TEACHING SOCIAL SKILLS TO STUDENTS WITH AUTISM TO INCREASE PEER INTERACTIONS IN AN INTEGRATED FIRST-GRADE CLASSROOM

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We investigated the use of social skills groups to facilitate increased social interactions for students with autism and their nonhandicapped peers in an integrated first-grade classroom. Social skills groups consisted of training students and peers in initiating, responding, and keeping interactions going; greeting others and conversing on a variety of topics; giving and accepting compliments; taking turns and sharing; asking for help and helping others; and including others in activities. Training occurred during the first 10 min of 20-min play groups, four times per week. Using a multiple baseline across subjects design, results demonstrated increases in the frequency of, time engaged in, and duration of social interactions, as well as the responsivity of students and peers to each other. Results were maintained when students were monitored and given feedback on social performance in play groups and during follow-up.

DESCRIPTORS: autism, social skills, integration, peer social interaction

Students with autism exhibit a multitude of asocial and antisocial characteristics (Autism Society of America, 1990). By definition, appropriate social behavior implies positive or at least functional interaction with others. Consequently, there has been an increase in research investigations that use peer strategies (e.g., modeling, prompting, tutoring) as a vehicle for increasing learning and improving social relationships of students with autism and other developmental disabilities (e.g., Carr & Darcy, 1990; Charlop, Schreibman, & Tryon, 1983; Kamps, Locke, Delquadri, & Hall, 1989; Odom & Strain, 1986; Sasso, Hughes, Swanson, & Novak, 1987; Shafer, Egel, & Neef, 1984).

In addition to the efforts to increase social skills and interactions among children with autism, further consideration must be given to the effects of

training in social groups and integrated school environments (Brown, Ragland, & Fox, 1988; McEvoy et al., 1988). These issues are of particular concern for high-functioning students with autism. This subgroup is often of normal intelligence; thus, expectations are that social skills are at near-normal levels as well. Yet many high-functioning students with autism are typically quite ineffective socially. Like low-functioning children with autism, they often desire to be alone, adhere rigidly to structure and schedules, are disinterested in others (particularly peers), and perseverate on irrelevant objects or topics.

This study investigated the use of social skills groups for high-functioning students with autism to improve social interaction skills with peers. This study differs from previous work in several ways. Students were in an elementary school, totally integrated into a regular first-grade classroom. Treatment was neither target- nor peer-oriented but was conducted in a generic fashion for all group members. Thus, treatment was considered to be part of the first-grade curriculum. Social skills instruction

was implemented using portions of published cur-
ricula (McGinnis & Goldstein, 1984; Walker,
Hops, & Greenwood, 1988). These programs have
had limited testing among students with autism
(Sasso, Melloy, & Kavale, 1990), with primary
investigations conducted for students with behavior
disorders and other mild disabilities (McConnell,
1987; Schloss, Schloss, Wood, & Kiehl, 1986).

METHOD

Subjects and Setting

Three male students with autism participated in
the study. All students were considered high func-
tioning, as indicated by intellectual capabilities, lan-
guage skills, and academic performance, but were
lacking in social skills (e.g., few interactions with
nonhandicapped peers, frequent periods of isola-
tion, limited spontaneous speech, and few initia-
tions of conversations). The first-grade classroom
consisted of 11 nonhandicapped students, 3 stu-
dents with autism, 2 students with physical dis-
abilities, the first-grade teacher, and a paraprofes-
sional.

Mike was 7 years 5 months old, with an intel-
ligence score of 101 and first-grade academic skills.
Language skills were appropriate; however, he also
used rote or "canned" phrases to communicate and
perseverated on inappropriate topics. Mike often
whined and complained in a loud, disruptive voice
when changes in routine occurred, and preferred to
be alone, frequently ignoring initiations by peers
and adults.

Adam was 7 years 9 months of age, with a full
scale intelligence score of 71. Language character-
istics included frequent initiations of irrelevant top-
ics with perseveration on the weather, dates, ge-
ography, and so forth. He performed at first-grade
level, but had some difficulties in comprehension
and task completion. Adam responded to questions
and initiations, although he spent more time alone
than with peers during groups and at recess.

Bill was 7 years 7 months old, with a full scale
intelligence score of 70. Deviant characteristics in-
cluded perseveration on irrelevant topics, imma-
turity, severe mood swings, and aggression at home.

Bill typically chose to be alone; however, he would
remain in physical proximity to peers.

