Conversation Skills Training of Thought-Disordered Schizophrenic Patients Through Attention Focusing

H. Keith Massel, Patrick W. Corrigan, Robert Paul Liberman, and Michael A. Milan

Received August 21, 1990; revised version received February 9, 1991; accepted April 13, 1991.

Abstract. An attention-focusing procedure was designed as discrete trials and multiple prompts with contingent social reinforcement to facilitate the acquisition of conversational skills in thought-disordered schizophrenic patients. Three patients with DSM-III-R diagnoses of schizophrenia completed a standard social skills training program and the attention-focusing procedure in multiple baseline experimental designs. While social skills training had little effect on the acquisition of skills, patients who completed the attention-focusing procedure significantly increased performance of conversational skills and showed some generalization of trained behaviors.

Key Words. Schizophrenia, social skills training, attention-focusing, thought disorders.

Practitioners conducting social skills training (SST) use instruction, modeling, rehearsal, feedback, and reinforcement to facilitate the acquisition of interpersonal skills by chronically mentally ill patients (Christoff and Kelly, 1985; Liberman et al., 1989). Patients participating in SST programs show significant improvement in microsocial skills, like appropriate voice volume, eye contact, and hand gestures (Wallace, 1982; Morrison and Bellack, 1984; Fecteau and Duffy, 1986), as well as in molar interpersonal skills, like making a positive statement, requesting additional information, and resolving interpersonal problems (Brown and Munford, 1983; Liberman et al., 1986). In addition, the relapse-prevention effects of antipsychotic drugs appear augmented by SST; schizophrenic patients who are stabilized on drugs show reduced relapse rates after completing SST programs (Fallon et al., 1982; Brown and Munford, 1983; Wallace and Liberman, 1985; Hogarty et al., 1986, 1987). Evidence about the generalization of social skills acquired through SST, however, is mixed. Some studies have found that skills learned in training situations generalized to settings outside the SST milieu (Hersen et al., 1974; Kazdin, 1974, 1980, 1983).

H. Keith Massel, Ph.D., is Assistant Research Psychologist at the UCLA Department of Psychiatry; Patrick W. Corrigan, Psy.D., was Postdoctoral Research Fellow in the UCLA Department of Psychology and is now Assistant Clinical Professor of Psychiatry at the University of Chicago Pritzker School of Medicine; Robert Paul Liberman, M.D., is Professor of Psychiatry at the UCLA School of Medicine; and Michael A. Milan, Ph.D., is Professor of Psychology at Georgia State University. When this research was conducted, the first three authors were affiliated with the Camarillo-UCLA Clinical Research Center for Schizophrenia & Psychiatric Rehabilitation. (Reprint requests to Dr. R.P. Liberman, Camarillo-UCLA Research Center, Box 6022, Camarillo, CA 93011-6022, USA.)

0165-1781/91/$03.50 © 1991 Elsevier Scientific Publishers Ireland Ltd.
Goldsmith and McFall, 1975; Falloon et al., 1977; Brown and Munford, 1983; Liberman et al., 1986) while other studies have failed to find patients who generalized skills to untrained situations (Frederiksen et al., 1976; Cole et al., 1982).

Despite positive findings, the characteristics of some patient populations may thwart SST efforts (Martinez-Diaz et al., 1983; Liberman et al., 1985; Wong and Woolsey, 1989). Information-processing deficits have been shown to be enduring vulnerabilities of schizophrenia, present during the premorbid stages, the acute phases of the disease, and remission (Nuechterlein et al., 1987). As a result, persisting cognitive deficits in schizophrenia may impede the acquisition of social and coping skills (Corrigan et al., 1991). Moreover, acutely and chronically psychotic patients have cognitive deficits and symptoms that intrude upon accurate interpersonal perceptions and effective social performance (Trower et al., 1978; Livesay, 1981). Distractibility and diminished information processing may hamper patients' abilities to attend to SST instructional materials, to acquire social behaviors by observing models, and to comprehend the trainer's feedback. These deficits, especially when compounded by language anomalies such as incoherence, may prevent the acquisition of skills in traditional SST programs.

