Journal of Autism and Developmental Disorders, Vol. 14, No. 3, 1984

Conversational Skills for Autistic Adolescents: Teaching Assertiveness in Naturalistic Game Settings[1]

Gail G. McGee[2]
University of Massachusetts, Amherst

Patricia J. Krantz and Lynn E. McClannahan
Princeton Child Development Institute

A naturalistic social skills training program was used to teach assertive responses to three autistic adolescents. Training and assessment of positive and negative assertions occurred in the context of two game situations—a card game and a ball game. Training consisted of modeling and behavioral rehearsal prior to each game, with tokens delivered contingent on assertive responses. Evaluation of training effects was accomplished in a multiple baseline across response classes. The results demonstrated the effectiveness of the procedure in generating high levels of positive and negative assertions that maintained across a 4.5-month follow-up interval. This in vivo procedure for teaching social behaviors permits the concurrent acquisition of assertive responses and leisure behaviors, two skills that are of special importance in improving the quality of autistic youth's experiences with their peers.

Deficits in assertive skills may severely limit autistic adolescents' opportunities to participate in recreation or leisure activities with their peers. Autistic youth who seldom or never make positive assertions probably

[1]This research was supported by Grant No. MH20030 awarded by the National Institute of Mental Health (Center for Studies of Crime and Delinquency) to the Bureau of Child Research, University of Kansas. The authors thank Joylyn G. Bailey and Michael J. Tyburczy for their contributions to the progress of these youth.
[2]Address all correspondence to Dr. Gail G. McGee, Department of Psychology, University of Massachusetts, Amherst, Massachusetts 01003.

0162-3257/84/0900-0319$03.50/0

diminish their access to social reinforcers (Twardosz & Jozwiak, 1981). Additionally, autistic youth who have not yet learned to use negative assertions to express their opinions in a socially acceptable manner may alienate their peers by making inappropriate or aggressive verbalizations. Therefore, teaching assertiveness is an important step in helping autistic youth to engage in pleasant social interactions and to minimize negative social consequences.

Although prosocial verbal and motor behaviors have been successfully taught to a variety of populations (Matson & Stephens, 1978; Strain, Shores, & Kerr, 1976; Strain, Shores, & Timm, 1977; Strain & Timm, 1974; Turner, Hersen, & Bellack, 1978), there have been no demonstrations of procedures for teaching assertive skills to autistic adolescents. Ragland, Kerr, and Strain (1978) demonstrated that motor-gestural social interactions of withdrawn autistic children increased when social initiations were made by a behavior-disordered peer, but verbalizations did not spontaneously increase concurrent with motoric behaviors. There remains a need for innovative programs that specifically target the verbal initiations and assertive skills needed by autistic youth to enjoy recreational activities with their peers.

A naturalistic social skills training strategy that has been demonstrated effective with aggressive predelinquent children consists of in vivo modeling and group-contingent reinforcement for cooperative interpersonal statements made in the context of outdoor recreational activities (McCoy, McGee, Price, & Mason, 1980). Naturalistic procedures seem particularly promising for teaching and assessing the social skills of autistic youth, since they are often unable to generalize new skills in the absence of special programming. Thus, the present study investigated a procedure for teaching autistic youth to make positive and negative assertions in the context of naturally occurring leisure activities, and evaluated the generality and durability of behavior change achieved.

METHOD

Subjects

The participants were three adolescent males who were enrolled in the Princeton Child Development Institute, a private, nonprofit educational and treatment program for autistic children. The boys attended the institute's day school and resided at the institute's Teaching-Family Model group home. Each had been diagnosed autistic by at least two outside agencies and had been accepted by the institute's admissions committee because they met

the criteria for a diagnosis of autism, as established by the National Society for Autistic Children (1978). All participants had histories of unsuccessful treatment with psychotropic medications, although none of the youth were receiving medication at the time of this study. All were in excellent physical health and had no history of severe illness, with the exception of Child 1, who previously exhibited severe anorexia.

The three boys had acquired basic direction-following skills, and all demonstrated delayed but functional expressive language. The families of the youth were actively involved with child treatment, and received them home for regular visits on alternating weekends, holidays, and vacations. The three youth were selected for this study on the basis of observed deficits in cooperative play, social interaction, and assertive skills.

