

*PROMOTING AUTISTIC CHILDREN'S PEER INTERACTION IN AN
INTEGRATED EARLY CHILDHOOD SETTING USING
AFFECTION ACTIVITIES*

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Group affection activities were used to increase the interaction of three autistic children with their nonhandicapped peers in an integrated early childhood setting. Peer interaction increased during free play when the affection activities were conducted, but not when similar activities without the affection component were used. This interaction included initiations by both the autistic and nonhandicapped children, with reciprocal interactions occurring more frequently with nonhandicapped peers who had participated in the affection activities.

DESCRIPTORS: autistic children, mainstreaming, social interaction, social skills

One distinguishing feature of autistic children is a marked deficit in relating appropriately to other people. Although their relationships with adults often improve, relationships with peers usually remain severely impaired (Rutter, 1978; Wing, 1976).

Two types of behavioral procedures have been developed and refined during the past 20 years to promote autistic children's social development. One approach involves teaching specific social behaviors such as making eye contact, touching, or sharing (Lovaas, Freitas, Nelson, & Whalen, 1967; Trammontana & Stimbert, 1970). The other approach involves teaching peers to initiate interactions with

autistic children, or to respond to them during social-skills training (Brady, Shores, McEvoy, Ellis, & Fox, 1987; Fox et al., 1984; Shafer, Egel, & Neef, 1984; Strain, 1983). Both methods have increased the peer interaction of autistic children, although generalization to nontraining situations continues to be problematic.

Both the social-skills training and peer procedures are difficult to use with preschool children (Odom & Strain, 1986). Thus, more attention should be given to developing interventions that are intrinsically reinforcing, address the behavior of both autistic and nonhandicapped children, and can be integrated easily into daily classroom activities. One intervention that contains all of these components is group affection activities.

Affection activities were used by Twardosz, Nordquist, Simon, and Botkin (1983) to increase the peer interaction of three preschool isolate children, two of whom were developmentally disabled. The activities occurred during group time; included discussions of the importance of friendship and showing affection; were based on typical preschool games, songs, and materials; involved both the isolate children and their peers; required little teacher training; and appeared to be fun for the partic-

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ipants. Once they began to participate in the activities, the isolate children interacted more often with their peers during free play. The authors suggested that the activities may have been effective because they paired peers with pleasurable experiences, desensitized them to those aspects of peer interaction that may have been aversive, and perhaps taught them skills that facilitated free-play interactions.

The present study was undertaken to assess the effects of affection activities on autistic children's peer interaction. The activities in our study differed from those described in Twardosz *et al.* (1983) by deemphasizing discussions about friendship. Also, unlike the goals of other investigators (e.g., Charlop & Walsh, 1986) who trained autistic children to respond to people with specific affectionate behaviors, the goal of our study was to increase reciprocal peer interaction rather than affectionate responses *per se*. We sought to extend the Twardosz *et al.* research by evaluating the use of affection activities with a more severely handicapped population and by providing a more comprehensive measurement of social interaction skills.

METHOD

Subjects

Three autistic children who attended a special classroom in a large metropolitan school participated. They had been diagnosed as autistic by school psychologists based on criteria outlined in the *Student Evaluation Manual* of the Tennessee Department of Education. This manual is an administrative policy guide used by teachers to screen and evaluate students with handicaps.

Greg was 7 years, 4 months old. He interacted with adults but not with peers, sometimes made eye contact but usually needed to be prompted, had some functional language but did not use it often, watched other children play, and would play with materials occasionally. Standardized test scores were unavailable for Greg. Rachel was 7 years old. Her full-scale IQ (WISC-R) was 86. Rachel interacted with adults and occasionally with peers, had excellent receptive language, and would follow

any instruction immediately. She also had some expressive language, but most of her speech was echolalic. Michael was 4 years old. He did not interact with adults or peers. Michael followed most one-step instructions but had no expressive language. He did not use materials appropriately, and self-stimulated by running aimlessly and tapping a table with a toy. He complied with adult instructions only about 50% of the time and had tantrums or cried several times each day. Standardized test scores were unavailable for Michael.

