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TEACHING YOUTHS WITH AUTISM TO OFFER ASSISTANCE

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Three adolescent boys with autism were taught to offer assistance to a person stating inability to complete a task. The study used a multiple baseline across the 3 youths and a multiple baseline across three tasks for each student. Both designs provided clear support for the ability of the youths to discriminate those settings in which offers of assistance were desired. All 3 participants showed relatively rapid acquisition of responding. Generalization was assessed to a new person in the training setting, to a familiar person in a new room at the center, to the mother in the youth's home, and to three novel tasks. Generalization to a new person in the familiar setting was most likely to occur, with very high levels of responding for all 3 youths. Generalization to the other conditions varied across youths, although all 3 boys showed some transfer of skills to all conditions.

DESCRIPTORS: autism, social skills, adolescents

One of the diagnostic indicators of autistic disorder as specified by the American Psychiatric Association (1987) is impairment in social interaction. The lack of sensitivity to the feelings and needs of others and a failure to understand social conventions have long been identified as key features of this disorder (Rutter, 1978). Some researchers have argued that impairment in ability to relate socially and affectively is an essential feature of autism (e.g., Hobson, 1989; Mundy & Sigman, 1989). Some recent research has focused on the capacity of the person with autism to adopt the perspective of another person (e.g., Baron-Cohen, Leslie, & Frith, 1985; Hobson, 1984).

The failure to respond to others in need of assistance can be a source of considerable distress to those who live or work closely with a person with autism. Given the impact of these behaviors on others, it would be useful if people with autism could acquire skills that would make their presence more reinforcing to peers, parents, teachers, and supervisors. Consistent with this objective, Charlop and Walsh (1986) documented the feasibility of teaching school-aged autistic children to verbalize spontaneous expressions of affection to familiar adults. Similarly, teaching social skills to autistic preschoolers and older youths has received considerable attention (e.g., Gaylord-Ross, Haring, Breen, & Pitts-Conway, 1984; Strain, 1983; Strain, Kerr, & Ragland, 1979).

Social sensitivity is especially valued when we are unable to do something for ourselves. With an armload of packages, we cannot put a key in the lock; without our glasses, we cannot find the money we dropped on the floor. A friendly offer of assistance under such conditions is a welcome event. The purpose of the present study was to explore the extent to which young people with autism could be taught to offer assistance to an individual requesting assistance with a simple daily task.

METHOD

Participants

The participants were 3 adolescent boys enrolled at the Douglass Developmental Disabilities Center. All had been diagnosed as autistic by an outside agency at the time of referral, and that diagnosis was confirmed by an experienced clinical psychologist at the center using the criteria of the *Diagnostic and Statistical Manual III* (American Psychiatric Association, 1980).

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Rick, 14 years of age, was in a class for 7 adolescents between 14 and 19 years of age. Ronnie (age 13) and Vic (age 14) were in an early adolescent class for 6 boys between 11 and 14 years of age. Both classes emphasized functional academics, prevocational skills, and daily living skills. Repeated efforts on the part of child study team psychologists to assess the cognitive skills of each boy yielded no norm-based test results.

Rick's skills included assembly, cooking, independent self-help, and clerical work. His age-equivalent score on the Peabody Picture Vocabulary Test was 2.1 years. He was capable of three- and four-word utterances but rarely was spontaneous in speech. He responded appropriately to greetings and was beginning to greet familiar adults spontaneously. He accepted initiations of social interactions by peers but did not initiate such contacts. His socialization programs at the time of the study focused on teaching him reciprocity, turn taking, and game playing.

Ronnie exhibited ritualistic behavior and verbal perseveration. He had reading, packaging, assembly, matching, and sorting skills. His Peabody Picture Vocabulary age-equivalent score was 2.2 years, and his speech included four-word utterances. He spontaneously greeted familiar people and initiated brief conversations and interactions with peers, although these interactions were not always appropriate. Socialization programs in effect at the time of the study were designed to teach him appropriate greetings, sharing, and positive peer interactions.

