

*BEHAVIORAL TRAINING FOR SIBLINGS
OF AUTISTIC CHILDREN*

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The present study was conducted to investigate the effectiveness of a program designed to teach behavior modification procedures to normal siblings of autistic children. Three sibling pairs participated in a multiple-baseline analysis of the effects of training the normal siblings to use behavior modification procedures to teach their autistic brother or sister a variety of learning tasks. Results indicated that the siblings learned to use the behavioral procedures at a high level of proficiency, they used the procedures in a generalization setting, and there were observed improvements in the behavior of the autistic children. In addition, a social validation assessment of the normal siblings' statements about their autistic sibling indicated a decrease in negative statements and an increase in positive statements after training. These results are discussed in terms of the potential for incorporating siblings into the treatment plan in intervention programs with autistic children.

DESCRIPTORS: autistic children, family treatment, generalization, siblings

Procedures for training parents and other family members to serve as therapists for their handicapped children are becoming increasingly well documented in the behavioral literature (see Graziano, 1978; Koegel, Schreibman, Johnson, O'Neill, & Dunlap, in press; O'Dell, 1974). Most of this research has concentrated on training the children's parents to serve as therapists or co-therapists. With respect to autistic children, several different types of training programs have been developed, and training parents in behavior modification procedures has now been shown to produce positive changes in

many aspects of autistic children's behavior (e.g., Koegel, Glahn, & Nieminen, 1978; Koegel, Schreibman, Britten, Burke, & O'Neill, 1982; Kozloff, 1973; Wolf, Risley, Johnston, Harris, & Allen, 1967; Wolf, Risley, & Mees, 1964).

There has also been some suggestion that similar techniques could be used profitably to train siblings in families with handicapped children (Cash & Evans, 1975; Frankel, Tymchuck, & Simmons, 1976; Miller & Cantwell, 1976; Weinrott, 1974). The successful results of the above studies suggest optimism for pursuing this approach with severely handicapped children, such as those diagnosed as autistic. Some initial research has demonstrated the application of these procedures to a limited extent with certain target behaviors exhibited by such children (Colletti & Harris, 1977). Similarly, research has begun to show that interaction with other normal peers outside the family can have a beneficial effect on certain behaviors of autistic children (Frankel et al., 1976; Ragland, Kerr, & Strain, 1978; Strain, Kerr, & Ragland, 1979).

The above research shows that siblings can

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be trained, and it also supports the feasibility of attempting to train siblings in more broadly based general behavior modification procedures. This might prove helpful by giving siblings skills that will help them interact more generally with their autistic brothers and sisters (Dukoff, 1980; Sullivan, 1979). The purpose of the present study, therefore, was to investigate the effectiveness of a generalized training program for siblings of autistic children. The present study extends previous work in this area, which, as mentioned above, has focused on teaching siblings one aspect of behavior management skills, or on having them teach the handicapped children only one task or behavior (Cash & Evans, 1975; Colletti & Harris, 1977). The present program focused on giving the siblings a set of generalizable behavior modification skills, which they could use in a variety of settings with a variety of target behaviors.

Three main questions were addressed in this investigation: (a) could siblings of autistic children be taught to conduct correct behavior modification procedures at a high level of proficiency; (b) if so, would their implementation of such procedures also take place in nontraining (generalization) environments during unstructured play activities; and (c) would the siblings' implementation of behavior modification procedures produce measurable improvements in autistic children's behavior?

METHOD

Participants

The participants in this study were three sibling pairs, with one child in each pair diagnosed autistic by at least two outside agencies not associated with our research projects. The three autistic children and their families were participants in a research program conducted jointly by the University of California at Santa Barbara and Claremont McKenna College. All three of the autistic children were currently enrolled in public school special education programs.

