number of 10-second intervals that contained at least one on-topic question in conversations of Subject C in Dyad II (with subject A).
during training. The drop in the frequency of encouraging comments at the beginning of training for on-topic questions was probably due to Subject A's concentrating heavily on the new behavior (i.e., questions), and learning how to integrate the previously learned encouraging comments into conversations that contain more questions.

During baseline conversations with Subject C, Subject A gave encouraging comments an average of .5 intervals per session and asked on-topic questions an average of 3 intervals per session. During posttraining sessions with Subject C, Subject A gave encouraging comments in an average of 23.8 intervals per session and asked questions during an average of 26 intervals per session.

In the top panel of Figure 2 Subject C rapidly increased his use of encouraging comments during training period I, while his emission of on-topic questions stayed at baseline levels. Just as with Subject A, Subject B's emission of encouraging comments dropped at the onset of training period II. Also, like Subject A, Subject B by the end of training period II was emitting encouraging comments and on-topic questions at a rate above criterion level. The posttraining performances of Subject B were also good as both conversational behaviors maintained at a level approximately obtained during training. The drop in the frequency of Subject B's encouraging comments at the beginning of training for on-topic questions was probably due to the same reasons as those cited for Subject A.
In baseline conversations with Subject A, Subject C gave encouraging comments an average of zero intervals per session and asked on-topic questions in an average of .5 intervals per session. In posttraining sessions with Subject A, Subject C gave encouraging comments in an average of 24.8 intervals per session and asked questions in an average of 23.2 intervals per session.

The sequential introduction of training for encouraging comments and on-topic questions resulted in a considerable increase in the frequency of each subject's use of that behavior over baseline frequency. The multiple baseline analysis indicated that the targeted behaviors were independent to the extent that changes from baseline levels occurred only when training was directed to the specific behavior.

A summary of the frequency of conversational behavior of Subject B is shown in Figure 3. In baseline conversations with Subject A in Dyad I (Figure 3, left panel), Subject B gave encouraging comments an average of 8 intervals per session. In posttraining sessions with Subject A, Subject B gave encouraging comments an average of 6 intervals per session and on-topic questions an average of 9.75 intervals per session.

In baseline conversations with Subject C in Dyad III (right panel), Subject B gave encouraging comments an average of 11 intervals per session, and asked on-topic questions an average of 9.75 intervals per session. In
Figure 3. The number of 10-second intervals that contained at least one encouraging comment and the number of 10-second intervals that contained at least one on-topic question emitted by Subject B in conversations with Subject A (left panels) and with Subject C (right panels).
posttraining sessions with Subject C, subject B gave encouraging comments an average of 10.5 intervals per session and on-topic questions an average of 7.5 intervals per session.

For both behaviors the gains in conversational behaviors obtained by Subjects A and C during training generalized to conversations with Subject B (Figure 4). During baseline conversations with Subject B, Subject A (Figure 4, left panel) gave encouraging comments an average of zero intervals per session and asked questions an average of 4.25 intervals per session. During posttraining sessions with Subject B, Subject A gave encouraging comments an average of 11 intervals per session and asked on-topic questions an average of 25.75 intervals per session.

In baseline conversations with Subject B, Subject C (right panel) gave encouraging comments in an average of zero intervals per session and asked questions in an average of 1 interval per session. In the posttraining sessions with Subject B, Subject C gave encouraging comments an average of 21.75 intervals per session and asked questions an average of 20.75 intervals per session.

Four normal speaking judges were asked to rate the appropriateness and quality of the conversational behavior of each subject during each phase of the course. Ratings were made using a bi-polar scale, 1 = poor and 10 = excellent. Conversational ratings from Dyads I and III shown in Table 1 are absolute ratings and ratings in Table 1 from Dyad II are means of the two ratings made at the baseline
Figure 4. The number of 10-second intervals that contained at least one encouraging comment and the number of 10-second intervals that contained at least one conversational on-topic question for Subject A (left panels) and for Subject C (right panels).
### Table 1

**Conversational Ratings**

<table>
<thead>
<tr>
<th>Subjects &amp; Dyads</th>
<th>Dyad II(^a)</th>
<th>Dyad III(^b)</th>
<th>Dyad I(^b)</th>
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<tbody>
<tr>
<td>Judges No.</td>
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<td>(S^C)</td>
<td>(S^B)</td>
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<tr>
<td>1 Pre</td>
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<td>Post</td>
<td>8.0</td>
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<tr>
<td>Post</td>
<td>4.0</td>
<td>5.5</td>
<td>1.5</td>
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</tbody>
</table>

**Note:**
- **Maximum score = 10**
- **Minimum score = 1**

\(^a\)Ratings for Dyad II are mean ratings.

\(^b\)Ratings for Dyad III and Dyad I are absolute ratings.
and posttraining phase.

All four judges rated Subject A and Subject C in Dyad II as performing better during the posttraining phase. All four judges rated Subject C's posttraining performance better than baseline while talking with the control Subject B. Also all four judges gave Subject A higher posttraining ratings than baseline ratings when conversing with Subject B in Dyad I.

