MOTHERS AS EFFECTIVE THERAPISTS FOR AUTISTIC CHILDREN'S PHOBIAS

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Two autistic children were treated for specific fears. A three-component participant modeling procedure was implemented within a multiple baseline design across subjects. Children were exposed gradually to fearful situations, with mothers serving as therapists and reinforcers. Dependent measures were (a) number of approach steps completed, (b) frequency of verbalizations and vocalizations of fear, and (c) overall appearance of fear. Following treatment, the children functioned effectively in previously fearful situations without verbalizations or appearance of fear. Five-month and 1-year follow-up assessments with 1 child showed maintenance of treatment effects.

DESCRIPTORS: phobias, autism, participant modeling, mothers as therapists

Fear and avoidance behavior often characterize children with mental retardation and other developmental disabilities, directly interfering with adaptive functioning (Matson, 1980, 1981, 1990). This study was designed to extend the literature on childhood fears in several ways. We treated clinically relevant fears exhibited by 2 autistic children. One prior study with 1 autistic child, differing in age and target behaviors and with limited experimental control, has been conducted (Luiselli, 1978). Also, we conducted training in the community at large, where fears are often most debilitating to adaptive functioning and are problematic for caregivers. Finally, using mothers as the primary therapist in the context of fear reduction among autistic children has rarely occurred. Instruction in modeling adaptive, incompatible behavior and distributing reinforcement can enable the parents to remediate future avoidance behavior.

METHOD

Subjects

Two children who met DSM-III-R (APA, 1987) and the Autism Society of America (ASA) criteria for autism were studied. They were selected by screening over 20 autistic children for fear-related problems.

Kenny was a healthy 4.5-year-old adopted child diagnosed as autistic at the age of 2 who lived with his parents and a 13-month-old adopted sister. His

adoptive family was of middle socioeconomic status. Because of his co-occurring disruptive behavior, Kenny had been classified as "untestable" subsequent to attempts to administer standardized intelligence tests. His Adaptive Behavior Composite on the Vineland Adaptive Behavior Scales-Revised (1984) was at the 1-year, 10-month age equivalent, indicating below age-appropriate adaptive behaviors. Kenny obtained a total score of 62 on the Autism Behavior Checklist (Krug, Arick, & Almond, 1988), indicating mild to moderate autism.

Kenny avoided going outside, into either the front or back yard, unaccompanied by a parent, with the back door closed. He was observed to cry, physically resist, question the request, and/or run from the doorway when asked to go out alone. This avoidance behavior had been present for approximately 1.5 years.

Ronnie was a 6-year-old boy living with his middle-class parents and 8-year-old brother. Autism was diagnosed at the age of 3 by the local school system. Because of high levels of distractibility, Ronnie was "untestable" on standardized intelligence tests. At the time of enrollment in the study, his Adaptive Behavior Composite was at the 1-year, 8-month age equivalent. Ronnie's score (90) on the Autism Behavior Checklist indicated severe autism.

Ronnie exhibited pronounced avoidance behavior at the sight and sound of a running bathroom shower (e.g., shaking, eyes wide, facial grimaces,

refusal to get in, trying to escape from the room, etc.). Although he would take baths after his parents had run the water for him, he showed an anxious reaction (e.g., wide eyes, rapid breathing, and hand flailing) to the water running from the bathtub faucet. When an adult turned on the shower, Ronnie would scream and run from the bathroom. Ronnie had never bathed independently.

Parents of both children stated that these problems markedly interfered with the children's daily routine.

Setting

Treatment was implemented in the home settings because the targeted avoidance behavior occurred there. No adjustments to the home settings were necessary.

Kenny was treated in both the front and back yards. Front yard training included the walkway between the front door and driveway and the driveway from the end of the walkway to the street. All sessions in the front yard began from the home's front entry hall; Kenny was monitored by an observer to ensure that he did not run into the street. (Such potentially dangerous behavior did not occur before or during the study.) Back yard training included the patio and yard. All sessions in the back yard began in a storage room whose door opened onto the patio.