Dependent Measures

Social interaction. Observations were conduct-
ed during play group sessions to determine the
frequency of, time engaged in, and duration of
social interactions among target students and their
nonhandicapped peers. Data were collected using
the Social Interaction Code developed by Niemeyer
and McEvoy (1989) and NEC 8300 laptop com-
puters using 5-min samples taken in random order.
This code is a computerized system that records
social interactions with initiations, responses, and
duration of interactions as variables. *Initiations*
were defined as motor or vocal behavior (e.g., shar-
ing, assisting, touching), clearly directed to a peer,
that attempted to prompt a social response. *Re-
sponses* were defined as motor or vocal behavior
that acknowledged a reply to an initiation within
3 s. *Interactions* were thus defined as reciprocal
social behaviors that occurred as a result of an
initiation–response sequence.

Social skills behavior. A 21-item social skills
rating scale was used to measure the occurrence of
particular social behaviors by targets during the
play group sessions. Items were scored using a
3-point Likert scale (1 = never or seldom occurring,
2 = sometimes, 3 = very often). Fourteen of the
items measured social skills, including sharing ma-
terials; seeking or offering help; initiating, listening,
and responding; interacting with one or more peers
(for extended periods); giving and accepting com-
pliments; accepting peer ideas; and inviting others
to join in activities. Seven of the items were de-
scriptive of appropriate behavior and responsiveness
during the group, including being nondisruptive,
having a pleasant demeanor, not displaying autistic
behavior, displaying appropriate behavior (no
whining), staying in group, and following instruc-
tions.

Interobserver agreement. Interobserver agree-
ment was assessed by conducting two observations
concurrently during the 5-min samples for 17% of
the play group sessions. Agreement was computed
by dividing the number of agreements by the num-

ber of agreements plus disagreements and multiplying by 100. Agreement percentages for the frequency of social interactions ranged from 33% to 100% across conditions, with an overall mean of 87.5%. Agreement percentages for the time engaged in social interactions ranged from 25% to 100%, with an overall mean of 80.6%.

Reliability for the social skills rating scale was assessed by having observers independently complete the scale for 32% of the sessions. Agreement was computed by scoring plus or minus for each item, then calculating the number of agreements divided by the total of agreements and disagreements. Reliability ranged from 52% to 95%, with an overall mean of 73%.

Experimental Design and Conditions

A multiple baseline design across subjects was used to evaluate the effectiveness of the social skills training.

Baseline. Baseline consisted of 20-min play sessions four times per week during which a target student and 3 nonhandicapped peers were provided with two activities (e.g., making party hats, creating collages, dressing up, playing house, making puppets, or playing games). The entire class participated in the play groups; thus, four play groups participated simultaneously during the 20-min session. Instructions were given to stay in the group, be polite to friends, and play with the designated activities. No prompts were given during baseline, except to return if a student left the group. Baseline lasted 2 weeks for Mike (eight sessions), 4 weeks for Adam (16 sessions), and 6 weeks for Bill (24 sessions).

Social skills training. Training was conducted for individual groups during the first 10 min of the 20-min sessions. Specific skills were selected from published curricula (e.g., McGinnis & Goldstein, 1984; Walker et al., 1988) and included (a) initiating an interaction, responding to initiations, and keeping an interaction going; (b) conversations, greetings, and topics; (c) giving and accepting compliments; (d) taking turns and sharing; (e) helping others and asking for help; and (f) including others in activities. Trainers were the first author, the class-room teacher, the learning disabilities teacher, and the classroom paraprofessional for Mike, Adam, and Bill (with their peers) and a fourth group, respectively. Social skills training lasted for 2 to 3 weeks per skill.

Feedback for social skills. This condition was implemented following the completion of social skills training and consisted of 20 min of free play with teacher monitoring (i.e., a star was placed by the student's name on a monitoring form if he was engaged in social interaction at 1-min checks) and feedback (i.e., students were shown the form once during the session and again at the end).

Follow-up. In the final month of the school year (1 month after the feedback condition) free-play groups were held two to three times per week. The classroom teacher restated the social skills at the beginning of play. Monitoring was reduced to two 5-min checks for social interaction per group, with feedback provided to the whole class.

RESULTS

Results indicated improved social performance for target students and peers. Positive changes were noted for social interactions among students and social skill behaviors.

Social Interactions

The frequency of social interactions involving the 3 target students (i.e., as initiator or responder) is presented in Figure 1. The average numbers of social interactions per 5 min during baseline conditions were 0.6, 2.7, and 1.5 for Mike, Adam, and Bill, respectively. During social skills training, the average frequencies were 9.5, 7.4, and 6.1. During the last half of the play group (posttraining probes), the average numbers of interactions were 3.5, 4.8, and 5.6, respectively. During the feedback and follow-up conditions, interactions occurred on the average of five to six times.