Three male and three female nonhandicapped children from a kindergarten classroom in the same school volunteered to participate. They ranged in age from 5 years, 2 months to 5 years, 9 months. These target peers participated in the group activities throughout the study to allow us to assess the effects of the affection activities on the interaction of target and nontarget peers. The remainder of the kindergarten class ($N = 21$) participated in free play and could be recorded as peer initiators or recipients of interaction.

Setting

The three autistic children were brought daily to a kindergarten classroom that contained areas for housekeeping, reading, blocks, music, and fine motor activities. One full-time kindergarten teacher was responsible for the 27 nonhandicapped children.

Observations and Measures

Data were collected daily during group activities and free play. Two students served as observers. A multiple baseline across subjects was used.

Peer interaction was scored during the group activities if the subject made unprompted verbal or nonverbal contact with one or more children that lasted at least 3 s. An observer watched for the occurrence of interaction for 7 s and then used the remaining 3 s to record. Peer interaction was scored only if no teacher prompt occurred during the entire 7-s interval. Each observation session lasted for 5 min. The purpose of these observations was to measure the implementation of the independent variable.

The purpose of observation during free play was to measure duration of interaction in the absence of teacher prompts. Thus, during these sessions an observation system developed by Fox et al. (1984) was used to record the autistic and nonhandicapped children's interactions. An *initiation* was defined as any motor or vocal behavior directed to a student that attempted to elicit a social response. A *response* was defined as any social behavior that acknowledged a reply to an initiation within 3 s of the initiation. *Reciprocal interactions* were defined as ongoing social behavior that continued for more than 3 s past the original initiation-response sequence.

Observers recorded subject and peer initiations, responses, and reciprocal interactions by speaking into hand-held tape recorders. Two minutes of continuous records per day were collected for each subject. The order of subject observation was rotated daily. Following each session, a separate observer transcribed each tape. A stopwatch was used to determine the exact duration of the reciprocal interactions and the exact time an initiation or a response occurred.

Interobserver agreement. Interobserver agreement was assessed by having two observers independently but simultaneously record the behaviors during 36% of the group activity sessions and 34% of the free-play sessions. During the group activities, agreement was computed by dividing the number of agreements by the number of agreements plus disagreements and multiplying by 100. An agreement was scored when both observers agreed that a peer interaction had occurred in a 7-s interval. Agreement percentages for Greg, Michael, and Rachel were 87% (range, 50% to 100%), 77% (range, 20% to 93%), and 84% (range, 60% to 100%), respectively.

Interobserver agreement was calculated during free play using the same agreement formula. Agreements on initiations and responses were scored only when two observers recorded the same behavior in the same sequence within a 5-s time frame. Agreements on the duration of interactions were scored when both observers recorded a reciprocal interaction between the same persons as beginning and

ending within the same 5-s time frame. Mean agreement percentages for initiations, responses, and reciprocal interactions of the 3 subjects ranged from 80% to 88%, with the exception of reciprocal interaction for Michael ($M = 93\%$). Mean agreement percentages for peers averaged 78% for initiations, 82% for responses, and 88% for reciprocal interactions. Agreement percentages ranged from 0 to 100%.

Experimental Conditions

Baseline. Each autistic child was brought individually to a corner of the kindergarten classroom where group activities were conducted 4 days per week. Preschool games, songs, and dances were conducted for 5 min per day per child and included the same six nonhandicapped target peers. The teacher encouraged children to participate in the activity, but did not encourage the expression of affection. For example, during the song activity "If You're Happy and You Know It," the children clapped their hands, stomped their feet, and shouted "hooray," which are the typical actions called for in the song.