Ronnie was treated in a small bathroom adjacent to his parents' bedroom. Half of the bathroom contained the vanity, and the bathtub and toilet were located through a doorway in a separate room.

Therapists

The children's mothers served as therapists. Kenny's mother had a master's degree in education and worked at home. Ronnie's mother worked at home as well. Both had used a variety of tactics in an attempt to guide their children to approach avoided stimuli or situations, including threats, attempted reasoning, and brief nonsystematic attempts at exposure (i.e., exposing the children without a rationale or in a nongraduated fashion). During the months immediately preceding the study, the chil-

dren were permitted to avoid the criterion situations.

Approximately 1 hr was spent in explaining treatment. Instruction in modeling approach behavior and methods of reinforcing its occurrence were discussed and practiced using role playing, in which the first author modeled the desired parental responses. Correct implementation of instructed and modeled procedures was monitored during training and throughout the study.

Raters

The first and third authors, both graduate students in clinical psychology, served as raters. They received 3 hr of training in observational and scoring skills prior to baseline.

Target Behaviors

In both cases, the following three dependent measures of fear responses were recorded during baseline and treatment phases:

Approach steps completed. Ratings on this measure were based on the number of approach steps the child completed successfully when exposed to the situations he typically avoided. The highest step completed by the child alone was recorded to conclude each baseline and treatment session. The nature and number of necessary approach steps differed with each child because of the different phobias exhibited. These approach steps formed the basis for graduated exposure and were modeled by the parent-therapist during treatment. Graduated exposure involved introducing the child to the previously avoided situation in a systematic and step-by-step fashion through approximations to the final goal of fearless interaction. It has been applied previously (with positive clinical outcomes) on behalf of mentally retarded persons (Mansdorf, 1976; Matson, 1981).

Verbalizations and vocalizations of fear. A count of verbalizations and vocalizations of fear issued by the child when requested to approach the criterion situations was also obtained during each discrete learning trial. *Verbalized fear* was defined as "any word or string of words spoken by the

child indicating reluctance or fear while in the fear-producing situation." A *vocalization of fear* was "any noise made by the child indicating reluctance or fear while in the fear-producing situation (e.g., whimpers, whines, or crying)."

Appearance of fear. An overall rating of fear, also completed at the conclusion of each learning trial, was obtained in which the child's facial and motor behavior (e.g., facial grimaces, eyes wide, pushing away from the fearful stimuli, running away from the situation) was rated on a 5-point Likert-type scale, with 5 being most fearful and 1 indicating no fear.

Data Collection and Reliability Assessment

Two independent raters (the first and third authors) observed target behaviors only when the child was to approach the criterion situation alone. Observations and ratings of treatment sessions in the front yard with Kenny were made through a bathroom window on the front of the house facing the walk and driveway. Observations and ratings of baseline and treatment sessions in the back yard were made through a window in the storage room and through a glass door opening onto the patio. With Ronnie, observations and ratings of baseline and treatment sessions were taken from a position outside the bathroom doorway against the wall farthest from the tub. Raters used a tape recorder to permit later evaluation of verbalizations and vocalizations. Immediately following each session, observers independently recorded (a) number of approach steps completed, (b) total number of verbalizations and vocalizations of fear, and (c) overall appearance of fear.

Reliability data were collected simultaneously but independently. Observer records were compared on a session-by-session basis, and interobserver reliability was determined using exact percentage agreement (the number of agreements divided by the number of agreements plus disagreements multiplied by 100). An agreement was scored when both raters recorded the same number of approach steps completed, the same number of

verbalizations or vocalizations produced by the child, and the same number rating for the appearance of fear. Reliability data were collected during 94.6% of the sessions for Kenny and 100% of Ronnie's sessions.

Experimental Procedure

Behavioral approach steps. For each child's avoidance behavior, a sequence of approach steps was established. This sequence consisted of successive approximations toward the final goals (i.e., approaching and entering the running shower for Ronnie, or going outside alone with the doors shut and retrieving a newspaper in the front yard and retrieving an object placed several feet from a fence in the back yard for Kenny). Thus, each step required increasing exposure to and interaction with the criterion situation. (Approach steps are available from the authors.)