Sibling pair 1 contained an 8-yr-old autistic female and her brother. Her IQ (nonverbal) from the Leiter International Performance Scale was 78. Her social age, from the Vineland Social Maturity Scale was 7.2. She had some very simple speech, and displayed some appropriate social skills (such as occasional affectionate behavior). Her main autistic symptoms were delayed echolalia, a large amount of self-stimulatory behavior, and occasional intense tantrums. This child's sibling was a 13-yr-old male. He was of normal intelligence, performed well in school, and participated in a variety of extra-curricular activities (e.g., baseball and soccer).

Sibling pair 2 consisted of an 8-yr-old autistic boy and his 11-yr-old sister. The autistic boy had a (nonverbal) Merrill-Palmer IQ of 60. His social age, from the Vineland, was 3.7. He had some simple expressive and receptive labeling skills, with occasional spontaneous speech and appropriate play behaviors. His self-stimulatory behavior was infrequent but relatively intense when it occurred. The sibling was of normal intelligence, and functioned adequately in school and social situations. She was described by her parents (and observed by the experimenters) to be generally quiet and to display some social shyness.

Sibling pair 3 consisted of a 5-yr-old autistic boy and his sister. The autistic child had a (nonverbal) Merrill-Palmer IQ of 83. His social age, obtained from the Vineland, was 4.2. He had limited expressive and receptive speech, and occasionally displayed some echolalia and self-stimulatory behavior. This child's sibling was an 8-yr-old female of above average intelligence who obtained high grades in school. Like the previously described sibling, she was reported (and observed) to be somewhat "quiet."

None of the three normal siblings had ever been suspected of, or diagnosed as, having any type of clinical pathology or learning disability.

Design

A multiple-baseline design across sibling pairs was used to assess the acquisition and generali-

zation of behavior modification skills by the siblings. All experimental sessions were conducted in the children's homes, except for the generalization probe sessions which were conducted in a separate building.

For each sibling pair a predetermined number of baseline measures were obtained. During these measures the sibling was instructed to attempt to teach the autistic child a task that was determined not to be in the child's repertoire, such as time telling, simple discriminations, or speech concepts. Table 1 lists the tasks trained by the sibling pairs during baseline and training sessions. Baseline sessions lasted for 15 min each,

Table 1

Tasks worked on by sibling-autistic child pairs during baseline and training sessions.

Sibling Pair One

- Discrimination between penny, nickel, dime, quarter, and dollar
- Number of pennies in a nickel
- Before and after concept for numbers (i.e., two is before three)
- Number of pennies and nickels in a dime
- Number of pennies, nickels, dimes, in a quarter
- Expressive labeling of penny, nickel, dime, quarter, and dollar

Sibling Pair Two

- Preposition discrimination (between in, on, under, behind)
- Discrimination between pronouns "I" and "you" (I have vs. you have)
- Expressive labeling of truck, tractor, and top
- Receptive labeling of letters (a, c, h, k, r, s, t)
- Expressive labeling of penny, nickel, dime, quarter, and dollar

Sibling Pair Three

- Before and after concepts (for numbers)
- Receptive identification of money (penny, dime, nickel)
- Sorting of picture cards by group (animals, clothes, etc.)
- Pronoun discrimination (I have vs. you have)
- One-to-one correspondence (counting objects)
- Spelling short words (cat, hat)
- First/last concepts (What did you touch first? Last?)
- Identification of capital letters
- Short-term memory after hearing a sentence (Who went to the store?)

during which the sibling's behavior was recorded in terms of five behavior modification skill areas (see *Dependent Measures*). The autistic children's correct responding was also recorded.