Affection activities. Affection activities were conducted in the same area as baseline activities. However, when the children sang the same song described above, for example, they were asked to "hug your friend," "give your neighbor a high-five," or "pat your friend on the back." Similar modifications were made for preschool games such as "Duck-Duck-Goose," "Farmer in the Dell," and "Ring Around the Rosie." The group activities were visible to the nontarget peers in free play.

Generalization and follow-up. Free play occurred for 25 min 5 days per week in the kindergarten classroom just prior to the group activities. The six target and 21 nontarget children as well as the three autistic children participated. The teacher told them that they could play but did not prompt or praise interaction. However, beginning with Session 75 the teacher verbally prompted Michael to "find a friend to play with" if he had not interacted with a peer for 30 consecutive seconds, and praised him if he did so. Approximately two prompts occurred per free-play session thereafter.

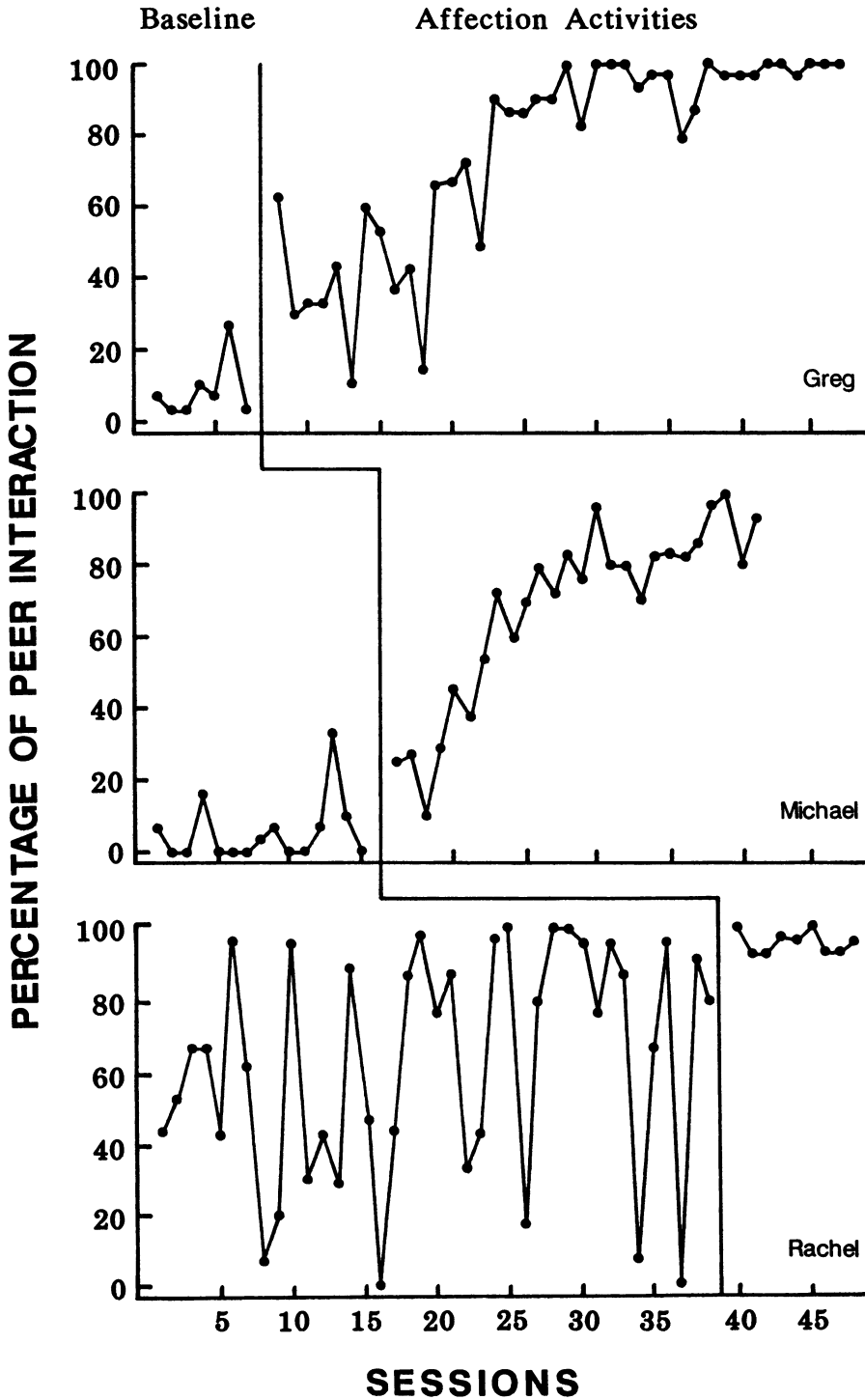


Figure 1. Percentage of peer interaction for each autistic child during the group activities for baseline and affection activities conditions.