To expose Kenny gradually to greater distances from the house while alone, it was necessary to place markers and retrievable objects at varying distances from the house in both the front and back yards. Retrievable objects provided a rationale for going outside, allowed the child to measure his progress, and provided the observers with a number of discrete approach steps within trials that could be directly observed and recorded. Given that Kenny exhibited total avoidance of going outside alone in the back or front yards, treatment in both settings was provided to improve his ability to respond appropriately in either situation. Treatment was begun in the front yard because the mother reported a greater number of avoidance-related verbalizations associated with requests to go outside alone in the back yard. Hence, exposure would be more gradual if training were undertaken in the front yard first.

During treatment in the front yard, the route to the street consisted of seven distances. Three markers were placed in the yard along the walkway, yielding three 1.02-m lengths. Four markers were placed in the yard along the driveway, producing four 1.92-m lengths. Stickers were used as retrievable objects and were placed at each separate dis-

tance along the route to the street. A bound newspaper placed at the end of the driveway was the final retrievable object.

Total distance from the back door to the back yard fence (the terminal goal for the child) was also divided into discrete distances. The first marker was positioned at the end of the back patio and the next five in the yard itself, resulting in five 9.23-m lengths. Painted bricks constituted markers with retrievable objects, such as stuffed toys and strings of plastic beads, placed on them.

Baseline. Children were instructed by the parent-therapists to engage in the specific criterion situations. Kenny's mother said, "I want you to go outside in the back yard and get the [object] back by the fence. I want you to do it with the door closed behind you." The child had to open the door in the storage room, go outside, close the door, retrieve the object, and then return to the house by himself. The retrievable object was placed on a painted brick (to facilitate its location) positioned several feet from the back yard fence. One minute was given to respond, and no movement within this time limit terminated the session.

Ronnie's mother said, "I want you to turn on the shower," while positioned approximately 1.5 m from the tub where the child also stood. No movement towards the bathtub in 1 min ended the session.

Treatment. Children were exposed to participant modeling and received reinforcement contingent upon approach using three components, all of which were used in each session. First, the child observed the parent-therapist as she modeled approach steps. While modeling, the parent-therapist verbalized to the child her actions and lack of fear.

Secondly, both the child and parent-therapist undertook various steps of the approach sequence together, with emphasis on the child's maximum independence. Minimal physical guidance and prompting were used. Again, the parent-therapist talked with the child about being brave and provided performance-based feedback. When the child refused to complete the next step in the sequence, the parent verbally and physically prompted him to complete the designated approach response.

Third, the parent instructed the child to perform the previously modeled approach steps by himself. As in baseline, each child was given up to 1 min to begin the approach sequence. The parent requested the child to do as much of the sequence as possible. The parent informed the child that being scared was an acceptable reason for stopping further approach. When the child became too fearful or refused to proceed further, ratings of the three dependent measures were recorded by the observers.

Given that the child's solitary exposure to the criterion situation was to a large degree self-paced and self-terminated in this final phase, the parent-therapist was instructed to praise and dispense reinforcement (e.g., verbal praise and stickers) to the child for his successful partial approach, even if he fell short of the intended next step and refused to proceed. The parent explained to the child that reinforcement had been dispensed because he had worked hard and had been brave in completing (at least some of) the steps.

Reinforcers. Determination of specific reinforcers was based on parental reports during interviews prior to the study. Kenny's reinforcers were verbal praise, a favored sticker (Peanuts cartoon), stuffed dog toys, colored plastic beads, and edible reinforcers (e.g., Gummi Bears). Ronnie responded most consistently to verbal praise and stickers.

Experimental Design

A multiple baseline across subjects design (Barlow & Hersen, 1984), with concurrent measures of fear, was used. Treatment occurred three times weekly during 1-hr meetings, with approximately three treatment sessions each meeting. Sessions ranged from 5 to 10 min in duration.