Child 1 was 15.5 years at the time of the study; he achieved a Vineland Social Age Score of 8.5 years and a Peabody Picture Vocabulary Test (PPVT) Mental Age Score of 6.3 years. He had lived in a psychiatric institution for 3 years before his enrollment in the institute's programs, due to severe behavior problems that included anorexia, noncontextual speech and laughter, social isolation, and physical aggression. He had entered the institute's educational and group home programs 2.5 years prior to the onset of this study. Between program entry and the time of this research, he had met treatment goals for many inappropriate behaviors, including physical and verbal aggression, leaving the assigned area or activity, screaming, and anorexia. Noncontextual laughing continued to be treated, and episodes of noncompliance, hoarding of objects, and obsessive behaviors (e.g., repetitive listing of items) were observed occasionally. An independent psychiatric evaluation conducted near the time of this research described Child 1's progress as excellent but noted a "rigid and mechanical" social interaction style. Although verbal interactions were under adult stimulus control, spontaneous verbal initiations and cooperative play with peers occurred infrequently.

Child 2 was 13 years old; he had obtained a Vineland Social Age of 7.4 years and a PPVT Mental Age Score of 4.2 years. He was referred to the institute's day program at 8 years of age following a 3-year placement in another school for developmentally delayed children. Presenting problems included tantrums, which involved screaming, hitting, and kicking; self-stimulatory behaviors such as fingerplay and hair twisting; echolalia and perseverative speech; articulation deficits; noncontextual laughing; and noncompliant behavior. Although he made substantial progress in the highly structured environment of the school, severe tantrums and other problem behaviors continued to increase in the home, so that placement in the group home was necessary approximately 1 year before the study began. Concurrent with this research, he received individualized treatment for hit-

ting and kicking, noncontextual laughing, inappropriate vocal and nonvocal noisemaking, and stereotyped motor behaviors. He typically engaged in high rates of verbal behavior, which often included repetitive or noncontextual speech. Usually, verbal behavior was undirected or directed toward adults, and he seldom participated in social interactions with peers.

Child 3 was 14.5 years of age at the time of this study; he achieved a Social Age of 8.8 years on the Vineland and a PPVT Mental Age Score of 4.10. This child entered the institute's educational program at age 10, following previous enrollment in another day program for autistic children. His presenting problems included echoing aggressive verbal statements from television programs, deficits in direction following, physical aggression, and destructive behavior. He was admitted to the institute's group home at age 12 due to his continuing aggressive and self-injurious behaviors at home. At the time of this study, he continued to receive treatment for inappropriate verbalizations, including mumbling and self-directed reprimands, bizarre body postures and facial expressions, delays in complying with adult requests, and destructive behavior. He did initiate social interactions with adults, and to a much lesser extent with peers, although his verbalizations were often noncontextual or nonsensical.

Setting

The research was conducted during daily sessions at the school, in a 15-min card game in a classroom, followed by a 15-min ball game on the playground. Furnishings and materials typically available in eductional settings were used in the study. Observers were seated approximately 3 m apart on the perimeter of the boys' activity areas, and used a portable cassette deck and earphones to synchronize timing of observation intervals.

Response Definitions

Both trained and spontaneous (untrained) verbal assertions were recorded in four response categories, including (a) positive assertions in a card game, (b) negative assertions in a card game, (c) positive assertions in a ball game, and (d) negative assertions in a ball game. Since other data on the youth's performance indicated that their newly acquired social skills did not usually generalize across behaviors or settings, the four response classes were viewed as functionally unrelated. Only responses to peers were recorded; statements to the teacher or observers, nonverbal gestures (e.g., clapping), and verbalizations other than assertions were not recorded.

1. Positive assertions in a card game were defined as expressions of praise, joy, appreciation, affection, or concern. Specifically trained statements were (a) "Great play," (b) "I like playing with you," and (c) "Isn't this fun?" Although not specifically trained, complimentary statements that included mention of the card game were also counted as positive assertions (e.g., "You're a terrific card player," "Hooray for you, you got the highest card!").

2. Negative assertions in a card game were defined as expressions of legitimate opposition or socially appropriate demands, without intent to injure the person whom the speaker was attempting to influence. Trained statements were (a) "It's my turn now," (b) "Please pay attention," and (c) "That's not fair, let's start over." Spontaneous negative assertions referring to the card game were also counted (e.g., "You need to deal a card to me," "It's time to show your card").