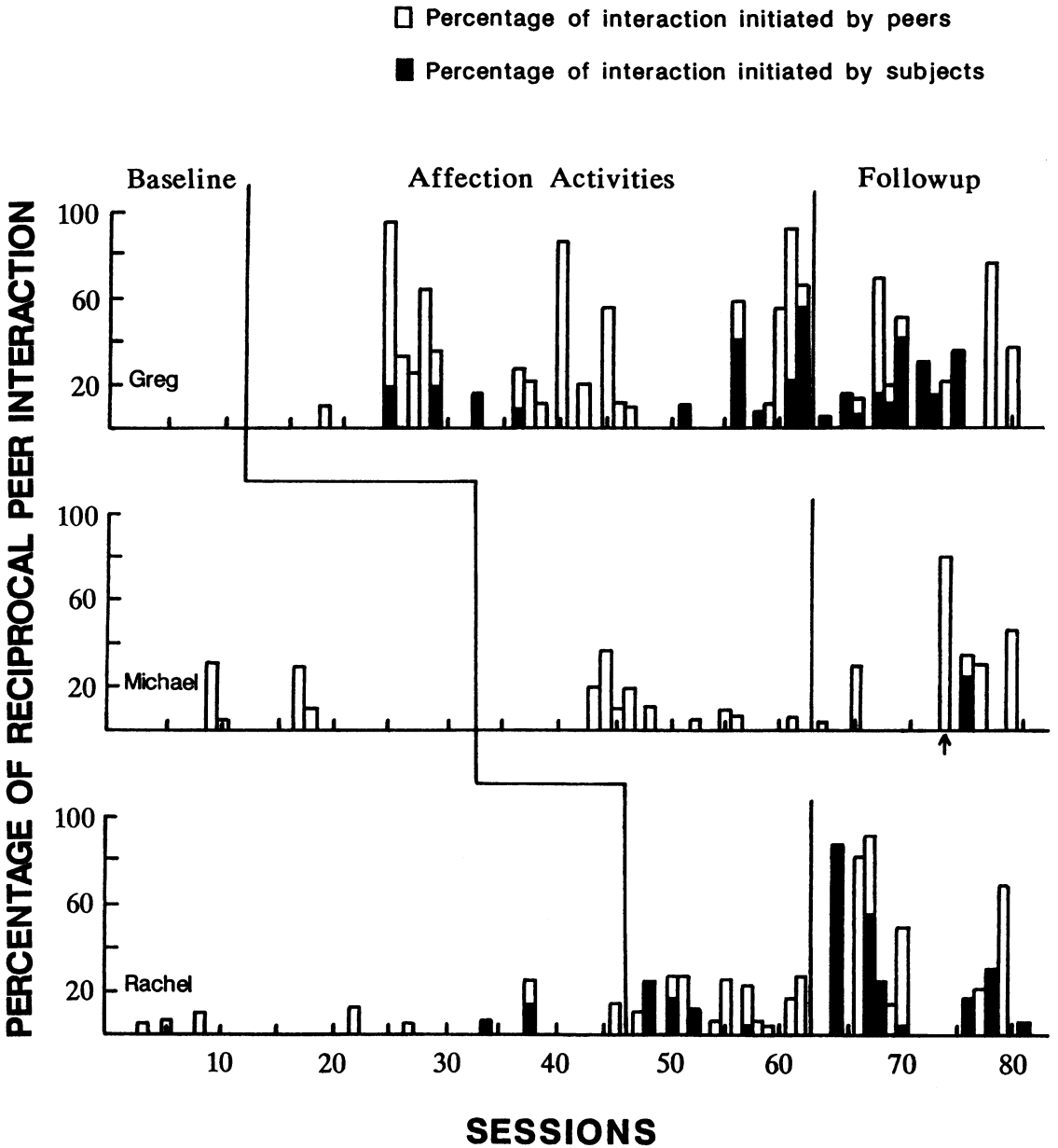


Figure 2. Percentage of peer- and subject-initiated reciprocal peer interaction in free play during baseline, affection activities, and follow-up. Arrow indicates date that teacher prompts for interaction were implemented for Michael. Sessions with no bars indicate that no interaction occurred.

During follow-up, the three autistic children continued to visit the kindergarten classroom each day for free play. No group activities were conducted, but the experimenter stayed in the room and watched unobtrusively while observers recorded data.

RESULTS

Percentages of reciprocal peer interaction during the group activities for each autistic child are presented in Figure 1. They were computed by dividing the total number of observation intervals into

Table 1
Mean Percentages of Subject, Target Peer, and Nontarget Peer Initiated Reciprocal Interactions and Mean Duration in Seconds of Interactions Across All Experimental Conditions

Subject		Condition							
		Baseline				Affection activities			
		Target peers		Nontarget peers		Target peers		Nontarget peers	
		Inter-action	Dura-tion	Inter-action	Dura-tion	Inter-action	Dura-tion	Inter-action	Dura-tion
Greg	Subject initiated	0	0	0	0	65	14.6	35	13.3
	Peer initiated	0	0	0	0	68	20.2	32	23.6
Michael	Subject initiated	0	0	0	0	0	0	0	0
	Peer initiated	58	17	42	12.3	74	11.7	24	4.3
Rachel	Subject initiated	0	0	100	16	26	12.7	74	36.7
	Peer initiated	17	8	82	7.8	90	17	10	4.5

the number of intervals in which peer interaction was scored. Each subject interacted more often with peers during intervention when affection activities were conducted than during baseline when regular preschool activities were conducted. Greg's interaction increased from a mean of 10.1% to 72.7%, Michael's increased from 6.6% to 66.6%, and Rachel's increased from 61.2% to 93.6%.