Judges 1 and 3 rated Subject B's conversational behavior with Subject C (Dyad III) lower than his baseline conversational behavior. Judge #2 rated Subject B as having improved in posttraining over baseline behavior, and judge #4 rated Subject B as performing the same both baseline and posttraining phases. Judges rated Subject B's conversational behavior with Subject A (Dyad I) as poorer during posttraining in comparison to baseline behavior.

Discussion

For both Subjects A and C, the social-skills training package was effective. Training effectively increased each subject's use of encouraging comments and on-topic questions when engaging in conversation. The multiple-baseline analysis indicated that the two target behaviors were independent and that any changes from baseline levels occurred only when training was directed at the targeted behavior. In most cases, the gains obtained during training continued during the posttraining and follow-up sessions. Finally, the
degree of generalization of the terminal behaviors to Subject B was excellent.

The effectiveness of this intervention, (instructions, rehearsal, modeling, and feedback), with developmentally delayed board and care home residents had not previously been demonstrated. These results suggest that conversational skills training can be successfully applied with this population in the residential setting.

There are certain specific problems that may be encountered when doing conversational training. In order for an encouraging comment to have an encouraging effect, it should be delivered with some enthusiasm. There were instances where the subjects would emit an encouraging comment in a monotone voice. This was not a desirable aspect of the behavior, and the subjects were asked to practice voice inflection and voice volume changes with the experimenter, who modeled for them, and their partner. Another problem was that a subject would use a particular encouraging comment repetitively. Highly frequent repetition of a word or encouraging phrase tended to reduce its beneficial effects. Therefore, when a subject started to use a particular encouraging word frequently (more than 2 or 3 times in a row) he was asked to choose from the variety of encouraging comments he had been taught or to generate a novel one.

During the second phase of training, the subjects were not only taught how to use encouraging comments and on-topic questions in separate responses to a statement, but they were also shown how to use the two types of behavior in conjunction
with each other. For example, if they were given the statement "I like to play golf," a perfectly acceptable and proper response would have been "That's great! Where do you play?" Getting the subjects to use these behaviors in direct relationship to one another made it easier for the experimenter to train the subjects, and for the subjects to speak in a smooth, natural way.

An important aspect of the training procedure may have been the criterion performance levels that each of the subjects were required to attain for each of the targeted behaviors. The criteria were set under the assumption that developmentally delayed adults would not be able to learn the behaviors to the same high level as was accomplished by the "normal" subjects in Minkin et al. (1976). A criterion level was chosen that was one-half of that used in the Minkin et al. study. This criterion may have been too low. Research by Johnston and O'Neill (1973) demonstrated how the quality of student performance could be controlled by the academic criteria. The results of their study showed that regardless of a student's past performance history the student will change his performance to meet a new criterion level. Like academic performance, conversation behavior may be strongly influenced by the experimenter-chosen criterion. Conversational training and monitoring procedures could be systematically adjusted to obtain an optimal mixture of criterion-level and density of reinforcement. Longer-term, systematic analysis of these contingencies is needed.
Unlike the Hanserman, Zweback, and Plotkin (1972) study with the developmentally delayed, there was a good generalization of the trained behaviors when the trained subjects engaged in conversation with the control subject. Because the trained subjects lived and traveled with the control subject, there was considerable opportunity for them to engage in conversation with him outside the scheduled sessions of this study. Both trained subjects knew the control subject very well and felt comfortable when around him. Therefore, obtaining a high level of conversational behavior during the generalization assessments, posttraining and follow-up phases was to be expected.

An important question suggested by these results was whether or not the trained behaviors generalized to other situations and people. Specific assessment of such generalization was not included in this study. Future studies should attempt objective, verifiable measures of this sort. There were informal reports made to the "Our House" staff, by teachers and doctors who were unaware of the study, that both of the trained subjects seemed to be making friends and conversing much better at school or with the doctors who treated them.

Certain characteristics of this study limit the generalizability of the findings. First, the experimenter was also the main staff member at "Our House" and exerted a high degree of "control" over the subjects' behavior throughout the day. He assigned chores, delivered various
reinforcements, was responsible for maintaining discipline, and so forth. This may have been an important factor in the positive results obtained. If another experimenter tried to replicate or do a similar study in another board and care home, and he was not on the staff of the home, highly dissimilar results may be obtained. Another factor contributing to the results may have been the stable environment of the board and care home. That is, the same three clients were residents throughout the study, and the daily schedule was virtually the same every day. If training is done in another board and care home where there is a great movement of residents in and out of the home or with fluctuating daily schedules, then the results would probably be quite different.

In this study the stimulus material used (SX-70 pictures) was very successful at generating conversation. The pictures served as excellent "story prompters." Other materials for stimulating conversation should be assessed. The greater the potential source of effective stimulus materials, the greater the chance that more subjects can be trained in a wider variety of situations.