Sibling Training Procedures

After baseline, the siblings were trained in the following manner. During the first training session the sibling and trainer viewed a videotape which presented examples of behavior therapy with autistic children. Reinforcement, shaping, chaining, and discrete trial techniques were discussed (cf. Koegel & Schreibman, 1982). These techniques were explained in reference to both appropriate and inappropriate behaviors (e.g., reinforcement, extinction). For example, with respect to reinforcement the siblings were taught how to provide positive consequences contingent on appropriate task responding and good behavior; with respect to extinction the siblings were taught to withhold attention or other positive consequences contingent on inappropriate behavior. (Also, the siblings were told that if the autistic child displayed disruptive behavior, such as tantrums, they were to ignore it and continue to try and work with the child [paced instructions]. None of the children in this study exhibited disruptive behavior severe enough to warrant outside intervention by the trainers during the training sessions.) Frequent stops were made to explain and clarify points presented in the videotape, and to simplify technical terms with which the siblings would be unfamiliar. The trainer also gave the sibling examples of how the techniques and procedures could be applied to more general target behaviors and situations besides those shown on the tape.

Next, the trainer and sibling discussed how behavior modification procedures could be applied to everyday situations involving problem behaviors, using examples from a training manual designed for use with exceptional children (Baker, Brightman, Heifetz, & Murphy, 1976). The next training step involved instruction to the siblings while they worked with their autistic

brother or sister. A specific target behavior was chosen and worked on for approximately 30 min. The trainer would periodically interrupt briefly with corrective or positive feedback on the sibling's progress. If the sibling had trouble applying a particular procedure, the trainer modeled the procedure and asked the sibling to try again until he or she could perform it correctly.

After each training period a new (untrained) task was chosen and the sibling worked for an additional 15 min for the purpose of data collection. Since this was a probe to determine the sibling's proficiency, there was no intervention by the trainer. Eight such sessions with training and data collection were conducted for each child.

Dependent Measures

Primary measures. These were the siblings' correct use of behavior modification procedures and the autistic children's correct responding. Data were collected during each baseline and training session. The siblings' behavior was scored during every other 30-sec interval for correct use of five behavior modification procedures. These areas were the use of S^D's (instructions and questions), use of prompts, use of shaping, use of consequences, and the use of discrete trials. The sibling had to use a procedure correctly for the entire 30-sec interval to be scored correct (+) for that interval. The scoring definitions for the five skill areas were taken from a scoring system used in a previous study (on parent training) by Koegel *et al.* (1978), and are presented in Table 2. An overall percent correct score across the five categories was calculated for each baseline and training session by dividing the number of intervals scored correct (+) by the total number of intervals, and multiplying by 100.

During these same intervals, the correct responding by the autistic children was also recorded. The child had to respond correctly (or attempt to respond correctly) to the sibling's instructions for the entire interval to be scored

as a (+) for that interval. A percent correct responding was calculated for each baseline and posttraining session using the same formula as was presented above with the sibling percent correct scores.

Generalization measures. Along with the above measures, we gathered additional probe data related to the generalization of the procedures carried out with the autistic children by their siblings, both during training and after training. These probes were conducted in a room located at the research project site and decorated to resemble a living room. A variety of toys was placed in the room, and the sibling was instructed to interact and play with his or her autistic brother or sister while they were alone in the room. The sibling was not asked to conduct any training. These sessions were covertly videotaped for scoring. The siblings' interactions were characterized in terms of discrete trials and were scored for the same teaching categories as the home data sessions. For example, if the sibling said, "Get the ball," the autistic child brought the ball, and the sibling delivered a consequence ("thanks, good job"), these would be scored as the components of one discrete trial (i.e., "Get the ball" = an S^D, bringing the ball = the response, "thank you" = the consequence). As with the baseline and training sessions, the correct responding by the autistic children was also recorded. These generalization data were collected to assess both stimulus and response generalization in that they were in a novel and unstructured setting and involved different behaviors.

Social validation assessment. As mentioned in the introduction, much of the motivation for this research stemmed from parental concern about the interactions between their normal and autistic children. Therefore, we conducted an informal social validation assessment (cf. Wolf, 1978) of the effects of the training program by randomly asking the parents for examples of comments the siblings were making about their brothers and sisters both before and after training. To minimize demand characteristics and to

Table 2
Instructions for Scorers

Observers were told to mark a "+," a "-", or "N.A." (not applicable) for each category for each 30-sec interval. Observers watched a session for 30 sec, and scored while the session continued for the next 30 sec.