Vic could match and sort and follow two-part directions, but he required considerable prompting. The majority of his vocalizations were preseverative and echolalic. His age-equivalent score on the Peabody Picture Vocabulary Test was 2.5 years. His interactions with others were mostly inappropriate in that he either crowded and clung to peers and adults or appeared oblivious to their presence. His socialization programs were designed to promote peer interaction, turn taking, sharing, and appropriate greetings and initiations. He was able to return appropriate verbalizations following the greetings of others.

Setting

The Douglass Developmental Disabilities Center is a university-based day school for the treatment of children with autism. All training sessions were conducted in the student's regular classroom while 5 or 6 pupils in other parts of the room participated in individual and group programs. One of the generalization settings was the center's research office, a small room with a desk and computer. The second generalization setting was the kitchen of the participant's home with the mother acting as confederate.

Experimenters and Confederates

The 10 experimenters and confederates were advanced undergraduate students in psychology who had completed at least one semester of direct work with children with autism and were enrolled in a course on research issues with this population. One graduate student in clinical psychology also served as an experimenter. The three additional staff members who participated in the assessment of generalization to novel persons were individuals who worked in the classroom but did not participate in training the subjects. Those who tested for generalization to other tasks were involved in the initial training. In the assessment of generalization to the home, the youth's mother served as confederate and the observer was one of several previous trainers.

Design

The participation of 3 youths allowed us to embed two analyses within the same data collection procedure. A multiple baseline across participants was based on the first task trained for each youth, and the second analysis included a separate multiple baseline across three tasks for each youth.

The multiple baseline across youths involved the successive training of Rick, Ronnie, and Vic. Rick received 5 days of baseline, 15 days of training, and 16 days of maintenance. Ronnie had 21 days of baseline, 5 days of training, and 11 days of

maintenance. Vic received 25 days of baseline, 7 days of training, and 5 days of maintenance.

Following each boys's training on his initial task, he was trained on two additional tasks, shifting to a multiple baseline across tasks rather than across participants. The design for each youth was identical, requiring a criterion of 80% correct verbal responding for 2 days on each successive phase prior to training on the next task in the sequence.

Procedure

Pretest. To ensure that they were capable of making a verbal offer of assistance, each participant was asked five times to imitate the phrase "Can I help you?" To meet the criterion for inclusion they had to imitate intelligibly four of the five times as rated by the experimenter and an observer. Rick met criterion without training. Ronnie required 8 days of discrete-trial training, and Vic needed 2 days to reach criterion. This training consisted of 20 trials a day with a mastery criterion of 80% correct over 2 consecutive days. During each trial the experimenter presented the instruction "Say, 'Can I help you?' " and waited 5 s for the youngster to respond. If he complied he was praised, if he failed to respond the next trial was presented after ensuring that appropriate attending behaviors were established, and if he made an error he was corrected, "No, say 'Can I help you?' "

The youths were also screened for their ability to emit the motor skills needed to offer assistance in the study. The pool of 15 items included screwing on (or off) a jar top, finding a quarter on the floor, inserting a key in a lock, putting a tape in a tape recorder, opening a cabinet door, putting paper in an envelope, zipping a jacket worn by another person, sealing a ziplock bag, picking out a paper clip from a pile of closed safety pins, finding a fork among a set of spoons, putting the top on a plastic food container, picking up a cup, fastening a button on a jacket worn by another person, and tearing off a piece of tape. Each task was presented to the youth in the form of a command (e.g., "Put the top on the jar."). Each of the 15 items was presented five times in 1 day.

Compliance with commands was reinforced with praise. To be included in the study, the subject had to have at least six tasks with which he complied upon command at least four of five times. Rick had 13 tasks for which he met criterion, Ronnie had eight, and Vic had seven.