3. Positive assertions in a ball game were also defined as expressions of praise, joy, appreciation, affection, and concern; specifically trained statements were identical to the positive assertions taught in a card game (e.g., "Great play," "I like playing with you"). Spontaneous positive assertions referring to the ball game were also scored (e.g., "Good, you caught the ball," "Nice throw").

4. Negative assertions in a ball game were defined similarly to negative assertions in a card game (i.e., nonaggressive statements of legitimate opposition or socially appropriate demands); specifically trained negative assertions were consistent with those taught in the card game (e.g., "It's my turn now"). Examples of spontaneous negative assertions relating to the ball game were "You missed, so you go get the ball" or "Call my name before you throw."

Data were collected simultaneously for all three boys using a 15-sec interval time-sampling procedure. Each assertion was scored in the interval in which it ended, regardless of the degree of overlap across intervals. Observations were recorded daily during a card game and a ball game, with data collection initiated 5 min after the beginning of each game. The audiotape signaled the end of each interval as well as the end of eight intervals, at which time a break occurred. Immediately following reinforcement delivery, the game and data collection resumed. Eight intervals were scored in 2 min, and three 2-min observation periods occurred per game. For each youth, data were summarized as the percent of intervals scored for each of the four categories of assertions.

Two independent observers assessed interobserver agreement for each child in each condition. Agreement was assessed in 34% of the sessions and was calculated using the formula: Total number of agreements divided by total number of agreements plus disagreements $\times$ 100. For Child 1, mean

interobserver agreement was 92% (range = 77% to 100%); for Child 2, mean interobserver agreement was 92% (range = 79% to 99%); and for Child 3 the mean was 94% (range = 85% to 99%). Mean levels of interobserver agreement for each condition, across all three children, were as follows: (a) baseline—99%, (b) positive assertions in a card game—91%, (c) negative assertions in a card game—97%, (d) positive assertions in a ball game—92%, (e) negative assertions in a ball game—99%, and (f) follow-up—82%. Interobserver agreement for spontaneous assertions was also assessed, resulting in a mean of 92% across response classes, with a range of 80% to 97%.

Teaching Procedures

When intervention began, the three boys jointly participated in a teaching session prior to each game, and this was immediately followed by an opportunity to practice and receive reinforcement for assertions exhibited during the game they played together. During the 5- to 10-min pregame teaching sessions, a teacher modeled the target assertive responses and discussed the context in which each response would be appropriate (e.g., "That's not fair, let's start over" might be used when a game rule had been violated). The teacher also prompted and praised behavioral rehearsals of target responses. When each participant was able to demonstrate all target assertions in the appropriate situational context, the youth were instructed to begin the game.

Games were divided into 2-min intervals, with each interval followed by a "break" during which the teacher delivered token reinforcement and behavior-specific praise for each target response emitted during the preceding game period. These "breaks" permitted the teacher to provide reinforcement without influencing data collection. Neither the teacher nor the observers participated in the games, and social conversation to the teacher and observers was ignored. At the end of the class, tokens were exchanged for backup reinforcers that each youth had selected at the beginning of the session; token-exchange rates were individualized.

Assessment and training occurred during a simple card game called "Battle" and during an outdoor ball game. The card game rules required dealing a card to each player; the player who received the highest card won the hand and took all the cards that had been dealt. In the ball game participants stood in a circle, the passer called the receiver's name and then bounced the ball to him. Training on game rules was accomplished in four sessions prior to baseline.

Follow-Up Assessment

A follow-up session was conducted 4.5 months after termination of the class. No pregame teaching of game rules or assertive responses was provided, and both games took place indoors in different rooms than had been used previously. Token reinforcement and behavior-specific praise, contingent upon the display of any of the four types of assertive responses, were again delivered during breaks. At the end of each game, tokens were exchanged for points on the youth's group home point cards, and these were used to purchase backup reinforcers such as snacks or special activities later in the evening.