S^D's

1. The *S^D* should be *clear* and *discriminable*; that is, it should stand apart from anything else that the sibling says. A good *S^D* has a distinct beginning and a distinct end.

2. The *S^D* should be *appropriate* to the task. If the sibling is teaching the child to point to a red card, he should not mistakenly say, "point to the blue card."

3. The *S^D* should be *consistent* with that given on the previous trial for that task.

4. The *S^D* should be *uninterrupted*.

5. When the *S^D* is presented, the child should be *attending*. The child should not be engaged in off-task or overly disruptive behavior.

Prompts

1. The prompt must be *effective*; that is, it must evoke a correct response.

2. The prompt should be faded (as the teaching situation advances). This should be scored with respect to the overall teaching session.

Shaping

1. Shaping involves the correct reinforcement of successive approximations. In order to have a good shaping procedure, each reinforced response should be at least as good as the last one. (Score shaping with reference to responses actually observed during the scoring period.)

Consequences

1. Consequences should be delivered *immediately* after the response. Immediately is defined as within 3 sec.

2. Consequences should be *contingent*; that is, reinforcement only for correct responses, and non-reinforcement only for incorrect responses (or punishment for inappropriate responses).

3. The consequences should be *unambiguous*. A "No" said with a smile or a "Good boy" given with a frown are ambiguous.

4. Consequences should be *consistent*. Reinforcement should follow each correct response, unless the child has reached an advanced level, in which case the reinforcement may be scheduled. Once the sibling begins to punish or say "No," he or she should do it consistently.

5. Consequences should be *effective*. They should be tailored to each child. Reinforcers should be something the child is eager for, and punishments something the child dislikes or attempts to avoid.

Discrete trials

1. Within the natural flow of the sibling/autistic child interactions, observable (although usually very brief) intertrial intervals should be discriminable. That is, the interactions should not be run together in a manner that makes it difficult to discriminate where one interaction ends and the other begins.

N.B. 1. In working with siblings it is rare to encounter a child who uses very sophisticated programming techniques. However, should one encounter a child who systematically uses delayed consequences or sophisticated reinforcement schedules, these should be taken into consideration in the scoring.

2. In the absence of research specifically addressing the need for very stringent shaping criteria, it is conceivable that the definition in the above table may be modifiable slightly after future research is conducted in this area.

try to prevent bias from affecting these data, we simply asked the parents for comments the children made, rather than directly asking about "attitudinal" shifts. Also, whenever possible, we had two experimenters obtain samples of comments from the same parents at different times so that comments that were reported on multiple occasions could be emphasized in the data sample.

Reliability

Reliability data were obtained by a second observer for at least one fourth of all the base-

line, training, and generalization sessions. Observer agreement was calculated for both sibling behavior and correct responding by the autistic children. For sibling behavior and correct responding, an agreement was scored if both observers recorded a plus (+) or both observers recorded a minus (-) for a particular sibling skill area or child correct responding during an interval. Reliability was calculated by dividing the number of agreements by the number of agreements plus the number of disagreements, and multiplying by 100.

Observer agreement for the sessions ranged

from 67% to 100% for the S^D category, with a mean of 94%; from 71% to 100% for the prompts category, with a mean of 93%; from 67% to 100% for the consequences category, with a mean of 93%; from 86% to 100% for the discrete trial category, with a mean of 96%; and from 87% to 100% for the autistic child correct responding category, with a mean of 97%.