Rick's training tasks were putting a key in a lock, tearing off a piece of tape, and fastening a button. His generalization tasks were putting paper in an envelope, opening a cabinet door, and putting a top on a jar. Ronnie's training tasks were putting paper in an envelope, taking a top off of a jar, and opening a cabinet. His generalization tasks were finding a fork in a pile of spoons, putting a top on a jar, and putting a tape in a tape recorder. Vic's training tasks were opening a cabinet, zipping a jacket, and putting a top on a jar. His generalization tasks were putting a top on a plastic container, picking up a cup, and taking a top off of a jar.

Baseline. Three tasks from each youth's pool of six items were selected randomly for baseline. Each task was presented three times per day for a minimum of 5 days. In addition, baseline data for generalization were obtained with a confederate who had not trained the participants, in two settings other than the classroom (research office at the center and the youth's home), and to three other tasks that had not been trained.

During each task the youth observed a confederate state his or her inability to complete a task (e.g., "I can't get this top off." or "I can't button my button."). The experimenter and the confederate independently noted whether the participant made a verbal offer of assistance within 5 s of the confederate's statement of difficulty and whether the act of assistance was provided. If the youth did not make an offer of assistance within 5 s, the next trial was presented. Three trials were given on a single task, then the next task was presented for three trials followed by the third task, making a total of nine trials a day. The order of presentation of the tasks was randomized each day. Throughout baseline the participant was praised for general compliance and appropriate classroom behavior.

Training. The order in which the youths entered

training and the order in which their tasks were trained were determined randomly. To meet the requirements of the multiple baseline across participants, Rick began training on Task 1 and remained in baseline for his other two tasks, and Ronnie and Vic remained in baseline for all tasks. After Rick met criterion for Task 1 he began training for Task 2, and Ronnie began training for his Task 1. When Ronnie met criterion for his first task, he went on to his second task, and Vic began training on his Task 1. When Vic completed Task 1, he, like the other boys, moved ahead within his own multiple baseline across tasks.

As in baseline, at the beginning of a trial the youth saw a confederate state the inability to accomplish a task (e.g., "I can't button this jacket."). The experimenter then prompted the youth to say "Can I help you?" Upon emission of this phrase by the participant, the confederate said, "Thanks a lot. Please ——— (e.g., "Button my button."). After the youth completed the act of assistance the confederate thanked him (e.g., "That was great." or "Thank you."). Verbal prompts were quickly faded as the youths complied. The criterion for reduction of the level of prompt was one 15-trial session of 80% or better responding at that prompt level. Failure to respond to the reduced level of prompting within one session would have resulted in returning to the prior level of prompting, but this was never necessary. For all participants, acquisition was so rapid that the transition from full immediate prompts to 5-s delayed full prompt to 5-s delayed partial prompt occurred within 3 days.

Maintenance. The procedures during maintenance were identical to those of baseline; the youth was thanked for offers of assistance but was not prompted to make such offers.

Generalization. Following mastery of each task, generalization was assessed to a new confederate in the training setting, in the research office at the school with a familiar confederate, at home with his mother, and with three novel tasks. The procedures used in generalization probes were identical to those used in baseline. Three probes were used for each task during each session, and only one session occurred on a single day.

Data Collection

The experimenter and the confederate independently scored the youth's verbal and motor response on each trial. In order to be scored as correct verbally, the participant had to say "Can I help you?" without prompting within 5 s of the confederate's discriminative stimulus for assistance. A correct motor response consisted of emission of the behavior required to complete the task. Interobserver reliability was calculated on a trial-by-trial basis using the formula of agreements plus disagreements divided by agreements and multiplied by 100.

RESULTS

Reliability

Both the experimenter and confederate collected data in each session. For Rick, agreement was 100% in all sessions across all conditions, except training for key in lock, in which mean reliability was 97.1%. Agreement on Ronnie's and Vic's responding was 100% in every session.

Performance

Figure 1 depicts the verbal performance of all 3 youths across a multiple baseline for Task 1. After 5 days of baseline data during which Rick's performance was consistently 0%, he was trained on Task 1, a key in lock, and over 12 days his performance rose gradually to criterion. His performance during the 25-day maintenance phase remained high, with a mean of 88% and a range of 100% to a 1-day low of 33%.

