TEACHING FUNCTIONAL COMMUNITY SKILLS TO AUTISTIC CHILDREN USING NONHANDICAPPED PEER TUTORS

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In this study, two autistic children were paired with normal peers who, after pretraining sessions, taught community skills to the autistic children. Data were collected during three conditions: baseline, modeling, and peer tutoring. Results demonstrated that no identified skills were acquired during the baseline and modeling conditions. However, direct instruction of each child by a peer tutor resulted in the learning and maintenance of functional community skills.

DESCRIPTORS: community skills, peer tutors, community setting, autistic children

The risks of long-term residential treatment for some clients can be minimized by creating an environment that lends itself to community transition (Luce, Anderson, Thibadeau, & Lipsker, 1984). In spite of parental, legal, and professional pressures to educate in "least restrictive" and "normalized" environments, the technology for doing so remains largely confined to classroom- and the home-based procedures (Egel, Richman, & Koegel, 1981; Koegel, Russo, & Rincover, 1977; Schreibman, O'Neill, & Koegel, 1983; Strain, 1981; Strain, Shores, & Timm, 1977). Relatively little attention has been devoted to the training of autistic children in the skills necessary to participate in community activities enjoyed by nonhandicapped children.

There is evidence to suggest that peer modeling is an effective training method with both autistic and retarded children (Apolloni, Cooke, & Cooke, 1976; Coleman & Stedman, 1974; Egel et al., 1981).

In view of the findings of the positive effects of peer models and mainstreaming for handicapped children, it appears to be beneficial to apply this

knowledge to the development of skills displayed by normal children and adults in the community. Natural community settings such as libraries, stores, and restaurants could provide the handicapped child with opportunities for observation and learning. We investigated a training package that included functional skill training, community exposure, and normal peer interaction in the acquisition of community skills with two autistic children.

METHOD

Children and Setting

Two children living in a residential treatment facility participated. Both children were being prepared to return to their homes and community-based educational placements and were recommended by their teachers as good candidates for the study. Both children had been diagnosed autistic at the age of 3 by an evaluator not associated with this research.

John, an 8-year-old male, had been at the treatment facility for 3 years when this investigation began. John's expressive language was characterized by two- to three-word utterances and occasional immediate echolalia. Teachers reported that he could spontaneously request preferred objects and activities. Receptively, he was able to follow simple instructions and identify a large number of objects. John's maladaptive behaviors included: self-injurious behavior, tantrums, and high rates of self-stimulatory behaviors such as hand flapping,

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object manipulation, pica and inappropriate noises. John's independent work, play, and self-care skills were severely limited; with close supervision, he was able to complete tasks such as sorting, simple assembly tasks, and dressing. John received a mental age score of 3.8 years on the Peabody Picture Vocabulary Test.

Tom, a 5-year-old male, had been a student at the treatment facility for 16 months. His receptive language skills were considered age appropriate, whereas his expressive skills were severely deficient. Tom's expressive language was characterized by four- to five-word utterances and occasional echolalia. Tom's maladaptive behaviors included tantrums and self-stimulatory behaviors such as spinning objects and rocking. Tom was able to work or play for 20 minutes with supervision. He could dress with limited supervision, but required assistance to complete other self-care routines. Tom performed at a 4 year, 3 month age level on the Stanford Binet; however, in social and self-help skills he achieved an age equivalence of 3 years, 10 months.

Each child was paired with a normal peer. John was paired with an 8-year-old male who was in the third grade of a local public school. Tom was paired with a 7-year-old male who was in the second grade of the same school. Although both peer tutors volunteered to work with the autistic children, neither had any previous training in autism prior to their selection as peer tutors.

Data were gathered in four different community settings, none of which were altered in any way for the study. A library, restaurant, convenience store, and five-street intersection were used as training sites. These settings were chosen on the basis of their attributes as good training sites for important general community skills and their proximity to the residential facility. Prior to the training trials at the community sites, pretraining was conducted with each autistic child and his peer tutor in the home of one of the trainers.