To compensate for patients' cognitive disabilities, SST programs have included attention-focusing interventions to improve the acquisition of skills. Finch and Wallace (1977) directly trained attentional skills in a small group of schizophrenic patients with pronounced cognitive deficits. A discrete trials format that involved systematic introduction and fading of prompts and reinforcers has been shown to train social skills in developmentally disabled adults (Foxx and Mc Morrow, 1983; Foxx et al., 1983). A similar procedure has been successfully extrapolated to low-functioning, thought-disordered schizophrenic patients (Kale et al., 1968; Wong and Woolsey, 1989).

While attention-focusing techniques may facilitate the acquisition of social skills by thought-disordered schizophrenic patients, previous studies were limited by inadequate diagnostic procedures in the pre-DSM-III era and lack of testing for generalization. In addition, no studies have previously compared standard SST and attention focusing with this population. In the present study, the acquisition and generalization of skills after a traditional SST program were compared to the effects of an attention-focusing procedure (AFP) using discrete trials and faded prompts with severely thought-disordered schizophrenic patients.

Methods

Subjects. The three male inpatients at Camarillo State Hospital who participated in this study were selected from a group of six thought-disordered patients. Two of the original six patients rapidly evinced high levels of conversational skill during initial SST sessions and were therefore not in need of the more intensive procedures examined in this study. A third patient was dismissed from the study because of her refusal to participate in the training activities. Subjects met criteria for DSM-III-R diagnoses of schizophrenia (American Psychiatric Association, 1987) and demonstrated severe thought disorder as determined by the Present State Examination (Wing et al., 1974). All three patients had adolescent-onset schizophrenia and had been continuously hospitalized for at least the past 5 years because of bizarre appearance, irreverent behavior, distractibility, stereotypies, and frequent talking to themselves. Ted was almost constantly incoherent with neologisms and idiosyncratic use of
words. Stuart showed poverty of speech with frequent wandering and rambling far from the original topic. James showed nonsocial speech, muttering out of context of the conversation.

The subjects exhibited no evidence of major alcohol or drug abuse and no organicity. Subjects were also socially withdrawn as measured on the Activity-Withdrawal Scale (Venables, 1957) and exhibited significant conversational deficits as assessed by structured social skill assessments during screening interviews. The three subjects scored 50 or more on the total score of the Brief Psychiatric Rating Scale (Overall and Gorham, 1962) and, except for the conversational skills targeted in the present study, showed little variability in overall psychopathology throughout the course of their participation in the project. Indeed, they had been chronic and stable in their symptoms and signs of schizophrenia for many years. Their pharmacotherapy consisted of moderate doses of single neuroleptics that were kept constant throughout the duration of the study. Table 1 summarizes the characteristics of the three subjects—Ted, Stuart, and James.

Table 1. Characteristics of 3 subjects

<table>
<thead>
<tr>
<th>Subject</th>
<th>Ted</th>
<th>Stuart</th>
<th>James</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>51</td>
<td>42</td>
<td>41</td>
</tr>
<tr>
<td>Age at first admission</td>
<td>17</td>
<td>18</td>
<td>16</td>
</tr>
<tr>
<td>Total years hospitalized</td>
<td>29</td>
<td>22</td>
<td>20</td>
</tr>
<tr>
<td>Educational level (grade)</td>
<td>7</td>
<td>10</td>
<td>8</td>
</tr>
</tbody>
</table>

Dependent Measures. Subjects were assessed for performance on three of four sets of conversational skills in response to key statements made by a confederate. The four sets of skills were as follows: (1) positive comments (compliments like “That’s a nice shirt”), (2) questions (e.g., “What kind of sports do you like?”), (3) request (e.g., “Could I visit you sometime?”), and (4) appropriate self-disclosing statements (e.g., “I like football”). The sets of conversational skills had been socially validated in previous research with schizophrenic patients (Urey et al., 1979; Kelly et al., 1980; Holmes et al., 1984). The key statements spoken by the confederate were reduced from a pool of 275 statements to 48 items (12 key statements per skills set) during a pilot study. Members of the nursing staff on the patient’s unit rated the statements on a 5-point scale according to the probability that someone might address such a statement to the patients. The 48 statements that received the highest ratings were selected. Key statements were presented before treatment to determine a conversational skills baseline, in the training room to assess acquisition of skills, and on the ward to measure generalization of skills. All interactions were surreptitiously audiotaped for later ratings by independent judges.