Ronnie had a 21-day baseline with consistent 0% responding. When training on Task 1 (putting a letter in an envelope) was introduced, his performance rose rapidly, reaching criterion in 4 days. With the exception of 1 day of nonresponding during the 20-day maintenance phase, his performance remained high (M = 92%).

Vic's 25-day baseline was consistently 0%, with the exception of Day 3 when he reached 33%. Following training in Task 1 (putting on a top), he met criterion in 7 days and remained at 100% throughout the 12-day maintenance phase.

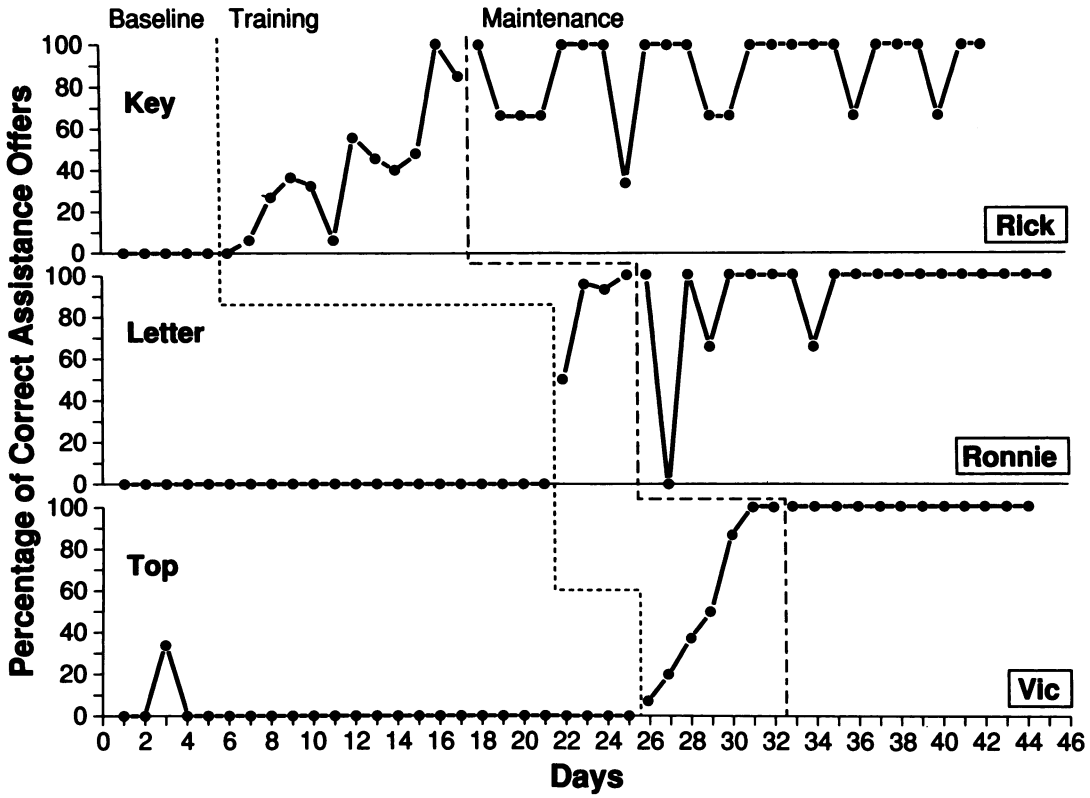

Figure 1. Percentage of correct offers of assistance across 3 participants. For Rick the task was putting a key in a lock, for Ronnie the task was putting a letter in an envelope, and for Vic the task was putting on a top.