The percentages of subject- and peer-initiated reciprocal interaction that occurred in free-play during baseline, affection activities, and follow-up are presented in Figure 2. They were computed by dividing 120 s into the number of seconds that peer reciprocal interaction was recorded. The data reveal that Greg, Rachel, and to some extent, Michael, began to interact more often with peers in free-play during intervention when affection activities were conducted. The effect was immediate for Rachel and slightly delayed for Greg and Michael. In all three cases, peers initiated reciprocal interaction more frequently at first, but eventually Greg's and Rachel's initiations increased and occurred more often than peer initiations. Michael rarely initiated to peers during baseline or when the affection activities were conducted (0.14 and 0.19 per minute, respectively) but this rate did increase to 0.60 per minute during follow-up when prompted by the teacher. Greg's rate of initiations to peers was 0, 0.84, and 2.16 per minute and Rachel's was 0.61, 0.97, and 0.89 per minute across the three respective conditions.

Mean percentages and duration of subject- and peer-initiated reciprocal interactions during free play are presented in Table 1 for target and nontarget peers. These data were computed for each condition by dividing the total number of subject- or peer-initiated intervals of reciprocal interaction into the number of intervals in which the peer involved was either a participant or nonparticipant in the affection activities. They show that during baseline the proportion of reciprocal interactions was greater for nontarget peers. However, during the affection activities and follow-up, more of the interaction that occurred in free play involved target rather than nontarget peers.