Standard Social Skills Training. The trainer began each SST session by modeling a targeted skill in an interaction with a confederate. The subject was instructed to practice the targeted skill in a role-play conversation with the confederate. The trainer then provided feedback about the role play accompanied by a videotape playback of the conversation. Subjects also received social reinforcement and tokens contingent on correct responding. The tokens were exchangeable for backup reinforcers like snack foods, drinks, cigarettes, or ward privileges.

Subjects were trained one at a time while their peers were present in the training room. In this way, subjects received the benefit of intensive individual training but were also able to model the learning efforts of their peers. Each subject was trained on two of the four sets of conversational skills during SST. Positive comments and questions were targeted for Ted and James, while requests and appropriate self-disclosures were targeted for Stuart.

All training was conducted in a 3 m × 6 m room, equipped with a video recorder, camera, monitor, and audio recorder. Training sessions were conducted 5 days a week, with each
subject receiving 12 min of training per session. The total number of SST training sessions per set of conversational skills varied from subject to subject (see Table 2). SST continued until a significant change from baseline was observed or until at least 25 sessions had been completed without a noticeable effect.

Table 2. Characteristics of 3 subjects

<table>
<thead>
<tr>
<th></th>
<th>Subject</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ted</td>
<td>Stuart</td>
<td>James</td>
</tr>
<tr>
<td>Number of SST sessions &quot;positive comments&quot;</td>
<td>31</td>
<td>29</td>
<td></td>
</tr>
<tr>
<td>Number of SST sessions &quot;questions&quot;</td>
<td>93</td>
<td></td>
<td>50</td>
</tr>
<tr>
<td>Number of SST sessions &quot;self-disclosures&quot;</td>
<td></td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>Number of SST sessions &quot;requests&quot;</td>
<td></td>
<td></td>
<td>51</td>
</tr>
<tr>
<td>Number of AFP sessions &quot;positive comments&quot;</td>
<td>119</td>
<td>43</td>
<td>124</td>
</tr>
<tr>
<td>Number of AFP sessions &quot;questions&quot;</td>
<td>43</td>
<td></td>
<td>109</td>
</tr>
<tr>
<td>Number of AFP sessions &quot;self-disclosures&quot;</td>
<td></td>
<td>107</td>
<td></td>
</tr>
<tr>
<td>Number of AFP sessions &quot;requests&quot;</td>
<td>30</td>
<td>79</td>
<td>48</td>
</tr>
</tbody>
</table>

Note. SST = social skills training, AFP = attention-focusing procedure. None of the SST sessions reached criterion levels of performance, but more than half of the AFP sessions did reach criterion levels.

Attention-Focusing Procedure. The attention-focusing procedure consisted of the repeated practicing of the skill until mastery was achieved, a graduated sequence of prompts to facilitate mastery, and the consistent use of reinforcement for the achievement of mastery. Subjects were instructed to respond with the appropriate conversational skills matched to key statements made by a confederate. Subjects who made an unprompted correct response received a token or other reward; rewards were initially provided on a continuous schedule of reinforcement, but gradually faded to a leaner schedule.

When incorrect responses were given, trainers used a three-level prompt sequence to facilitate learning. During a first level prompt, subjects were instructed to perform the appropriate conversational response (e.g., for the question skills set, the trainer instructed the subject: “Ask your partner a question”). During second and third level prompts, the trainer modeled appropriate responses (e.g., one question you can ask is, “What movie did you see?”). The time between prompts did not exceed 4 sec, in accord with research demonstrating that short intervals lead to faster acquisition and higher levels of correct responding (Koegel et al., 1980). Prompts continued until the subject made a correct response. Thus, the difference between the standard and attention-focusing skills training procedures lay in the attention-focusing procedure’s much greater density of prompting, modeling, and reinforcement, with the targeted conversational skill being trained in graduated steps during repeated discrete trials.