Experimental Design

A multiple baseline across the four classes of assertive responses was used to evaluate the effects of teaching; the experimental design included replication across participants and a 4.5-month follow-up assessment. During baseline, tokens were delivered noncontingently, and prompts and social praise were provided for visually attending to the activity and following game rules; tokens were not delivered for verbal behavior. Following 3 days of baseline for the first response class, teaching procedures were introduced sequentially across response classes every fifth session; the limited number of teaching sessions for negative assertions in ball games resulted from inclement weather conditions and child absences due to illness. This occurred in the last week of the summer school session.

RESULTS

Figure 1 shows the effects of modeling, behavioral rehearsal, and contingent reinforcement on four categories of assertions for each of three participants. For Child 1, the mean percent of intervals scored for positive assertions in card games increased from 1% in baseline to 36% in teaching; changes from baseline to teaching conditions were 0% to 27% for negative assertions in card games, 0% to 63% for positive assertions in ball games, and 2% to 42% for negative assertions in a ball game. Mean percents of intervals scored for assertions by Child 2 during baselines were 6%, 0%, 0%, and 3% for the four response classes, while means of teaching conditions for this child were 41%, 16%, 41%, and 17%. Child 3 showed similar increases in the mean percents of intervals scored for assertions, with baseline-

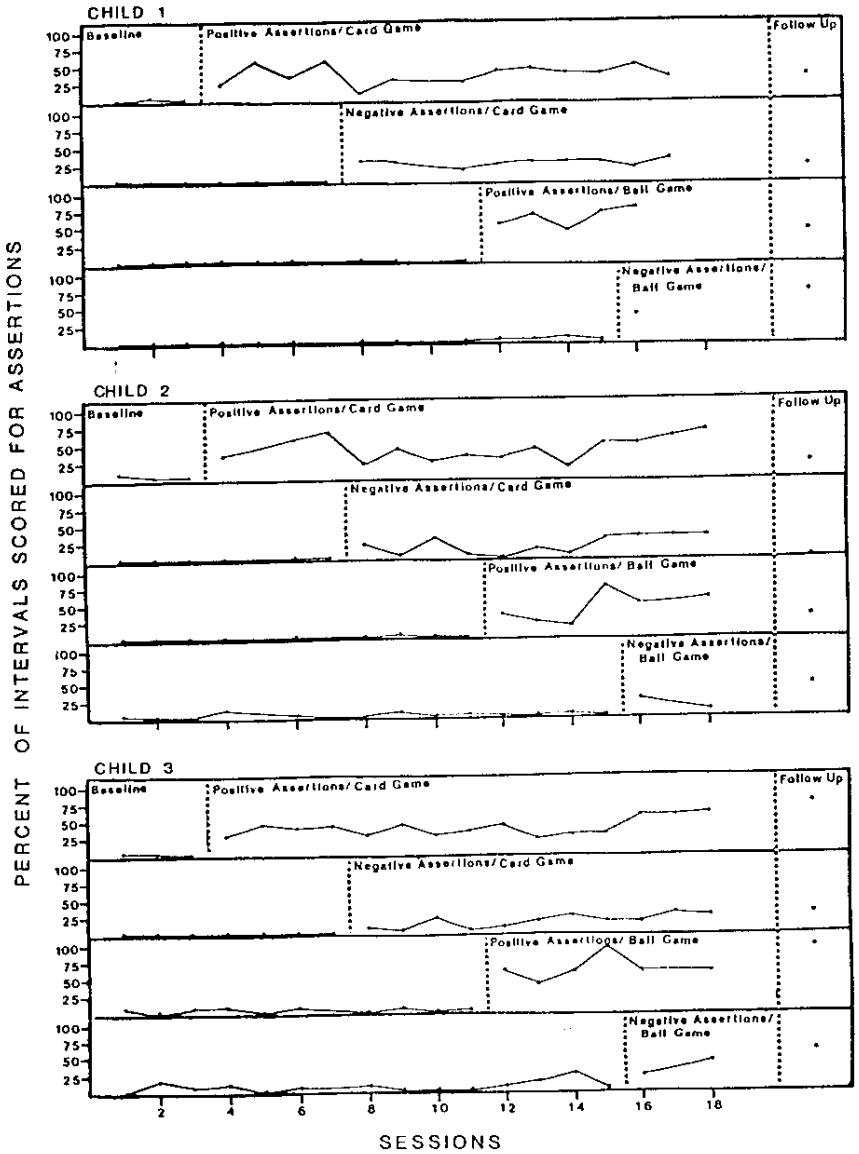

Fig. 1. Percentage of intervals with assertions across four response classes for each child during baseline, teaching, and at 4.5-month follow-up.