The duration of social interactions involving the target students is depicted in Figure 2, with increases following implementation of training and feedback conditions. The baseline means of duration per 5-min samples (300 s) were 9.8 s, 30.3
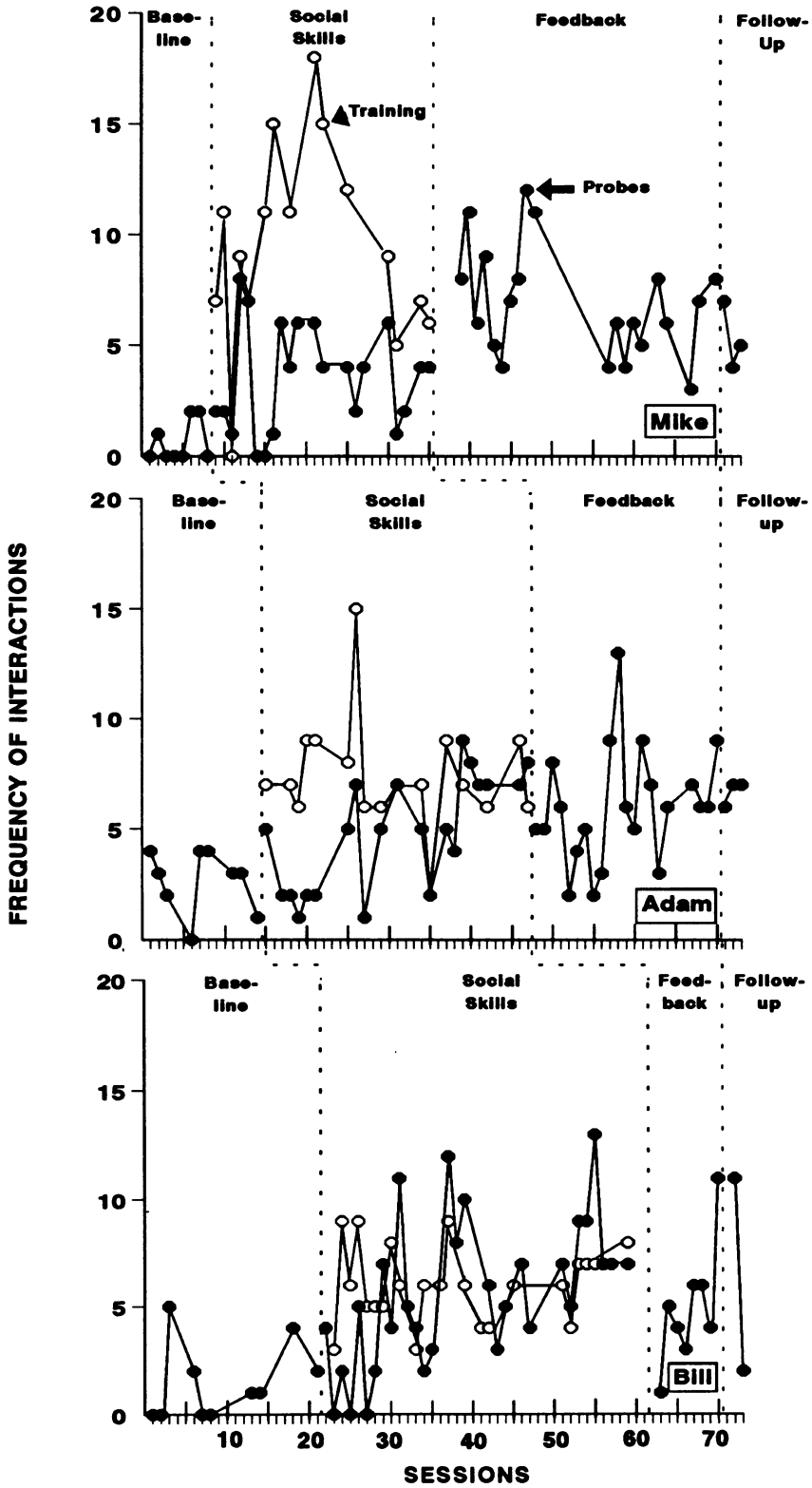
Figure 1.   Frequency of social interactions during 5-min samples for target students and their peers.
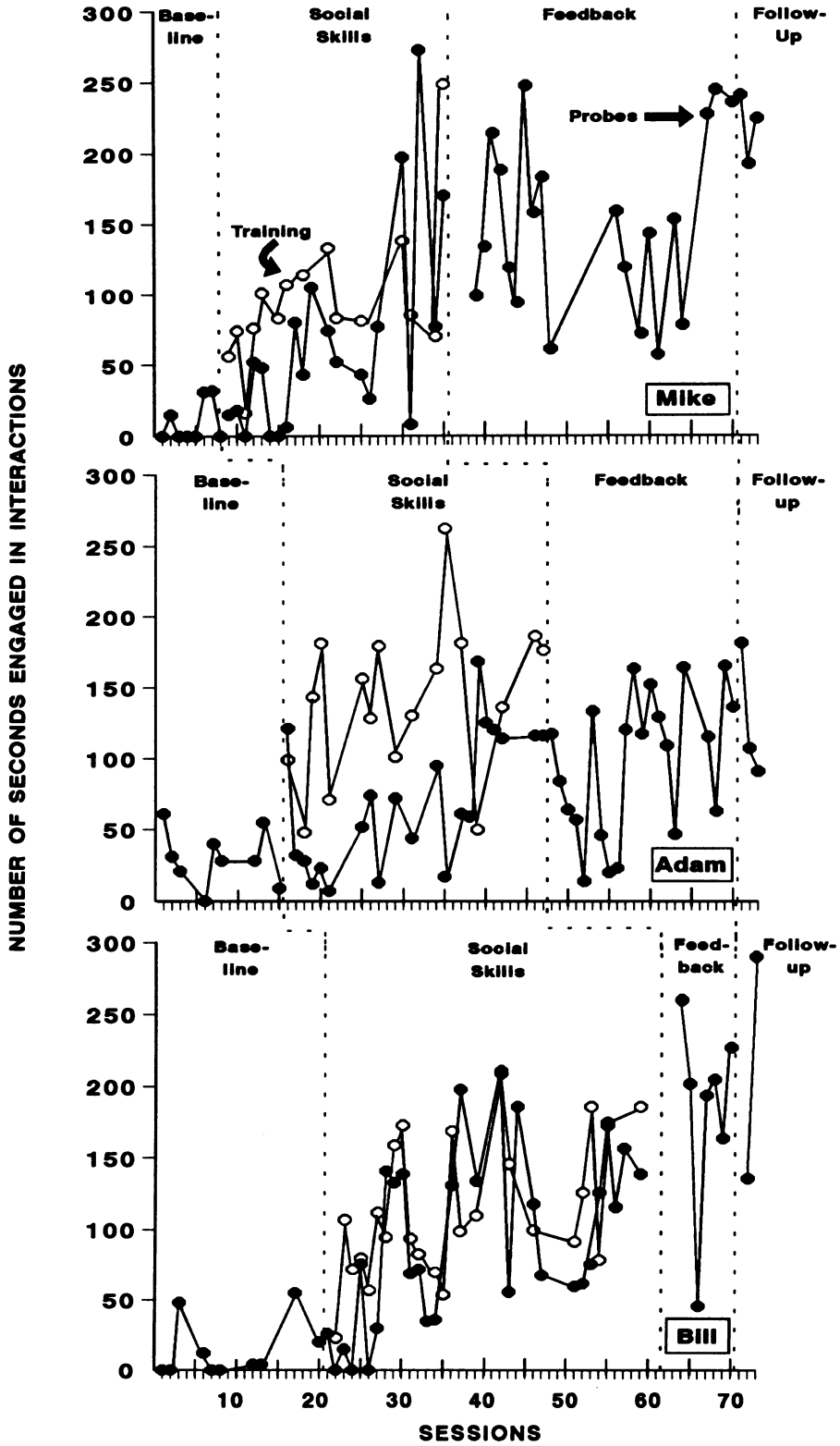
Figure 2.   Time engaged in social interactions during 5-min samples for target students and their peers.

