A PROBLEM-SOLVING APPROACH TO SOCIAL SKILLS TRAINING IN EMPLOYMENT SETTINGS WITH MENTALLY RETARDED YOUTH

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The present study examined two approaches to teaching social behaviors to 3 developmentally disabled youths in work contexts. In one approach, a problem-solving procedure was learned and transferred to different materials. Conversational probes monitored interactions between disabled employees and their co-workers and customers. A multiple baseline design demonstrated that the training produced generalization and maintenance of the targeted social behaviors to the work settings. A second approach based on a role-playing intervention produced no substantial generalization in the work setting. A social validation questionnaire administered to co-workers supported the efficacy of the problem-solving training procedure. The efficacy of social problem-solving training was discussed in terms of sufficient exemplars, common stimuli, and self-mediators.

DESCRIPTORS: social skills training, problem solving, supported employment

Skillful social behavior has been identified as an important factor in performing and maintaining a competitive job (Chadsey-Rusch, 1986; Greenspan & Shoultz, 1981; Rusch, Schutz, & Agran, 1982). Although there have been some surveys (Rusch et al., 1982), observational studies (Chadsey-Rusch & Gonzalez, 1988), and anecdotes suggesting the importance of social behavior in the workplace, most social skills training research with disabled persons has been conducted in sheltered workshop settings (e.g., Agran, Salzberg, & Stowitschek, 1987). However, competitive or supported employment sites confront persons with an environment in which there is likely to be greater opportunity and demand for skillful social behavior. With the onset of the supported employment movement (Rusch, 1986; Wehman, 1981), there needs to be social skills research keyed to nonsheltered work settings, where the majority of developmentally dis-

abled persons will be employed in the future (Will, 1984).

Of the few social skills training studies in such settings, a small number have assessed or achieved generalization across settings or maintenance of treatment effects (for a review, see Chadsey-Rusch & Rusch, 1988). For example, Breen, Haring, Pitts-Conway, and Gaylord-Ross (1985) successfully taught autistic youths to converse with their non-disabled co-workers. Training and probes were conducted in the same setting. Thus, there was evidence of generalization across people, but not across settings. The Breen et al. and other studies have used the typical "component" form of social skills training (Trower, 1984). That is, a specific number of behaviors are rehearsed through role-playing between the client and an instructor or the client and a confederate. The role-playing is usually supplemented with instruction, modeling, and feedback. Some evidence suggests (Rusch & Menchetti, 1981) that this approach may help to develop a social repertoire but only under conditions highly similar to those during role-play training. That is, the desired social responses may not be emitted when the disabled worker is confronted with a slightly different setting or problem than was present in the role-playing situation.

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A problem-solving method (D'Zurilla & Goldfried, 1971) may offer an alternative way to promote the generalization of social skills. For example, McFall (1982) and Trower (1984) have proposed a "process" approach to social skills training that relies on the person's understanding and acting upon the rules of a social situation. The present investigation adapted McFall's model into four steps for the training process: decoding, decision, performance, and evaluation. Participants first interpret or decode the meaning of a social situation. Next, they describe possible alternative ways and select one of these choices to cope successfully with the social situation. After emitting the behavior, they evaluate their performance.

It is possible that the problem-solving, rule-based, and contextual nature of process training may lead to superior generalization. That is, learning more general rules of social conduct may promote transfer from setting to setting, in spite of the disparate and distracting stimuli across employment contexts. The present study attempted to evaluate the efficacy of a process training package in producing such effects.

METHOD

Participants

Three students with mental retardation were working in nonsheltered employment settings at the time of the study. They displayed some deficits in their social behaviors and expressed willingness to improve their social behaviors.

Geoff. Geoff was 18 years old. His primary handicapping condition was mental retardation. His WISC IQ was 58. On the AAMD Adaptive Behavior Scale (ABS) (norms for people with moderate mental retardation; Lambert, 1981), Geoff consistently performed at the 99th percentile on all subscales of Part 1, except on socialization (69th percentile). In the Wide Range Achievement Test (WRAT), his reading comprehension was at the second-grade level, and his math score was at the third-grade level. Geoff lived at home with his parents. He was one of several high school graduates enrolled in a transitional vocational program. Geoff was working as a dish washer/bus boy in a

restaurant located in a large department store. His job was to wash dishes and clean up tables in the restaurant. His work performance was considered good by his supervisors and co-workers. However, he had some difficulties communicating with his co-workers and/or supervisors. He had a tendency to mumble when he spoke to people. Also, he did not seek help when he needed it, which caused delays in his work. He was generally aloof and did not talk to co-workers or to customers during break or while working.