RESULTS

Siblings' Correct Use of Behavior Modification Procedures

Figure 1 shows (solid line) the siblings' average percent correct use of behavior modification procedures during baseline and training sessions. As can be seen, prior to training the siblings showed no consistently high levels of correct behavior modification usage (although sibling 3 inconsistently exhibited high levels in three scattered pretraining sessions). The mean correct performance levels for siblings 1, 2, and 3 during baseline were 53%, 42%, and 73%, respectively. The introduction of the training procedures produced consistent increases above baseline levels for all three siblings. Further, all three siblings exhibited consistent and stable levels of correct procedures after training began. The mean correct performances during the intervention for siblings 1, 2, and 3 were 87%, 98%, and 100%, indicating that they were acquiring and using the techniques at a steady high level of proficiency.

A more detailed analysis of the siblings' behavior is presented in Table 3, which shows the average percent correct use of each teaching component, both pre- and posttraining (except shaping, which was never used for these tasks). These data show that, prior to training, the siblings in this study were able to provide relatively clear instructions and questions, but had difficulty using effective prompts and consequences, and clear discrete trials. The training was ef-

fective in improving the siblings' use of all the components to high levels of correct performance, which produced positive changes in the autistic children's behavior.

Autistic Children's Correct Responding

The percent correct responding by the autistic children is also shown in Figure 1, represented by the dashed line. None of the autistic children showed steady improvements prior to the introduction of the training procedures. The mean percent correct responding for autistic children 1, 2, and 3 was 9%, 16%, and 15%, respectively. However, after training began, and as the normal siblings became more proficient and consistent in their teaching skills, the percentage of correct responding showed increases for all three children (means of 45, 58, and 45). The correct responding for autistic child 1 shows some decrease during the latter stages of treatment, but the level of correct responding remained above baseline levels.

Generalization Probes

Figure 1 also shows the normal siblings' percent correct use of behavior modification, as well as the autistic children's correct responding, during the generalization sessions. Looking at percent correct usage of behavior modification across the two probes for each normal sibling, the results indicate for sibling 1, 74% and 72%; for sibling 2, 92% and 68%; and for sibling 3, 98% and 100%. The percent correct responding for the autistic children across the two probes

Table 3
Average percent correct use of each teaching technique (pre- and posttraining) by the siblings.

	S^D		Prompts		Consequences		Discrete Trials	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
	%		%		%		%	
Sib 1	79	89	31	71	44	88	51	90
Sib 2	84	100	33	100	37	97	8	97
Sib 3	98	100	73	100	67	100	61	100