to-teaching changes of 3% to 38% for positive assertions in card games, 0% to 16% for negative assertions in card games, 5% to 63% for positive assertions in ball games, and 8% to 31% for negative assertions in ball games. Collapsed across response classes, mean percent of intervals scored for assertions by Child 1 was 1% in baseline (range 0% to 8%), increasing to 42% in teaching (range 8% to 79%). For Child 2, mean intervals scored for assertive responding were 2% in baseline (range 0% to 13%) and 29% in teaching (range 0% to 71%). Child 3's baseline mean was 4% (range 0% to 29%), with an increase to a mean of 37% (range 4% to 100%) as a function of the teaching procedures. Although both positive and negative assertions in card games and ball games increased for all three children when teaching was introduced, the most marked increases occurred in positive assertions in card games and positive assertions in ball games.

Teaching effects maintained for at least 4.5 months after the daily teaching program had ended, as demonstrated by the follow-up data. The percents of intervals scored for positive assertions in the follow-up card game were 33% for Child 1, 21% for Child 2, and 71% for Child 3. Negative assertions in the card game were scored during 21% of intervals for Child 1 and 29% of intervals for Child 3. No negative assertions were scored for Child 2 in the follow-up card game. Positive assertions in the ball game were scored in 46%, 29%, and 96% of intervals for Children 1-3, and negative assertions by each of these youth occurred in 75%, 46%, and 54% of the intervals in the ball game. Thus, above-baseline assertive responses maintained for all three youth in each of the response categories, with the exception of negative assertions in card games for Child 2. Although the data in Figure 1 represent assertive responses throughout the entire follow-up session, it should be noted that similarly high levels of assertions were observed in the first assessement interval, prior to the first break for praise and reinforcement.

Consistent with previous findings on the learning characteristics of autistic children, the four response classes were independent; generalization across response categories did not occur until such skills were directly programmed. However, generalization from trained to spontaneous assertions did occur within response classes. Mean baseline-to-teaching increases of 7% to 18% were observed for spontaneous positive assertions in card games, 0% to 1% for spontaneous negative assertions in card games, 3% to 8% for spontaneous positive assertions in ball games, and 8% to 11% for spontaneous negative assertions in ball games. Congruent with the youths' acquisition data, there were greater increases in spontaneous positive assertions than in spontaneous negative assertions. Similarly, spontaneous positive assertions in a card game and a ball game maintained through a 4.5-month follow-up period, with means of 42% and 8% of intervals,

respectively, while no spontaneous negative assertions occured in the card game or ball game during follow-up.

DISCUSSION

In the first systematic evaluation of procedures for teaching assertive responses to autistic adolescents, the results indicated that autistic youth can learn to make both positive and negative assertions to their peers if teaching is provided in those environments where the skills will be needed. It is likely that the maintenance of assertive responses and game-playing skills observed after 4.5 months was a result of teaching these skills in naturalistic settings, since many opportunities to use their newly acquired responses occurred during the youth's typical daily activities. In the follow-up session, the magnitude of generalization across time and settings and the occurrence of assertions prior to reinforcement are particularly noteworthy, since modeling and behavioral rehearsals were not provided and back-up reinforcement was delayed.

The finding that generalization from trained to spontaneous positive assertions was maintained during a 4.5-month follow-up interval, while only the negative assertions that were specifically trained were displayed at follow-up, is probably the result of ongoing teaching and treatment contingencies. Positive verbalizations were consistently reinforced by teachers and teaching parents in the school and group home, and negative verbal productions were ignored or treated as prescribed by children's ongoing intervention programs. Thus, the youth may have readily contacted naturalistic reinforcement for positive assertions but may have had difficulty in discriminating appropriate negative assertions from their target behaviors of aggressive and inappropriate speech. This phenomenon also appeared to explain Child 2's absence of maintenance in a card game at follow-up, since one of his treament programs targeted negative statements.

Anecdotal reports supported the follow-up data that documented generalization across different settings (classrooms). For example, after participation in this research, high rates of assertions were observed when the youth played board games and Atari video games at their group home. Also following training, two of the youth periodically made assertive statements to one another outside the classroom setting but in the presence of the teacher, apparently in an effort to obtain social reinforcers.