Tricia. Tricia was 16 years old. Her WISC IQ was 65. She performed in the 94th percentile in Part 1 of the ABS. On the WRAT her reading was between the third- and fourth-grade level. Her math score was at the third-grade level. Tricia lived at home with her parents. Her job at a beauty college was to sort and group hair perm curlers by color. Her other duties included arranging chemicals in alphabetical order and cleaning up the laboratory. During her break, she wandered around without initiating a conversation and displayed a peculiar hand mannerism. When she didn't wander around, she sat alone in a chair in the rear. If someone initiated a conversation, she would respond with one or two words, but she would not expand the conversation. Instead, she would repeat over and over what she had said previously. This repetition discouraged people from having a conversation with her.

Clara. Clara was 18 years old. She had cerebral palsy. She performed in the 76th percentile in Part 1 of the ABS. Informal testing indicated she could not read at all. However, her receptive and expressive language was at a reasonably high level. Her WISC IQ was 45. She lived at home with her parents. She worked at the same beauty college as Tricia and her tasks were to clean showcases, tables, chairs, and the lobby area. Thus, she had many opportunities to meet co-workers or customers. However, she would not engage in any social interaction unless someone initiated it. During her break, Clara did not interact with other co-workers. Most of the time she sat alone or with Tricia, saying nothing. If someone started a conversation with her, she would respond and converse with that

person. She easily got off a topic. This seemed to make people lose interest in carrying on further conversations with her.

Training Settings

All social skills training sessions were conducted in rooms separate from the work setting. Training for Geoff took place in an office (1 m by 2 m) adjacent to the restaurant; it contained a desk and office supplies. Social skills training for Tricia and Clara took place in a break room (1 m by 2 m) adjacent to the work setting. The break room contained chairs and a wooden board.

Materials

A Panasonic micro tape recorder (2 cm by 6 cm by 10 cm) was placed in the participant's pocket to record generalization data while the participant was working or taking a break. During the training sessions, 10 illustrations (pictures, 20 cm by 30 cm) were presented to the participant depicting problem situations that called for an appropriate social behavior corresponding to the target behavior.

Target Behaviors, Measurement, and Reliability

Three problem behaviors for each participant were identified from suggestions by co-workers and supervisors and observations by the first author. Thus, reducing mumbling, increasing social initiations, and conversational expansions were selected for Geoff; initiations, expansions, and conversational terminations were selected for Tricia and Clara.

Mumbling was defined as any utterance that the transcriber could not understand from the tape. Initiation was any statement that began a conversation, changed a topic, or provided an instruction to take some action. Expansion was a statement or question that served to continue a conversation (i.e., led to a verbal response from another person). Termination was a statement that appropriately ended a conversational exchange (e.g., "Good bye").

The first 30 min of each tape were transcribed by two graduate students in education. Transcribers wrote the exact statements the participants and

others made (Haring, Roger, Lee, Breen, & Gaylord-Ross, 1986). These utterances were then coded into the behavioral categories. Training was provided to the transcribers using 10-min sample tapes until agreement reached 80%.

Primary observations of each participant occurred in the work setting. Specifically, data for Geoff were taken in the restaurant during lunch hours (12:00 to 12:30 p.m.). Geoff was usually engaged in dishwashing and stacking plates and glasses in a cabinet behind a counter where three or four co-workers were taking orders from customers. He also cleaned up tables in the area where customers were having their lunch.

Data for Tricia and Clara were collected in the work setting during break. Workers did not usually take their breaks in the break room. Rather, they walked around or chatted with other co-workers in the work area. The work area included couches, tables, and the sort of sinks that are usually seen in a beauty salon. All the workers took their breaks at the same time; therefore, there were sufficient occasions for the participants to interact with other co-workers and customers.

Reliability. Reliability was calculated as point-by-point (behavior occurrence) percentages of agreement (Kazdin, 1982) by dividing the number of agreements by the number of agreements plus the number of disagreements and multiplying by 100. Reliability checks on training data were performed for 30% of the sessions (across all phases). The mean percentage of agreement was 97% (range, 94% to 100%) for Geoff, 96% (90% to 100%) for Tricia, and 91% (88% to 100%) for Clara.