Key statements were presented according to the stimulus rotation procedure (Lovas, 1977; Carr and Dores, 1981). The first statement was repeated until four consecutive correct, unprompted responses were made. A second key statement was then delivered until the same criterion was met. Finally, the first two statements were alternated until correct responses were made to both statements twice, in succession. Six pairs of key statements were presented for each set of conversation skills. The criterion for successful acquisition of each conversational skill was \( \geq 50\% \) correct responses with a minimum of six different key statements presented over three consecutive days. Table 2 summarizes the number of sessions needed to reach criterion.

Subjects participated in the attention-focusing program (AFP) after they had completed all sessions of SST for two sets of conversational skills. In addition, subjects participated in AFP alone for a third set of conversational skills. Training was conducted with subjects one at a time in the 3 m \( \times \) 6 m room during 12-min daily sessions with peers in attendance.
Experimental Design. The experimental design included a multiple baseline across behaviors to compare AFP and SST (Barlow and Hersen, 1984). Subjects received SST followed by AFP for two skills sets. To compare the interaction effects of SST/AFP to AFP alone (Bailey and Bostow, 1977), patients received only AFP for the third skill set.

Results

Two independent observers rated 25% of the audiotapes to determine interrater reliability. Interrater reliability coefficients equaled the formula of agreement divided by agreements plus disagreements on occurrence. They ranged from 0.83 to 0.89 for the four sets of conversational skills.

Acquisition of Targeted Behaviors. The AFP was far more effective in facilitating the acquisition of conversational skills than was the SST for all three patients. Figs. 1-3 present acquisition data for Ted, Stuart, and James, respectively. The average rate of responding to key statements across the first two sets of conversational skills for the three subjects combined was 0.96% at baseline, 3.16% after SST, and 57.87% after the AFP. Slopes with the $\beta$ coefficient (Kraemer and Thiemann, 1989) were calculated for the frequency distributions between baseline and training conditions for the three subjects. Of the nine $\beta$'s, only slopes for the AFP condition showed significant changes from baseline to training phases ($p < 0.0001$), reflecting the dramatic increase in behavioral frequency noted after AFP in the graphs. Subsequent analyses of variance (ANOВAs) showed that the mean of $\beta$ (across the three subjects) for the AFP condition was significantly greater than the mean of $\beta$ across baseline and SST condition ($p < 0.05$), while no difference was found between the means of the baseline and SST phases.

Subjects’ conversational behaviors that were treated by the AFP alone increased from 0.00% at baseline to 46.35% after the AFP. Again, $\beta$'s for the AFP vs. baseline phases were significant ($p < 0.0001$). While ANOVA found nonsignificant trends between the AFP condition and baseline ($p < 0.10$), the results of a more robust randomization test showed that the slope of AFP increased significantly from baseline. The combined findings suggested that improved acquisition of skills resulted from AFP alone, not in interaction with SST.

Generalization of Acquired Skills. Additional graphic and statistical (ANOВA) analyses showed that the generalization of skills acquired during AFP to ward settings occurred in two of the three subjects. The subjects were not instructed during their training sessions to respond to generalization probes, which were made by staff on the wards and conducted in an unobtrusive manner on days when training sessions were not held. Ted’s rate of conversational skills performed in response to key statements on the ward increased significantly ($p < 0.05$). Similarly, James showed a large generalization of skills to the ward ($p < 0.01$). While Stuart did not show statistically significant generalization of his acquired skills outside the training setting, his responses to key statements did increase. All three subjects also were rated by nursing staff on a global measure of conversational ability which showed marked increases from before to after the introduction of the AFP.
Discussion

AFP greatly facilitated the acquisition of conversational skills in thought-disordered schizophrenic patients for whom traditional SST had little effect. The performance of two sets of skills was significantly increased in all three subjects. While the lack of counterbalanced or alternating treatment designs prevents an unambiguous interpretation of the results due to possible interaction of SST followed by AFP, the critical

Fig. 1. Acquisition of 3 conversation skills by subject, Ted, under conditions of baseline (BL), standard social skills training (SST), and attention-focusing procedure (discrete trials)

The performance of the 3 conversation skills is shown as the percentage of correct responses to opportunities provided in the training sessions.
Fig. 2. Acquisition of 3 conversation skills by subject, Stuart, under conditions of baseline (BL), standard social skills training (SST), and attention-focusing procedure (discrete trials).