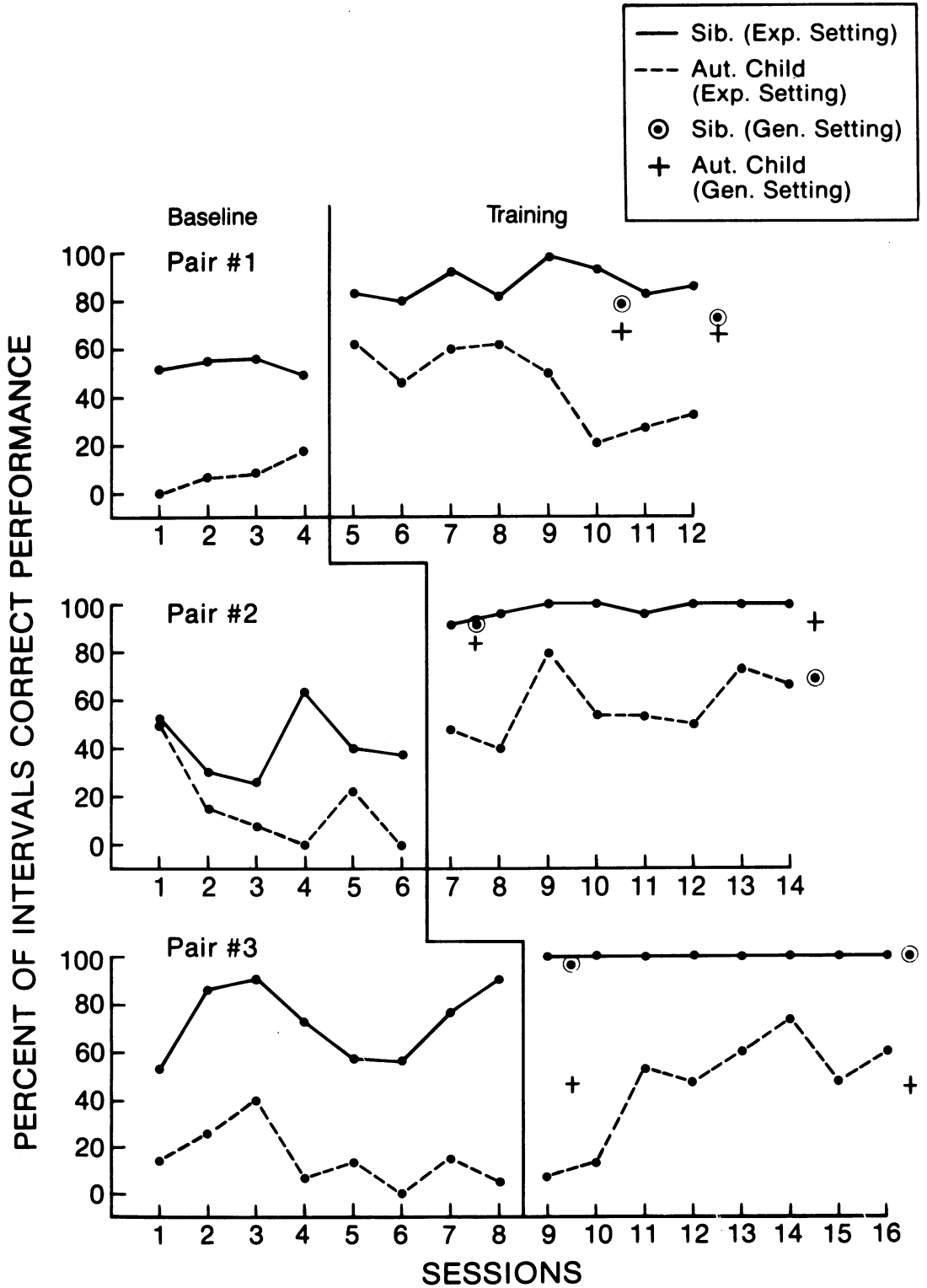


Fig. 1. Percent correct usage by sibling of correct behavior modification procedures and autistic children's appropriate responding. Data are presented from both experimental and generalization settings.

was child 1, 68% and 65%; child 2, 83% and 92%; and for child 3, 47% and 45%.

Social Validation

Table 4 shows that the parents reported that, prior to training, the normal children most often expressed comments that could be characterized as being neutral or tolerant, with occasional negative elements. For example, the sibling would say things such as "He looks weird and he acts funny, but he's my brother and I guess we have to put up with him." The table also shows that the training appeared to produce a positive shift in the siblings' verbalizations as reflected in comments such as "He does okay if we ask him right."

DISCUSSION

Overall, the results are quite encouraging in support of the idea of training autistic children's siblings in behavior modification. The siblings became proficient in behavioral teaching skills and their increased skills enabled them to produce improvements in the autistic children's correct responding. In addition, the parents were pleased with the changes in the siblings and they all felt the training had been very beneficial.

Significantly, the data show that the siblings used their skills in a different environment and also in a much less structured type of interaction than had occurred during the training sessions. Generalization of the acquired skills is very important if the training is to be expected to have a generalized positive effect on the siblings' interactions. Although these data must be interpreted with some caution since no baseline assessments were conducted in the generalization settings, the results are encouraging.

The data have implications for several areas of the functioning of the children's families. We observed several different types of improved interactions among the siblings with respect both to their general comments and to their ability to control and evoke appropriate behavior from the autistic children. We also realize, however,

Table 4

Sample comments made by siblings about their autistic brothers and sisters prior to and after training.