Reliability of transcription was checked on 20% of tapes (across all phases) by having two scorers produce transcriptions of the same tape. Transcriptions made by each recorder were compared on a point-by-point (utterance-by-utterance) basis. The mean level of agreement was 78% (range, 64% to 86%) for Geoff, 75% (64% to 86%) for Tricia, and 82% (74% to 92%) for Clara. Reliability for coding was performed on 60% of the sessions. Two different coders assigned codes as initiation, expansion, mumbling, or termination for each utterance of the participant. The mean level of agreement

was 94% (range, 86% to 99%) for Geoff, 95% (85% to 92%) for Tricia, and 88% (78% to 95%) for Clara.

Social Validation Data

Co-workers and supervisors were asked to complete six items regarding the participant's social behavior and their attitude toward the participant prior to and after training. The items were scored according to a 7-point Likert scale. The questionnaire was intended to assess the co-workers' general social perception of the participants. The co-workers were not aware of what stage of training the student was in.

Experimental Procedures

Baseline. Audiocassettes were placed in the student's shirt pocket. The first time this was done the student was told that the audiocassettes would record their conversations. The student then went about his or her work or break. No other instructions were given. The trainer or other research staff were never present in the probe setting.

Role-playing training. In this condition, training sessions were conducted in which the instructor presented an illustration representing a situation calling for an appropriate social behavior and asked what a person was supposed to do. For example, "a worker comes to get some perm solution in the lab when you (Tricia) are working there. What are you supposed to do or say when you see the person?" Tricia was expected to say, "I will greet the person either by saying 'hi' or with a smile." If the participant gave a correct response, the instructor provided verbal praise and emphasized the rationale for why it was important to perform a certain behavior. Then the instructor and participant role-played that behavior (e.g., greeting). Thus, there was a repeated exchange of behaviors between the participant and the instructor.

The instructor gave positive feedback for correct role-playing responses. If the participant did not give a correct response, the correct response was explained along with the rationale for such a response. Modeling of the behavior by the instructor followed. Then the instructor and the participant

role-played the correct behavior with the instructor taking a co-worker role. Five role-playing situations were provided in which the participant gave correct or incorrect responses. No training on the problem-solving process for generating an appropriate behavior was given in the training session. The training sessions lasted about 30 min, with about 10 trials per session.

Problem-solving training. During this condition the training procedures followed an adaptation of McFall's (1982) model to include decoding, decision, performance, and evaluation. The intervention procedure consisted of three parts in each session: pretest, training, and posttest. The procedure may be illustrated using the example of greeting customers. During the pretest the instructor presented a picture showing the participant passing by a familiar customer in the restaurant. The instructor asked the participant how he would behave in that situation (e.g., "How do you decide what to do when you see a familiar customer?"). The participant was expected to make use of the seven corresponding rules to explain the process or steps to follow in deciding what to do. The instructor recorded the participant's use of the seven corresponding rules.

In the next part of the session, training on the rules missed by the participant was provided. The instructor described the rules that the participant failed to use on the pretest and then conducted several trials with different pictures representing similar situations. For the example of customer greeting, the participant was expected to start with the first rule ("what's happening"; decoding skill, Rule 1) to determine an appropriate behavior in that situation. If he did not give a correct interpretation, a correct answer was provided. Once the participant interpreted the situation correctly, he was expected to describe the choices that were available to him in that situation (decision skill, Rule 2). If he was not able to generate alternative responses, the instructor provided some alternatives. At most, three alternative responses were generated (e.g., ignoring the customer, saying "hi," or waving). After he knew these alternatives, he was expected to test each alternative ("what might happen

if"; Rule 3). If he failed to test the choices, the possible consequences of choosing the various choices was discussed by the instructor. Then the participant was expected to choose the most appropriate behaviors in that situation ("which is better"; decision skill, Rule 4). If he did not select the best possible appropriate behavior, the instructor explained why a particular choice was the best one in that situation. After he picked the most appropriate choice, he was then expected to select (Rule 5) and emit (Rule 6) the behavioral responses (e.g., eye contact, gesture, saying "hi"). For the last step, the participant was expected to evaluate his feeling about his performance and how people reacted to his behavior (evaluation skill, Rule 7). For example, the instructor asked the participant to state whether or not he felt good about saying "hi" to the customer and asked him to interpret others' reactions to his greeting (e.g., did they, in turn, greet you by saying "hi" or did they ignore your greeting?).

After training each day a posttest was given. The instructor presented the same picture as in the pretest (e.g., greeting a familiar customer) and asked the participant how he would decide what to do in the situation. The instructor gave no feedback to the participant's response. The percentage of correct responses out of the total corresponding rules was coded as data for the posttest. The average of pre- and posttest scores was used as the dependent variable for training data on the process skill for that session. Each training session lasted about 30 min.