The performance of the 3 conversation skills is shown as the percentage of correct responses to opportunities provided in the training sessions.

Importance of AFP in the acquisition of the targeted conversation skills is supported by three elements: (1) Ted had more than double the amount of SST as compared with AFP for asking appropriate questions, yet his emitting questions rapidly increased to criterion performance only after the start of AFP. (2) The third conversation skill for each subject was successfully trained to criterion levels using AFP, without preceding exposure to SST. (3) The statistical test used to demonstrate significance of acquisition of the conversation skills used a measure of the respective
slopes of the learning curves and failed to detect an appreciable contribution to the learning by SST. Nonetheless, the results should be viewed as an initial clinical trial of AFP with thought-disordered schizophrenic patients. Replication and extension in group-controlled designs must be carried out before definitive conclusions about the efficacy of AFP can be made.

Generalization of skills varied among subjects. For two subjects, the performance of several skills sets increased in the milieu after AFP, although the size of the effects

Fig. 3. Acquisition of 3 conversation skills by subject, James, under conditions of baseline (BL), standard social skills training (SST), and attention-focusing procedure (discrete trials)

The performance of the 3 conversation skills is shown as the percentage of correct responses to opportunities provided in the training sessions.
was not as great as those noted during the periods of skills acquisition. The one subject who showed no appreciable generalization of skills participated in fewer AFP sessions at criterion levels of performance than his peers, suggesting that overlearning and practice may enhance generalization. As part of an additional effort to transfer training effects, this subject was prompted to perform conversational skills that were acquired during the training sessions with other staff members on the unit. Subsequent performance of conversational skills increased significantly. These results suggested that modest clinical efforts to provide naturalistic prompts in situations can augment generalization of acquired skills.

Implementation of the AFP was a staff-intensive task. Unlike traditional SST, which was presented in group settings, the repeated discrete trials and multiple prompts encompassed in attention-focusing strategies required pairing one subject with both a trainer and a confederate. As a result, this procedure required significant amounts of staff time. Treatment facilities that do not have sufficient staff members to implement one-on-one training may have to reorganize their staff cadre to include this method in their armamentarium. It should be noted that not all thought-disordered psychotic patients require intensive AFP, as two of the originally recruited subjects in the present study responded with appropriate conversation when exposed to the structure of SST.

Implementation of repeated discrete trials may be facilitated by using computer and laser disc videotape technology. The confederate’s key statements can be prerecorded. Feedback and prompts can be controlled using computer software that compares the patient’s response with a bank of conversational skills. Multiple iterations characteristic of a computer can repeat videotaped key statements until the patient meets criterion performance levels.

While this study found thought-disordered schizophrenic patients to be responsive to the AFP, some individuals who could benefit from this intervention would be negativistic and noncompliant with the requirements of the intensive and repeated training sessions. Extrinsic rewards—such as tokens that can be exchanged for tangible reinforcers—can improve but not assure participation. It is possible that the successful implementation of AFP may bring many patients currently inaccessible to psychosocial treatments into a state of readiness for rehabilitation, including more traditional and less staff-intensive forms of SST. Future research could investigate the extent to which the AFP, directed to basic conversation skills, improves negative symptoms and Remediates the enduring cognitive impairments that are characteristic of schizophrenia.

Acknowledgments. The authors thank Linda Bowen, Ph.D., and Roberto Zarate for providing AFP training and Stephen E. Wong, Ph.D., and Mark D. Mosk, Ph.D., who consulted on AFP development and the design of the study. The cooperation of B.D. Marshall, Jr., M.D., and the nursing staff of the Camarillo-UCLA Clinical Research Unit is also appreciated. Jim Mintz, Ph.D., provided invaluable help in analyzing the data. This study was supported in part by NIMH Grant No. MH-30911 to the UCLA Clinical Research Center for Schizophrenia and Psychiatric Rehabilitation, and was submitted by the first author in partial completion of the requirements for the Ph.D. in clinical psychology at Georgia State University.
References