The mean durations of subject- and peer-initiated reciprocal interactions were computed by totaling the duration times in each condition and dividing by the number of interactions. These data show that the mean duration of reciprocal interaction for Greg and Rachel increased during the affection activities condition and either increased further or was maintained during follow-up. Interactions that involved Michael were initiated by peers and did not seem to change in duration across conditions. The mean duration of reciprocal interactions initiated by Michael did not increase until follow-up (when interactions were prompted) and involved only target peers.

Finally, the percentages of subject initiations responded to by peers in free play (the generalization setting) during baseline, intervention, and follow-

Table 1
(Continued)

Condition			
Follow-up			
Target peers		Nontarget peers	
Inter-action	Dura-tion	Inter-action	Dura-tion
80	20.3	20	13
88	28	12	17.6
100	46	0	0
86	19.3	14	16.8
62	27.8	37	22.7
91	8.3	9	15

up increased for all 3 subjects. Greg did not initiate to peers during baseline but during intervention and follow-up peers responded to his initiations 97% of the time. Peers responded to Michael's initiations 0%, 80%, and 83% of the time and to Rachel's 37%, 93%, and 94% of the time in baseline, intervention, and follow-up, respectively. These data show clearly that peers responded much more favorably to all three autistic children during intervention and follow-up compared to baseline.

DISCUSSION

The results suggest that group affection activities produced increases in the autistic children's reciprocal peer interactions during free play, and that the encouragement of affectionate contact rather than simple participation in preschool activities is important.

The results for Michael differed considerably from those of Greg and Rachel. Peers initiated the vast majority of his interactions during free play throughout the study. In fact, very few of Michael's initiations to peers resulted in ongoing reciprocal interaction. This may have been because Michael's initiations were crude and peers did not recognize them as initiations. However, his participation during the affection activities themselves was similar to that of the other children.

Generalization from affection activities to free

play was not immediate for two of the children. Furthermore, Rachel's peer interaction again increased during follow-up. Such delayed generalization was also found by Foxx, McMorro, Bittle, and Ness (1986) who used a game format to teach elderly mentally retarded women to interact. In the present study, Rachel appeared to enjoy the affection activities and, after they were discontinued, may have increased her peer interaction to compensate for their removal.

Several features of the intervention may have contributed to its effectiveness. The teacher prompted, modeled, and reinforced affectionate and other types of social behavior, particularly for the autistic children. The fact that this training was conducted loosely (i.e., with several rather than one or two repetitive stimuli that had more than a few correct responses) may have promoted generalization (Stokes & Baer, 1977). Other features that may have enhanced generalization were the use of multiple peer exemplars (Brady et al., 1984, 1987; Fox et al., 1984; Gaylord-Ross, Haring, Breen, & Pitts-Conway, 1984), and inclusion of common stimuli (e.g., conducting the affection activities in the same room in which free play occurred).

The activities may have also functioned as a desensitization procedure by pairing previously feared or unpleasant stimuli (such as touching, holding, and proximity to peers) with the laughter and praise of the affection activities. This process may have made it more likely that the children would seek one another's company during free play.

Teachers who conduct group affection activities must be skilled in working with autistic and nonhandicapped children and be able to demonstrate and respond to affection. However, the activities can be integrated easily into a typical kindergarten classroom without the necessity of training peers beyond the context of the affection activities.

In addition to replicating these studies with more stringent follow-up procedures and determining the prerequisite skills autistic children might need to benefit from the affection activities, researchers should focus on measuring more precisely the types of interactions that occur between the autistic and nonhandicapped children. For some children, such

as Michael, additional procedures may need to be implemented in the generalization setting. Perhaps nonhandicapped peers who participate in affection activities would be more willing to assist the autistic children in developing those skills than peers who do not participate in such activities.

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