Table 1

Duration, Initiation, and Response Ratios for Baseline (BL), Social Skills (SS), Feedback for Social Skills (FB), and Follow-Up (FU)

Partici-pant	BL	SS1[a]	SS2[b]	FB	FU
Duration of interaction (in seconds)					
Mike	6	8	29	24	42
Adam	10	12	15	16	19
Bill	5	12	19	66	79
Peers	15	14	23	15	34
Initiations by students					
Mike	0.5	2	2	5	4
Adam	2	3	5	4	6
Bill	0.9	4	3	3	6
Peers	4	5	4	8	5
Initiations to students					
Mike	3	6	5	5	3
Adam	4	5	4	4	5
Bill	2	3	5	3	3
Peers	3	2	3	4	2
Responsivity of students to initiations from others					
Mike	.28	.30	.76	.80	1.0
Adam	.50	.56	.80	.67	.67
Bill	.49	.56	.76	.90	.88
Peers	.59	.50	.86	1.0	.88
Responsivity of others to students' initiations					
Mike	.00	.63	.69	.95	.67
Adam	.33	.30	.60	.72	.70
Bill	.61	.61	.87	.93	.90
Peers	.56	.75	.43	.79	1.0

[a] Mean of the first half of social skills training condition.
[b] Mean of the second half of the social skills training condition.

s, and 14.3 s. Social interaction time averaged 96.6 to 140.6 s during social skills training and 65 to 93 s during posttraining probes.