Transfer to nontraining materials. During training of the third behavior, on every other session a transfer probe (stimulus and response generalization probe) was made. That is, at the end of the training session the instructor presented two new social situations (with cards) that required social behaviors different from those taught in training. A total of 10 new social situations (six in training and four in follow-up phase) were presented for each participant. For example, the new social situation included the target behaviors of being patient when waiting in a line, offering help, responding to criticism positively, and so on. Participants had to state what they would do in that situation,

using the seven corresponding rules. Participants did not receive feedback from the instructor.

Follow-up. Follow-up probe sessions were conducted in the same manner as baseline and generalization probes. They were introduced intermittently at varying intervals subsequent to the completion of training.

Research Design

A multiple baseline design across response classes (Hersen & Barlow, 1976) was employed for each participant. For Geoff, a combined (B and C) behavioral role-playing (B) plus problem-solving (C) treatment was sequentially introduced across the three behaviors. With Tricia and Clara, the treatment components were introduced separately across the behaviors. Thus, baseline (A) was followed by B, and then by B and C.

RESULTS

Geoff successfully generalized the learned problem-solving steps for expansion to the new materials at a median level of 100%. Tricia increased the use of problem-solving steps to nontrained behaviors. However, the number of steps used ($M = 40\%$) was consistently lower for the nontrained behaviors than for the trained behaviors ($M = 70\%$). Clara did not successfully use the problem-solving skills for nontrained behaviors with the new cards.

Inspection of Geoff's data (Figure 1) shows that training the problem-solving skills resulted in a positive change in social behavior during generalization sessions (i.e., probes in the actual work site). When training was introduced, Geoff began to decrease mumbling, reaching almost a zero level at the end of the phase. His frequency of initiations also showed an increase after the intervention was introduced.

Figure 2 shows that Tricia's initiation, expansion, and termination were extremely low or close to zero during baseline. When role-play training was introduced, the frequency of initiations, expansions, and terminations remained near zero. However, as soon as the process intervention was introduced, initiations and expansions increased

Figure 1. The generalization of social behaviors for Geoff.

sharply. The number of terminations was not as high, yet it showed a definite increase during the process intervention. All three behaviors were maintained at a similar or slightly lower level than the previous phase.

Figure 3 indicates that Clara's generalization data showed a similar trend. During baseline Clara seldom exhibited any of the targeted behaviors. When role-play training was introduced, the three behaviors showed no or a negligible increase. When problem-solving training was introduced, her initiation and expansion rapidly increased, showing a constant upward trend until the end of the intervention. Termination increased slightly. At follow-up, ini-

Figure 2. The generalization of social behaviors for Tricia.

tiation and termination were maintained at about the same level, and expansion dropped slightly.

Social Validation: Co-Worker/Supervisor Questionnaire

Seven co-workers for Geoff, six for Tricia, and five for Clara completed the pretest and posttest social validity questionnaire. With a separate item analysis, all items improved significantly (Matched-pair Wilcoxon Test, $p < .05$) for Geoff (communication, desire of others to have lunch together, physical appearance, acceptance, and inclusion in

Figure 3. The generalization of social behaviors for Clara.

social get-togethers). For Tricia, all items except physical appearance had significant pre-post differences. With Clara, all items were significant except inviting to social functions.

DISCUSSION

For the 3 participants, problem-solving training led to substantial generalization and maintenance of social behaviors in natural work settings. The on-site conversational probes, as well as co-worker social validation, build a convincing case for the efficacy of this training. A question remains as to

why training based upon role-playing training failed to generalize because the participants did emit error-free responding during training in five of the six targeted behaviors. It may be possible, though, that even more training (overlearning) would have induced generalization (Haring, 1978). Also, there was only one instructor (confederate) conducting training. It is quite possible that multiple instructors (peers, exemplars) with more stimulus properties in common (Sacks & Gaylord-Ross, in press; Stokes & Baer, 1977) with the co-workers would have induced generalized responding (Brady et al., 1984). However, problem-solving training had only one instructor with an equivalent amount of practice given as role-playing training and did produce the desirable effects. Whatever the source of the difference may be, it appears that the rule-governed approach involved in process training is promising.

However, for persons with developmental disabilities, it is not clear just how far they may advance in the problem-solving behaviors of social decoding, generating alternatives, foreseeing consequences, and decision making. Certainly, advances have been made in their use of external self-mediators (Sowers, Verdi, Bourbeau, & Sheehan, 1985). It is hoped that applied behavioral intervention research in employment and other settings will encourage the development of such social problem-solving skills.

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