As illustrated in Figure 2, the multiple baseline comparison of Rick's performance across three tasks shows that, following his relatively slow acquisition of responding for Task 1, he showed more rapid acquisition for the next two tasks and some generalization prior to training. Thus, in Task 1 (key in lock) he took 12 days to meet criterion, for Task 2 (tape) he took 3 days, and for Task 3 (buttoning) he took only 2 days. Almost simultaneously with the onset of the maintenance phase for Task 1, Rick began to respond erratically to Tasks 2 and 3, although he did not meet criterion for either task until training for that task was initiated. He maintained high levels of responding across each task, averaging 88% (over 25 days), 94% (over 10 days), and 100% (over 8 days) for Tasks 1, 2, and 3, respectively.

As summarized in Table 1, Rick's generalization data reveal no correct responses during the pre-training baseline. Following mastery of Task 1, he immediately transferred this skill to a new confederate (100%), to his mother at home (100%), and to a familiar confederate in the center's office (100%). Responding did not, however, generalize to the three novel tasks (all 0%). After meeting criterion for Task 2, responding again generalized completely to a new confederate, his mother at home, and to the office. He also showed 100% correct responding to the tasks of putting paper in an envelope and a top on a jar and 66.7% responding to opening a cabinet. Following mastery of Task 3, his responding was 100% correct with the familiar confederate in the office, 33.3% to his mother at home, 66.7% to a new confederate, and 66.7% to the tasks of letter in envelope and top on jar and 100% to opening a cabinet.

Inspection of Figure 2 reveals that Ronnie's performance across tasks showed essentially no evi-