Dependent Measures

Four basic community skills were chosen for the two children. Each skill was task analyzed yielding

a chain of behaviors required for each skill. The number of steps in each chain varied according to the complexity of the task. Checking out a library book (8 steps) and buying a snack (10 steps) were used with both boys. In addition, John was taught to buy an item at a convenience store (8 steps), and Tom was taught to cross a street (5 steps). The autistic children were not taught any prerequisite skills, such as counting change or book discrimination, for any of the tasks. Rather, each task was specifically taught to ensure success in these specific areas.

Observers were given a data collection sheet (available from the senior author), which listed each step in each chain of behaviors required for completion of each skill. Observers scored correct responses, incorrect responses, and the absence of a response. Each step was scored as correct when the autistic child complied with the first instruction given by the peer tutor. If it was necessary to repeat the instruction or if the peer tutor had to physically prompt the autistic child, the step was scored as a child prompt. The autistic child was allowed to proceed to the next step independently. Intervention by the observers was scored as an adult prompt and accounts for the percentage data not equaling 100 during the peer tutoring sessions. There was no rigid step completion order; that is, changes were tolerated as long as they did not jeopardize the completion of the chain. For example, in the restaurant chain, the child could give the clerk the money first and complete the chain of getting the ice cream. Also, an incorrect response did not necessarily end the chain. For example, the child could wait inappropriately for the librarian while she completed her paper work to check out the book but then the child could correctly complete the chain. Examples of responses that would jeopardize the chain would be the child's going to the desk without a library book or picking out a candy bar at the store and leaving the store without paying for it.

Data were recorded by two independent observers and records were compared for each response in all conditions of the experiment. The observers' data sheets defined the acceptable behaviors of cor-

Figure 1. Percentage of steps completed by John in the three community tasks during each experimental condition.

rect step completion and the disruptive behaviors for each child. Interobserver reliability scores were computed by dividing the number of agreements by the number of agreements plus disagreements. To count as an agreement, observers had to score the same step of the chain identically on a trial-by-trial basis. The percentages of agreement for John and Tom averaged at least 95% in each setting and never ranged below 72%. Occurrence and nonoccurrence reliability (Hawkins & Dotson, 1975) also were assessed: Occurrence agreement for both boys ranged between 94% and 100% with a mean of 97% and nonoccurrence agreement ranged from 96% to 100% with a mean of 98.5%.

Experimental Design

Multiple baseline designs across settings were used to analyze the effects of the training with both children. To enable an analysis of each boy's dependence on the treatment conditions, baseline conditions were reintroduced periodically.

Baseline. Each child was taken to the appropriate setting in the community where the task was to be performed. After the appropriate instruction was given, there were no further interactions with the child until the trial was over. The trial was ended when the task was completed, the child became disruptive, the child's response was incom-

patible with the completion of the task (e.g., leaving the setting), or 10 minutes elapsed without the child initiating a correct response.

Modeling. The peer tutor was instructed to follow the steps of the task analysis chain for each community skill. The tutor performed the chain in close proximity to the child to ensure that the autistic child could observe each of the steps of the chain. During the modeling phase, the tutor was instructed not to help or reinforce the autistic child. No instructions to watch the tutor were given to the autistic child.

Pretraining. The pretraining sessions for the peer tutor consisted of one-on-one sessions with the autistic child to establish the peer as a familiar person and to instruct the peer tutor in the basics of discrete trial teaching. Motor and discrimination tasks that the autistic child could already perform were chosen for these pretraining sessions. At the beginning of the first session, the experimenter explained the components of discrete trial training to the peer tutors (see Koegel & Schreibman, 1982 for a complete description). The experimenter then modeled discrete trials for the tutor. The tutor was then instructed to give the commands to the autistic child, prompt as necessary, and reinforce correct responses. The peer tutors were given instructive feedback on their use of instructions, prompts, consequences, and redirecting self-stimulatory behavior. The peer tutors initially reinforced correct responses with edibles paired with praise statements. Edibles were faded after the first session and in subsequent sessions both children earned a snack for good work when the sessions were finished. Pretraining sessions were considered effective when the autistic child responded to 100% of 20 commands given by the peer tutor for two consecutive sessions. The tutors completed the set of 20 commands twice in each pretraining session. John had three pretraining sessions and Tom had two pretraining sessions.