<i>Prior to Training</i>	<i>After Training</i>
"He looks weird and acts funny, but he's my brother and I guess we have to put up with him."	"He does okay if we ask him right."
"She breaks things and messes up my stuff, but I guess we have to be patient."	"I don't get so mad at her when I ask her right and she does okay."
"He never does anything fun with me, because he doesn't know how."	"She behaves a lot better when we work with her right."
"We have to pay attention to her a lot, even though she never knows what we're doing."	"It's nicer to be around him when he plays good with us."
"Sometimes he acts funny around my friends, but I don't always get mad because he's my brother."	"We get along easier when I make him pay attention."
"She causes problems a lot, but I guess we have to put up with her."	"My friends like him better when he listens to us."
"I know she's part of the family, but she's hard to get along with."	"He gets along better if I know how to ask him."

that with such increased control there could also be a potential for problems, such as the siblings misusing them or "exploiting" their brothers and sisters. We did not observe any of this type of problem in this study, but we recognize that it may arise. Thus, we feel that careful monitoring, especially by trained parents, may be an important component of this approach. This and other specific questions concerning the relative roles of trained and untrained parents in conjunction with trained versus untrained siblings present a number of interesting questions for future research.

In general, the positive possibilities of these procedures seem quite broad. The data suggest that siblings may be useful adjuncts to trained parents in teaching and maintaining behaviors in many areas in addition to those appropriate

social and play behaviors measured in the present study. For example, along with parents, siblings could play an important role in providing continuity between the home and school for various educational programs, thus alleviating possible contrast problems and promoting generalization (cf. Koegel, Egel, & Williams, 1980). Siblings also are in an ideal position to serve as facilitation agents for the children's appropriate social interactions with other children in the neighborhood, thus increasing the potential for a more normalized development for the autistic child; and conversely, helping to prevent the development of maladaptive interactions, leading to progressively more and more abnormal situations as the autistic child matures (cf. Patterson, 1975; Patterson & Reid, 1970).

In relation to this latter point, recent research by Wellen (Note 1) and Wellen and Broen, (1982) has suggested that in some situations older siblings of normal and language delayed children may hinder the children's linguistic development by interfering with their language interactions with adults. Training programs for siblings may alter such potentially problematic situations by teaching the siblings how to promote and facilitate appropriate language production by their handicapped brothers and sisters.

All these types of sibling participation will perhaps function to lessen the burden that families with autistic children often have to bear. The positive results presented here and the potential beneficial results from future work make this seem like an especially important area for further research and teaching. The results of the present study provide encouraging evidence for the continuing development of intervention strategies that involve the family members of autistic and other severely handicapped children as primary sources of treatment delivery.

REFERENCE NOTE

1. Wellen, C. J. Older siblings' effects on the speech young children hear and produce. Unpublished

doctoral dissertation, University of Minnesota, 1981.