Peer Social Interactions

Social interaction data were occasionally collected for nonhandicapped peers (a total of 46 probes across conditions) for comparison purposes. The frequency of peer interactions averaged 3.8 during baseline, 5.8 during training, 4.2 during posttraining probes, 10.2 during the feedback condition, and 5.9 during follow-up. The duration of social interactions for peers averaged 69.7 s in baseline, 94.0 s during training, 72.0 s during posttraining probes, 147.2 s during feedback, and 185 s during follow-up.

Additional Data Analyses

Duration of social interaction. An additional analysis of social interaction consisted of computing the average duration of each interaction for the target students and their peers. The duration of interactions ranged from 5 to 15 s during baseline and initial training conditions, with increases to 42 s, 19 s, and 79 s for the target students and 34 s for peers during follow-up (Table 1).

Initiation and response patterns. Baseline initiations by the target students ranged from an average of 0.5 to 2 initiations, with increases to means of 4 to 6 during follow-up, equaling initiations made by peers ($M = 5$). Few changes were noted in the number of peer-to-target initiations or peer-to-peer initiations across conditions.

Response ratios (see Table 1) were computed by dividing the number of responses into the number of initiations, with a ratio of 1.0 depicting a one-to-one correspondence (i.e., all initiations were answered). The responsivity of the target students to peers increased from baseline levels of less than .50 to .67 to 1.00 in follow-up, equaling the response levels of peers. The level of responsivity from peers to the target students also increased to ratios of .67 to 1.0 during follow-up.

Social Skills Ratings

The percentage of social skills rated as occurring sometimes or often (i.e., a score of 2 or 3) during baseline averaged 18% to 36% for the target students. The percentage of social skills observed during training ranged from 38% to 61%, with peer ratings averaging 57%. During feedback, ratings of skills ranged from 54% to 100%, with increases to 92% to 97% during follow-up for target students and peers. Appropriate behaviors were generally observed during play groups, with baseline mean ratings ranging from 73% to 85%, and means of 85% to 100% during follow-up.

DISCUSSION

The findings indicated that social skills training for students with autism conducted concurrently with nonhandicapped peers was a viable procedure

for increasing the frequency of, time engaged in, and duration of social interaction for children in play groups. Perhaps as important were increases in levels of initiations and responses by targets and the responsivity of the peers to targets.

These results add to our current knowledge in several ways. First, the results demonstrated the benefits of social skills training as a classwide curriculum area (Neel, 1988), instead of limiting instruction to students with handicaps (e.g., Gaylord-Ross, Haring, Breen, & Pitts-Conway, 1984) or using peer-mediated procedures (e.g., Knapczyk, 1989; Strain & Odom, 1986). This supports other studies illustrating the social effects of interactive group instruction, such as the use of affection activities (McEvoy et al., 1988), peer tutoring (e.g., Greenwood, Delquadri, & Hall, 1989; Kamps et al., 1989), and cooperative learning (Johnson & Johnson, 1984).

A second finding is that rather than focus on structured learning of many social behaviors as dictated by published curricula (e.g., McGinnis & Goldstein, 1984), the groups were more successful when focusing on fewer behaviors with more practice opportunities for those basic skills. This reliance on more concrete behaviors with repeated practice was probably a more efficient approach, and contributed to the success of the program for the students with autism who might otherwise have had difficulty in processing more abstract social skills (e.g., negotiating, problem solving) into appropriate behaviors (Sasso et al., 1990).

Despite favorable findings and recommendations for future use of social skills training for these children, there remains a need to examine the quality of interactions, the effects of social skills programs longitudinally, and generalization of skills. For example, experimental effects were immediate during training, but were slower (approximately seven to eight sessions) during posttraining probes of free play (see Figures 1 and 2).

To summarize, these findings support the use of social skills instruction in small-group formats that include nonhandicapped peers and students with autism. In addition, more research needs to be done in instruction and measurement of the quality of

social interaction, isolation of the specific social skills and/or training components from identified curricula responsible for increased interactions, longitudinal study of socialization in integrated environments, and replication of social skills training for more severely impaired children with autism.

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