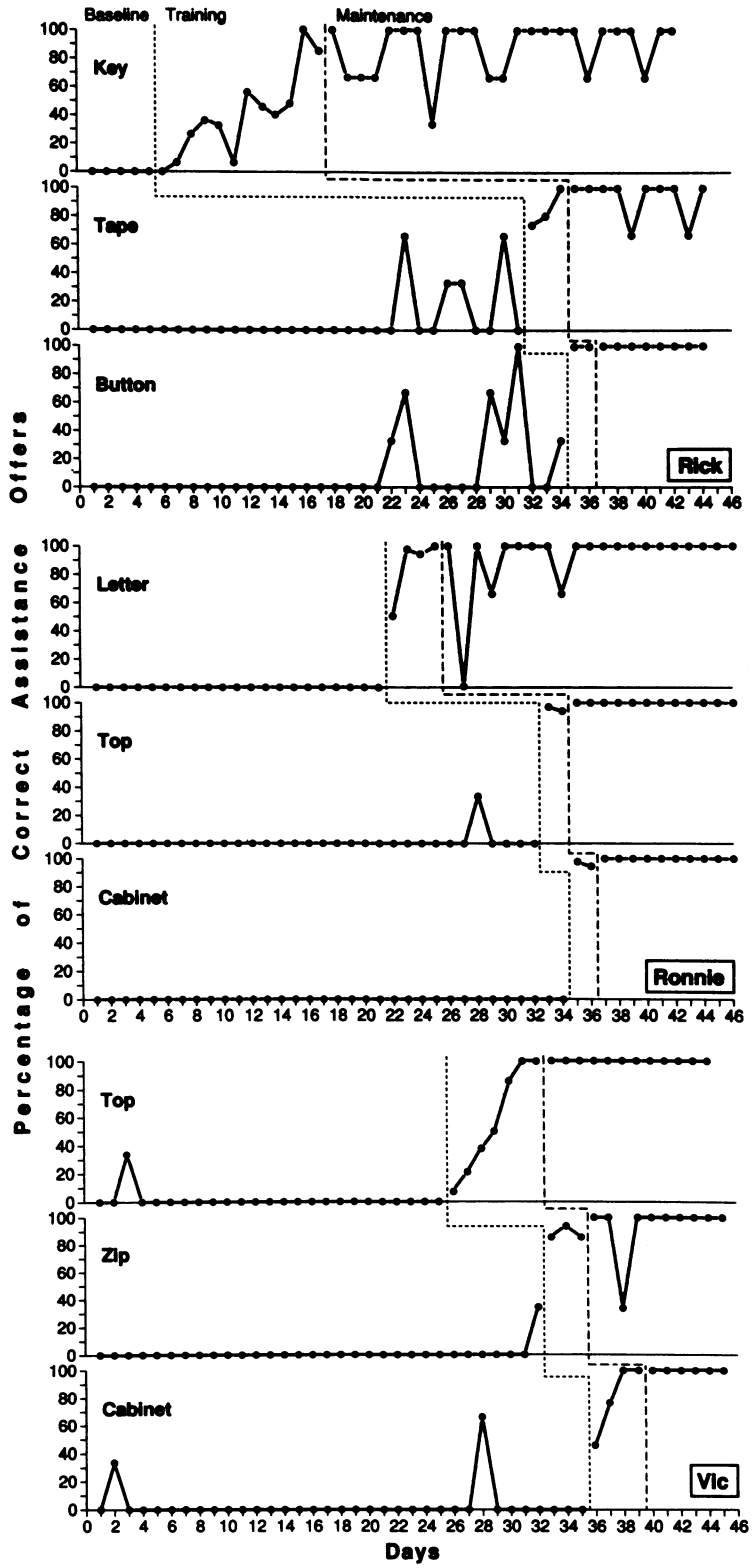

Figure 2. Percentage of correct offers of assistance for Rick, Ronnie, and Vic across each of their three tasks.

Table 1
Percentage of Correct Offers of Assistance in Novel Settings, Persons, and Tasks

Subject	Setting		Person	Tasks*		
	Office	Home		1	2	3
Rick						
Baseline	0	0	0	0	0	0
Task 1 (key)	100	100	100	0	0	0
Task 2 (tape)	100	100	100	100	100	66.7
Task 3 (button)	100	33.3	66.7	66.7	66.7	100
Ronnie						
Baseline	0	0	0	0	0	0
Task 1 (letter)	100	100	100	0	0	0
Task 2 (top off)	66.7	0	100	33.3	0	0
Task 3 (cabinet)	33.3	33.3	100	0	100	33.3
Vic						
Baseline	0	0	0	0	0	0
Task 1 (top on)	100	100	100	100	0	100
Task 2 (zipper)	100	66.7	100	100	0	100
Task 3 (cabinet)	100	33.3	100	100	66.7	100

* Novel tasks for Rick were envelope, top on, and cabinet; for Ronnie, fork, top on, and tape; for Vic, container, cup, and top off.

dence of generalization. In each instance, with the exception of Day 28 for Task 2 (putting on top) his performance remained at 0% until training was introduced. Performance rose rapidly to criterion following the onset of training, taking 4 days for Task 1 and 2 days for Tasks 2 and 3. Performance was maintained at consistent levels for each task after training ended. He had a mean of 92% maintenance for Task 1 over 20 days, 100% for Task 2 over 11 days, and 100% for Task 3 over 9 days.

Ronnie's generalization data, as summarized in Table 1, reveal 0% responding during the pretraining baseline. After mastery of Task 1, he showed 100% generalization to a new confederate, to his mother at home, and in the office. Generalization to the three new tasks was 0%. Assessment of generalization after mastery of Task 2 showed 100% generalization to a new confederate, 0% to his mother at home, and 66.7% in the office. He did not respond to the tasks of top on jar and tape in recorder, and responded at 33.3% when asked to find a fork in a pile of spoons. After mastery of Task 3 he showed 100% generalization to a new confederate, 33.3% to his mother at home, 33.3% in the office, 100% to top on jar, 33.3% to tape in recorder, and 0% to finding a fork.

As depicted in Figure 2, Vic's data closely resemble Ronnie's in that there was minimal generalization across tasks prior to training. He never responded until trained, with the exception of one data point on Day 3 for Task 1 (top on jar), one data point on Day 32 for Task 2 (zip coat), and two points on Days 2 and 28 for Task 3 (open cabinet). He mastered Tasks 1, 2, and 3 in 7, 3, and 4 days, respectively. He showed 100% maintenance after training, except for 1 day on Task 2 when his performance dipped to 33%.