REFERENCES

- Baker, B. L., Brightman, A. J., Heifetz, L. J., & Murphy, D. M. *Behavior problems*. Champaign, Ill.: Research Press, 1976.
- Cash, W. M., & Evans, I. M. Training preschool children to modify their retarded siblings' behavior. *Journal of Behavior Therapy and Experimental Psychiatry*, 1975, 6, 13-16.
- Colletti, G., & Harris, S. L. Behavior modification in the home: Siblings as behavior modifiers, parents as observers. *Journal of Abnormal Child Psychology*, 1977, 5, 21-20.
- Dukoff, S. A sibling's view. In C. D. Webster, M. M. Konstantareas, J. Oxman, & J. E. Mack (Eds.), *Autism: New directions in research and education*. New York: Pergamon Press, 1980.
- Frankel, F., Tymchuck, A. J., & Simmons, J. Q. Operant analysis and intervention with autistic children: Implications of current research. In E. R. Ritvo (Ed.), *Autism: Diagnosis, current research, and management*. New York: Spectrum Publications, 1976.
- Graziano, A. M. Parents as behavior therapists. In M. Hersen, R. M. Eisler, & P. M. Miller (Eds.), *Progress in behavior modification: Vol. 4*. New York: Academic Press, 1978.
- Koegel, R. L., Egel, A. L., & Williams, J. A. Behavioral contrast and generalization across settings in the treatment of autistic children. *Journal of Experimental Child Psychology*, 1980, 30, 422-437.
- Koegel, R. L., Glahn, T. J., & Nieminen, G. S. Generalization of parent training results. *Journal of Applied Behavior Analysis*, 1978, 11, 95-109.
- Koegel, R. L., & Schreibman, L. *How to teach autistic and other severely handicapped children*. Lawrence, Kansas: H & H Enterprises, 1982.
- Koegel, R. L., Schreibman, L., Britten, K., Burke, J. C., & O'Neill, R. E. A comparison of parent training to direct child treatment. In R. L. Koegel, A. Rincover, & A. L. Egel (Eds.), *Educating and understanding autistic children*. Houston: College-Hill Press, 1982.
- Koegel, R. L., Schreibman, L., Johnson, J., O'Neill, R. E., & Dunlap, G. Collateral effects of parent training on families with autistic children. In R. F. Dangel & R. A. Polster (Eds.), *Behavioral parent training: Issues in research and practice*. New York: Guilford Press, in press.
- Kozloff, M. *Reaching the autistic child*. Champaign, Ill.: Research Press, 1973.
- Miller, N. B., & Cantwell, D. P. Siblings as therapists: A behavioral approach. *American Journal of Psychiatry*, 1976, 133, 447-450.

- O'Dell, S. Training parents in behavior modification: A review. *Psychological Bulletin*, 1974, **81**, 418-433.
- Patterson, G. R. The aggressive child: Victim and architect of a coercive system. In E. J. Mash, L. A. Hammerlynck, & L. C. Handy (Eds.), *Behavior modification and families*. New York: Brunner/Mazel, 1975.
- Patterson, G. R., & Reid, J. B. Reciprocity and coercion: Two facets of social systems. In C. Neuringer & J. D. Michael (Eds.), *Behavior modification in clinical psychology*. New York: Appleton-Century-Crofts, 1970.
- Ragland, E. U., Kerr, M. M., & Strain, P. S. Effects of peer social initiation on the behavior of withdrawn autistic children. *Behavior Modification*, 1978, **2**, 565-578.
- Strain, P. S., Kerr, M. M., & Ragland, E. U. Effects of peer-mediated social initiations and prompting/reinforcement procedures on the social behavior of autistic children. *Journal of Autism and Developmental Disorders*, 1979, **9**, 41-54.
- Sullivan, R. C. Siblings of autistic children. *Journal of Autism and Developmental Disorders*, 1979, **9**, 287-298.
- Weinrott, M. R. A training program in behavior modification for siblings of the retarded. *American Journal of Orthopsychiatry*, 1974, **44**, 362-375.
- Wellen, C. J., & Broen, P. A. The interruption of young children's responses by older siblings. *Journal of Speech and Hearing Disorders*, 1982, **47**, 204-210.
- Wolf, M. M. Social validity: The case for subjective measurement or how applied behavior analysis is finding its heart. *Journal of Applied Behavior Analysis*, 1978, **11**, 203-214.
- Wolf, M. M., Risley, T. R., Johnston, M., Harris, F., & Allen, E. Application of operant conditioning procedures to the behavior problems of an autistic child: A follow-up and extension. *Behaviour Research and Therapy*, 1967, **5**, 103-111.
- Wolf, M. M., Risley, T. R., & Mees, H. Application of operant conditioning procedures to the behavior problems of an autistic child. *Behaviour Research and Therapy*, 1964, **1**, 305-312.

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