

APPENDIX

SUMMARY OF STUDIES INVESTIGATING SOCIAL SKILLS  
INTERVENTION FOR ADOLESCENTS WITH ASD

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### Summary of Studies Investigating Social Skills Groups

Author(s)	Ozonoff, S., & Miller, J.N. (1995)
Participant characteristics	Participants were nine male adolescents (13.5-14 years) diagnosed with autism or PDD-NOS with full scale IQ's of 70 or greater. Five participated in the treatment group and four served as controls.
Description of intervention	Intervention consisted of participation in a social skills group. Participants were taught basic interaction and conversational skills, perspective taking, and theory of mind skills. Clinic groups alternated with community outings, and group members also had several parties that included non-group members to practice learned skills. Professionals with expertise in autism facilitated groups in a clinical setting.
Length/duration of intervention	Groups met weekly for 4 1/2 months excluding holiday breaks (a total of 14 sessions) for 90 minutes each session.
Outcome	Study participants made significant gains in perspective taking and theory of mind skills. Study participants did not demonstrate significantly improved social interaction skills as a result of group participation as indicated by parent and teacher ratings on the Social Skills Rating System (SSRS; Gresham & Elliott, 1990).

Author(s)	Webb, B. N., Miller, S. P., Pierce, T. B., Strawser, S., & Jones, W. P. (2004).
Participant characteristics	Participants were 10 male adolescents (12.3-17.2 years) identified as having educational eligibility for an autism spectrum disorder program. Participants had receptive and expressive language scores >77, cognitive verbal scores ranging from 74-126, and attended a general education classroom for at least one period per day.

Description of intervention	The SCORE Skills Strategy program (Vernon, Schumaker, & Deshler, 1996) was used to teach five specific social skills to participants within a group setting. The social skills addressed included sharing ideas, complimenting others, offering help or encouragement, recommending changes nicely, and exercising self-control. The SCORE Skills Strategy program was implemented according to published guidelines. Professionals with expertise in autism facilitated groups in a community public agency building.
Length/duration of intervention	Participants met twice weekly for 60 minutes per session with a total of 13 sessions for the instructional phase of the intervention. This was preceded by a baseline phase consisting of 3 30-minute sessions for pre-intervention assessments, and was followed by 4 60-minute post-intervention sessions.
Outcome	Participants demonstrated significant increases in their knowledge of social skills and their ability to discriminate the appropriate skills to use in a particular situation. Participants' opinions about group work showed a trend in a positive direction. Generally, both participants and their parents indicated that they felt favorably about participation in the program. Participants did not demonstrate significantly improved social interaction skills as a result of group participation as indicated by parent ratings on the SSRS (Gresham & Elliott, 1990).
Author(s)	Broderick, C., Caswell, R., Gregory, S., Marzolini, S., & Wilson, O. (2002).
Participant characteristics	Participants were 9 adolescents (male and female; 12-15 years) diagnosed with Asperger's Syndrome, all of whom attended mainstream schools.

Description of intervention	Intervention consisted of participation in a local youth group with the support of a trained adult helper volunteer (college students, local youth leaders, or special educational needs coordinators), in addition to participation in a social skills group facilitated by a professional with expertise in autism. Within the social skills group setting, participants were trained in conversation skills, eye contact, body posture, understanding and using non-verbal communication, conflict resolution, and relaxation techniques. Group facilitators used strategies such as Social Stories (The Gray Center, 2006) and “break tickets”.
Length/duration of intervention	Participants met weekly for 8 weeks. The length of group meetings was not specified.
Outcome	Participants demonstrated excellent attendance for groups, group facilitators reported a decreased need for adult support in interactions with non-disabled peers within the local youth group setting, participants reported gained confidence in their social abilities, and scores on a measure of self-esteem improved for all participants.

Author(s)	McGee, G. G., Krantz, P. J., & McClannahan, L. E. (1984).
Participant characteristics	Participants were 3 male adolescents (13 - 15.5 years) diagnosed with autism.
Description of intervention	Participants were taught games and appropriate behavior using modeling and practice; also, reinforcement of appropriate positive and negative assertions was provided through praise and tokens. Professionals with expertise in autism facilitated social skills groups in a special education setting.
Length/duration of intervention	Participants met daily for 5-10 minute periods of time for small group training, and then participated in generalization training during a 15-minute card game followed by a 15-minute ball game. There was a total of 18 sessions.
Outcome	Participants demonstrated increases in appropriate use of positive and negative assertiveness acts. The majority of improvements persisted for 4.5 months.