Peer tutoring. During this phase, each pair of children was taken to the setting for the community task and the tutor was instructed to help the autistic child complete the task. Specifically, before arriving at the community site, the trainer reviewed

the task analysis with the peer tutors, reminded them of which behaviors they should not tolerate, and reviewed the highlights of discrete trial training. Then, as in all phases, the children were given the necessary materials (e.g., library card) and one instruction (e.g., "Check out a book"). The two children simultaneously completed the steps of the chain. Therefore, the opportunity to model was also present during this phase. Once the instruction to begin the task was given, the trainer observed the children as unobtrusively as possible. Due to the nature of the community sites, the trainer was usually in the same room as the children but did not interact with them until they completed the task or the session needed to be terminated due to inappropriate behavior. Although the observers attempted to be unobtrusive, they were prepared to intervene immediately in the event that one of the autistic children became disruptive and could not be controlled by the tutor.

In addition to the rehearsal prior to each session, the role of the trainers also included giving the tutors feedback immediately following each session. The feedback was delivered in a manner that has been described elsewhere as a teaching interaction (Phillips, Phillips, Fixsen, & Wolf, 1974). Specific feedback from previous sessions was sometimes included in pre-session rehearsals.

RESULTS

Figure 1 shows the results attained with John across three settings. Baseline data were initially low, averaging less than 14% steps completed correctly. Modeling showed no effects in the first two settings and was omitted in the third setting. By contrast, peer tutoring was associated with improved performance in all three settings. When baseline was reintroduced, John's performance dropped to 38% in the library and 45% during shopping but maintained at 80% in the restaurant. Peer tutoring was reintroduced twice in the library, and once in the store, until 80% independent step completion was achieved for three consecutive baseline sessions. The final baseline conditions

Figure 2. Percentage of steps completed by Tom in the three community tasks during each experimental condition.

demonstrated maintenance in the library ($M = 87\%$), store ($M = 91\%$), and restaurant ($M = 80\%$). Circumstances beyond our control and unrelated to the study prevented any further investigation of maintenance.

Similar results, shown in Figure 2, were obtained with Tom. Baseline scores for the restaurant, library, and street crossing were 10%, 17%, and 0%, respectively. Modeling showed slight increases in the restaurant and at the intersection

($M = 23\%$ and 27% , respectively), and no change in the library. Tom's performance improved consistently as a function of peer tutoring. On one occasion (Session 15), a library trip was terminated by the trainers due to a tantrum. Acquisition criteria were met after the second peer tutor phase in the restaurant and after the first peer tutor phase in the other two settings. Tom maintained the restaurant and library skills for several weeks following the termination of training.

DISCUSSION

This study demonstrated that the peer tutoring process was effective in teaching two autistic boys functional community skills. Further, the training package appeared to be effective in preparing the peer tutor for teaching these children.

In this study, autistic children were placed in a highly distractible environment without prompts or reinforcement for attending to the models provided. These factors may have contributed to the relatively poor performance attained in modeling. Observers noted very little imitation of peer behavior that was relevant to the task. Thus, it appears that these conditions were not optimal.

The pretraining sessions served two major purposes. First, the sessions gave the peer tutors an opportunity to meet their autistic counterparts with trainer support and supervision. The pretraining sessions were also used to provide the peers with a simplified version of the discrete trial training (Koegel & Schreibman, 1982). Throughout the pretraining, efforts were made to provide immediate feedback in a positive manner to the tutors.

Several features of the peer tutoring routine encouraged completion of the chains taught. Most of the chains served the function of securing a reinforcer; with the aid of the tutor, chain completion resulted in tangible reinforcement for the autistic child and the tutor. On the one occasion that a session was terminated, the tutor was still allowed to complete the chain. Street crossing did not naturally result in a reward; however, trainers arranged for snacks to be provided after successfully completing the chain. In addition, if the autistic child failed to complete a task, he did not consume the reinforcer (e.g., book or store item) and instead observed the tutor consuming his.

The results suggest that peer tutors represent a viable means for teaching autistic children. The benefits derived from exposure in the community

and the interactions between autistic and normal children should continue to be pursued.

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