There is a need for further research on procedures for teaching children to discriminate when, where, and with whom their newly acquired assertions will be regarded as appropriate (Eisler, Hersen, Miller, & Blanchard, 1975), since accurate discrimination of social parameters will be

related to their future success with assertive behavior. Thus, in an encounter with Child 3 in another class situation, the teacher casually remarked that she had made a mistake. The youth responded "Please pay attention!" and although the response was contextual, it could also have resulted in placing him in an unfavorable position with some adults in his environment.

Over the past several years, a technology has been developed for teaching basic social behaviors to autistic children. Children's acquisition of these prerequisite skills sets the stage for development of teaching strategies that contribute to more complex or "sophisticated" social performances. Once autistic children in treatment have learned to value social reinforcers, have developed attending and direction-following skills, have acquired appropriate verbal repertoires, and have learned to control some of their severe behavior problems, more extensive social skills training is needed. A next step in social skills training for verbal autistic youth is to provide them with appropriate contextual statements, so that they are able to spontaneously initiate as well as to respond to conversations. The teacher reported that an additional benefit of the boys' acquisition of assertions was a concurrent decrease in inappropriate verbalizations. During baseline, Child 2 frequently exhibited noncontextual and repetitive speech, while Child 3 periodically engaged in mumbled threats or self-reprimands. As teaching was introduced, appropriate assertions appeared to be substituted for inappropriate verbal behaviors. For Child 1, who had engaged in almost no verbal behavior during baseline, acquisition of assertions enabled him to engage in both trained and spontaneous social conversations with his peers. After appropriate contextual conversational skills have been acquired, refinements can be accomplished in areas such as increased length and complexity of statements, appropriate voice volume, decreased latencies of responses, and improved intonation or affect.

The research reported in this article documents the effectiveness of a procedure for teaching assertion skills to autistic youth. This intervention program can be readily implemented in home, school, and group home settings, and offers the advantage of simultaneously teaching social behaviors and leisure skills. Teaching social interaction skills in those situations where such responses will be called for facilitates maintenance as well as generalization to spontaneous verbalizations.

REFERENCES

Eisler, R. M., Hersen, M., Miller, P. M., & Blanchard, E. B. (1975). Situational determinants of assertive behaviors, *Journal of Consulting and Clinical Psychology, 43*, 330-340.

Matson, J. L., & Stephens, R. M. (1978). Increasing appropriate behavior of explosive chronic psychiatric patients with a social-skills training package. *Behavior Modification, 2*, 61-76.

McCoy, J. F., McGee, G. G., Price, D., & Mason, D. (1980, November). *Social skills training for aggressive children while playing competitive games.* Paper presented at the meeting of the Association for Advancement of Behavior Therapy, New York.

National Society for Autistic Children (1978). National Society for Autistic Children definition for the syndrome of autism. *Journal of Autism and Childhood Schizophrenia, 8,* 162-167.

Ragland, E. U., Kerr, M. M., & Strain, P. S. (1978). Behavior of withdrawn autistic children: Effects of peer social initiations. *Behavior Modification, 2,* 565-578.

Strain, P. S., Shores, R. E., & Kerr, M. M. (1976). An experimental analysis of "spillover" effects on the social interaction of behaviorally handicapped preschool children. *Journal of Applied Behavior Analysis, 9,* 31-40.

Strain, P. S., Shores, R. E., & Timm, M. A. (1977). Effects of peer social initiations on the behavior of withdrawn preschool children. *Journal of Applied Behavior Analysis, 10,* 289-298.

Strain, P. S., & Timm, M. A. (1974). An experimental analysis of social interaction between a behaviorally disordered preschool child and her classroom peers. *Journal of Applied Behavior Analysis, 7,* 583-590.

Turner, S. M., Hersen, M., & Bellack, A. S. (1978). Use of social skills training to teach prosocial behaviors in an organically impaired and retarded patient. *Journal of Behavior Therapy and Experimental Psychiatry, 9,* 253-258.

Twardosz, S., & Jozwiak, W. (1981). The expression of affection: Suggestions for research with developmentally disabled children. *Analysis and Intervention in Developmental Disabilities, 1,* 217-238.