RESULTS

For Kenny, the level of interobserver agreement regarding the number of approach steps completed, verbalizations and vocalizations of fear, and appearance of fear was 100%, 94%, and 86%, respectively. For Ronnie, these levels were 97%, 81%, and 91%. During baseline, Kenny made no at-

tempt to go into the back yard alone (Figure 1). The frequency of verbalizations and vocalizations of fear increased across baseline sessions, suggesting that exposure to baseline assessment conditions did not serve to diminish Kenny's reluctance to venture outside alone. Mean appearance of fear across baseline sessions was 4.3 (range, 4.0 to 5.0).

Mean number of approach steps completed over the first 16 treatment sessions was 13.1 (range, 7.0 to 18.0). During these sessions, verbalizations and vocalizations of fear declined to a mean of 0.31 (range, 0.0 to 3.0). Following the 16th treatment session, Kenny was not seen for a month because of his involvement, along with his mother and sister, in an automobile accident. His sister was seriously injured and required hospitalization. Although Kenny was uninjured, upon returning home he became even more reluctant to go outside. Thus, during Session 20, he was able to complete only Step 13 (retrieving an object from the end of the back patio). However, the previous level of achieved functioning gradually returned, with a commensurate reduction in the appearance of fear.

During baseline sessions, Ronnie made no attempt to approach the bathtub (Figure 1), his number of verbalizations and vocalizations of fear averaged 2.8 (range, 1.0 to 5.0), and mean appearance of fear was 4.75 (range, 4.0 to 5.0). He was able to get in the shower for 30 s or longer after 14 treatment sessions and remained in the shower for as long as 5 min on several occasions. During Session 16, he refused to shower despite his mother's prompts, but did so to the point of completing a shower during Sessions 17 through 24.

During treatment, verbalizations and vocalizations of fear rapidly decreased. Ronnie's appearance of fear also decreased immediately upon introduction of treatment. A mean of 1.38 (range, 0.0 to 3.0) for the appearance of fear resulted across the 24 treatment sessions. Maintenance of effects (*i.e.*, getting into tub and completing a shower) was observed at 5-month and 1-year follow-up assessments. Further, anecdotal reports of increased approach responses and appropriate verbalizations were noted.

DISCUSSION

Effective treatment of the avoidance behavior, verbalizations and vocalizations of fear, and appearance of fear exhibited by 2 autistic children was demonstrated. Results are consistent with studies using participant modeling procedures to treat fears and phobias exhibited by normal children and, more recently, by mentally retarded individuals as well (Matson, 1981, 1983). Further, our study advanced the existing literature regarding the treatment of avoidance behavior among autistic children with respect to the specific behaviors and settings examined.

A principal clinical aim was to provide assistance through orchestrating a parent-mediated modeling procedure designed to ameliorate avoidance behavior. Much expensive professional time can be saved if parents become active trainers, necessitating clinician input in response to only the more persistent problem areas. Anecdotal information obtained during the study indicated that parents understood the reason for training, were pleased with its results, and were relatively comfortable serving as the therapist. They stated that the improvement in their child's behavior eliminated a major impediment to their child's overall adjustment. However, further research is indicated wherein the acquisition of specific parental skills as a function of professional training is carefully monitored. In addition, more efforts to determine the most effective components of treatment seem warranted. Also, comparisons of the relative efficacy of our treatment intervention package *vis-à-vis* alternative treatments (*e.g.*, imaginal-based systematic desensitization, covert modeling, flooding, or self-control strategies) are needed.

The positive clinical outcomes reported here should encourage further exploration into the effective treatment of avoidance behavior often displayed by autistic individuals. Unfortunately, little attention has been paid to avoidance behaviors and other related concerns of autistic and mentally retarded persons (*e.g.*, hyperactivity, depression, *etc.*). It should be noted that conclusions based on our

results must be tempered by the fact that only 2 children were enrolled in our study. A multiple baseline lag across 3 or 4 children would have been preferable; however, the availability of such a subject pool, in which fear-related behavior occurs in conjunction with autism, is small.

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