Although the four social validation judges each recorded increases in the conversational abilities of Subjects A and C, they recorded no change or some decreases in the performance of Subject B. This rating shift, while small, suggests an improvement in their social speech. Further, these results suggest a causal inference: increased usage of on-topic
questions and encouraging comments results in increased conversational ability. This type of inference is falla-
cious in that there are many other conversational factors that may have changed as a result of training and that went unrecorded. Thus, the subjective results must be interpreted with caution and used in the suggestive sense only.

Since conversational skill training has proven to be effective with developmentally delayed board and care home residents, more research should be conducted on these behaviors and in this type of setting. In the coming years, with more and more developmentally delayed people being placed into the community, the necessity for conversational skill training will grow in importance.
References


APPENDIX A

Resident Bedroom

Resident Bedroom for two

WALL

Subject sat here

Tape Recorder

Trainer sat here

Subject sat here

Table

2.4 m

3.6 m

4.5 m
APPENDIX B

University of the Pacific
Stockton, California

Michael C. Carey
Graduate Student
Dept. of Psychology

Conversational Skill Training
Informed Consent

The purpose of my letter is to request permission for you to participate in a conversational skill training project that will begin soon at "Our House" (location 8342 N. El Dorado). My project is concerned with training residents to effectively use conversation. As a result of training you should be able to talk more effectively and enjoyably with your fellow residents and friends.

Each time you will be asked to converse with another resident of "Our House", you will be given a picture to look at, and you will talk about what you see with the other person. I will suggest with you what you might talk about and sometimes, I will ask you to imitate what I say. I will tell you how well you do.

You will participate in the project on a daily basis, 5-6 days per week. I expect the training to last about one month. Your conversations will be recorded on audio tape for a later assessment by observers. The observers will not be present at the sessions. You may review any or all of the tape recordings at any time. Your anonymity will be protected at all times. You are free to refuse any part of the project or to withdraw at any time.

This project has been thoroughly discussed with psychologists Dr. Mike Davis, Dr. Martin Gipson, Dr. Tom Allison, and Dr. Mary Lynn Young, and also by the Human Subject Research Committee at the University of the Pacific. Furthermore, the owner of "Our House" has been informed as to what alternate procedures are available for the residents as well.

In closing, let me emphasize that this project will not involve anything unpleasant, stressful, or risky for you or your fellow residents. Your participation in this research will be kept confidential, although the results of the study
may be used in a public report at some later date. In the event that you have any further questions about your participation, please feel free to call me at 477-8809, or talk to me when I am working at "Our House" Monday through Friday of each week.

__________________________  _____________________
(signature of resident)  (date)

__________________________  _____________________
(signature of care home owner)  (date)

__________________________  _____________________
(signature of trainer)  (date)
APPENDIX C

BEHAVIOR RECORDING FORM

Name of Observer

Experimental Condition

Observation Session

Dyad

Behavior 1: Positive conversational "encourages", which are defined to include all articulate verbal introductions (four words or less) by a subject that indicate approval for what his partner just said, interest and enthusiasm for the matter being discussed, and/or less his partner know that he understands what has just been said. Examples would include statements such as "that's really fantastic", "I'll bet", "Super", "swell idea", "That's neat", "Thank You", "Great", "Hey good," etc.

Behavior 2: Conversational questions, which are defined as any interrogative response by a subject that is designed to elicit a response from his dyad partner, and/or requests additional information or clarification of what the partner just said or he just said. Examples would include "Why did you do it?", "What is here?", "When did he go?", "Where is it?", "Who is he?", "How long?" etc.

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APPENDIX D

*Interater reliabilities were uniformly high for all subjects, for each behavior. Percentage agreements for occurrence, non-occurrence, and occurrence-nonoccurrence all ranged approximately from 85% to 100% for all ratings calculated.

*In the three probe sessions run to check for observer bias the results were:
1) Probe #1 was run at the end of the second training session, and involved a conversation between subjects A and C. The observers recorded subject A giving encourages in 3 of the intervals and giving questions in 5 of the intervals. Subject C was recorded with 2 encourages and 1 question interval. This was well below what the observers would "expect" to record if they were letting bias dictate their observations.
2) Probe #2 was run at the end of the post-training session and involved subjects A and B. A was recorded giving encourages in 4 of the intervals, and giving questions in 3 of the intervals. B was recorded with 5 encourages and 6 questions in the session. Once again below what the observers would "expect" if biased.
3) Probe #3 was run in follow-up and involved subjects B and C. It obtained results similar to probes #1 and #2.
Name:

Tape number:

Instructions: Please listen to the taped conversation. After listening to the entire ten minute tape you will then be asked to rate the conversational ability of each conversant. The ratings will be made on a ten-point rating scale.

Judging from this tape I would rate the conversational ability of this subject as (please mark only one check for each scale).

Subject:

1 2 3 4 5 6 7 8 9 10

poor average Excellent

Subject:

1 2 3 4 5 6 7 8 9 10

poor average Excellent