Like the other boys, Vic never responded to the generalization tasks prior to training (Table 1). Immediately after training on Task 1, his responding generalized 100% to a new confederate, to his mother at home, and in the office. He also made no errors on the novel tasks of top on container and top off of jar, but did not respond correctly to picking up a cup. Assessment for generalization after completion of Task 2 again showed 100% responding to a new confederate and in the office, 66.7% to his mother at home, 100% to putting a top on a container and taking a top off of a jar, and 0% to picking up a cup. After Task 3 training, his responding was 100% correct to the new confederate and to the familiar staff member in the

office, 33.3% to his mother at home, 100% to top on container and top off jar, and 66.7% to picking up a cup.

Motor Acts

There were very few instances in which a participant made a verbal offer of assistance that was not followed by the appropriate motor act; therefore, motor act data are not presented in detail. Rick, Ronnie, and Vic did not perform the corresponding motor act in four, eight, and seven trials, respectively.

DISCUSSION

Our results demonstrate that adolescents with autism can learn to respond to cues from others that indicate a need for assistance with a specific task. All 3 youths showed increased efficiency in learning as training progressed, with the second and third tasks mastered more quickly than the first. The close congruence between verbal offers of assistance and appropriate motor behaviors suggests that the youths had learned not simply a rote verbal behavior but were able to link their vocalizations to an appropriate (and varying) motor response as well. In addition, all participants showed evidence of generalization of responding, although the levels of generalization found were somewhat disappointing, especially in generalizing to the home.

The most consistent generalization was to a new confederate in the training setting where, with one exception (Rick's Task 3), responding was at 100% for all 3 boys for each task. This high level of response probably reflects the use of multiple trainers during the instructional phase, a strategy that has been recommended to enhance generalized responding (e.g., Stokes & Baer, 1977). Support for this interpretation of the impact of multiple exemplars is found when comparing generalization to the mother at home and the new confederate at school. Generalization to their mothers at home, which was both a new person and new setting, was somewhat more erratic than to the new confederate at school, although all 3 participants did show some transfer of skills to the home. Similarly, for Ronnie, generalization to the research office was a demanding task with variable performance. This greater difficulty for all of the boys in transferring the skill home, and for Ronnie to the research office as well, may reflect our failure to train in multiple settings as well as with multiple trainers.

The impact of one factor that might have served to enhance responding in the home, the presence of familiar staff members from the school who were acting as observers, cannot be assessed from the present results. The use of unfamiliar individuals as observers would have been a more appropriate control. Because several of the tasks were highly appropriate to the home setting but were not readily emitted there (e.g., putting a top on a jar), meaningfulness of the task alone did not appear to have been the salient variable in predicting generalization. Continued training of one or more exemplars might have enhanced generalization.

Ronnie's generalization to the home was variable; however, his mother reported that 2 weeks after the study was completed, he turned to her and said, "Can you help me please?" when struggling to do a task he could not complete. This observation suggests a future area of research on collateral changes in behavior.

The two single episodes of offers of assistance early in Vic's baseline raise interesting questions about the extent to which this response existed in his repertoire but was not being emitted in a consistent fashion. Assisting the young person with autism in attending to and responding to relevant environmental cues that signal responding may be as important as the training of a skill per se. Indeed, the speed with which Ronnie showed acquisition of the response when his training began raises the question of the extent to which this was a newly acquired response or was instead the mastery of a discrimination about when that response should be emitted.

To summarize, the results of the present study support the notion that increasing the discriminability of relevant social cues enhances the likelihood that people with autism will emit socially desirable responses. Offering a helping hand is one of the ways in which we establish social relationships in

the working world. To the extent that these young men have become more alert to signs of distress in others and are willing to volunteer help, their integration in the work setting should be enhanced. Learning to offer assistance is a social skill relevant in the training of young people with autism. Our data suggest that for the adolescent this response may be relatively easily acquired and generalized.

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