Author(s)	LeGoff, D. B., (2004).
Participant characteristics	Participants were 47 children and adolescents (34 male, 13 female; 6-16 years) diagnosed with an ASD (autism, Asperger's Syndrome, or PDD-NOS). Nearly half were identified as being language impaired (i.e., verbal IQ that was 2 standard deviations below the mean for the child's chronological age). Participants had average to borderline cognitive functioning (mean IQ=98 for non-language impaired group and 71 for language impaired group). Most of the participants attended public schools, although some attended schools for students with special needs. Adolescent data were not reported separately.
Description of intervention	The intervention consisted of a combination of participation in a social skills group and individual treatment. Group treatment focused on semi-structured building activities using Lego blocks combined with a routine sharing/conversation activity. Individual sessions were focused on long-term Lego projects used to practice reciprocity, communication, and task focus. Professionals with expertise in autism with the support of therapeutic aides and college students facilitated social skills groups in a clinical setting. Individual treatment was provided by the author of the study.
Length/duration of intervention	Participants met weekly for one 90-minute group and one 60-minute individual session for 12 or 24 weeks. Participants who had been on the waiting list for 24 weeks received intervention for 24 weeks.
Outcome	Positive outcomes were reported for participants in all skill areas that were assessed. Participants' GARS (Gilliam Autism Rating Scale; Gilliam, 1995)) scores decreased, there was a significant increase in duration of social interactions, and an increase in self initiated social contact after treatment.

Author(s)	Williams, T. I. (1989).
Participant characteristics	Participants were 10 male children and adolescents (9.6-14.10 years) diagnosed with autism. Adolescent data were not reported separately.
Description of intervention	Intervention involved participation in a social skills group. Topics addressed included making eye contact, asking for help, reducing rudeness, managing anger, developing flexibility, improving perspective taking, performing interviews after leaving school, being assertive, and dealing with teasing. To teach these skills, facilitators used such strategies as playing interactive games, role-playing, and modeling. Professionals with expertise in autism provided intervention in a special education setting.
Length/duration of intervention	Participants met weekly for 45 minutes over a period of 4 years.
Outcome	Positive changes, some of which reached statistical significance, were reported for all participants based on ratings on the Social Behavior Questionnaire (Galen & Underwood, 1997). Ratings were made by (non-blind) teachers/staff who knew each participant best.

Author(s)	Mesibov, G. B. (1984).
Participant characteristics	Participants were 15 adolescents and adults (male and female; 14-35 years) diagnosed with autism with average to below cognitive functioning (estimated IQs of 55-100). Adolescent data were not reported separately.

Description of intervention	The intervention consisted of participation in a social skills group in addition to individual treatment. Social skills groups were structured to follow a consistent sequence, including a group snack and discussion, dyad conversation practice, an appreciation of humor activity, and participation in games. Social skills topics addressed included how to meet others, pay attention, stay on topic, and express feelings. Strategies included role-playing, modeling, and coaching. Individual sessions were used prior to group sessions to practice the main lesson for the day. Professionals with expertise in autism and college students provided intervention in a clinic setting.
Length/duration of intervention	Groups met weekly for 10-12 sessions, twice yearly.
Outcome	Anecdotal reports from participants and parents indicated that the participants looked forward to group. Participants made considerable improvements in initiating and maintaining conversation in role-play situations, and results from a measure of self-concept indicated that participants had developed more favorable perceptions of themselves as a result of participation.

**Summary of Studies Investigating Group Therapy With Typically Developing Peers**

Author(s)	Bauminger, N. (2002)
Participant characteristics	Participants were 15 children and adolescents (11 male, 4 female; 8-17 years) who met the diagnostic criteria for autism based on the DSM-IV and the Autism Diagnostic Interview – Revised (ADI-R; Lord, Rutter, & Le Couteur, 1994). Participants had Verbal IQ scores of 69 or above on the WISC-R.
Description of intervention	Two social skills programs (Margalit & Weisel, 1990; Spivack & Shure, 1974) were adapted for students with ASD and were introduced to participants and their peers within their general education classroom. The intervention curriculum emphasized skills such as understanding friendship, teaching emotions, and social problem solving. Intervention was provided by the participant’s main teacher in conjunction with typically developing peers and the participants’ parents.
Length/duration of intervention	Participants received social skills training for 3 hours per week over a period of 7 months.
Outcome	Participants demonstrated significant increases in social problem solving, identifying basic and complex emotions, and were significantly more likely to initiate and respond to peers after intervention. Participants also demonstrated significantly improved social interaction skills as indicated by teacher ratings on the SSRS (Gresham & Elliott, 1990).

Author(s)	Haring, T. G., & Breen, C. G. (1992).
Participant characteristics	Participants were two male adolescents (both 13 years), one identified as having moderate mental retardation and one diagnosed with autism. Participants received the majority of their instruction in a special education classroom, with a 50-minute period each day in regular education and integration with non-disabled peers during lunch, recess, and assemblies.



Description of intervention	Non-disabled peers received training on how to increase opportunities for positive social interactions for two disabled classmates. Peers were taught strategies such as modifying the content or structure of an initiation to increase the likelihood that the disabled peer could/would respond, and increasing motivation to participate in social exchanges. Disabled participants received training in social skills from their peers and also individually from an instructor. A self-monitoring program was added for the participant with autism to increase his motivation to want to interact with his peers.
Length/duration of intervention	The peer intervention took place several times daily for 5-minute periods of time during breaks and 30-minute lunch periods. In addition, each participant received individual instruction twice weekly for 15 minutes per session from an adult with expertise in teaching students with special needs in a special education setting. Treatment was ongoing for approximately one month.
Outcome	Disabled participants initiated more frequently and appropriately after intervention. Non-disabled peers rated their disabled classmates' interactions more favorably after intervention, reported higher levels of satisfaction with their participation in the intervention program, and also increasingly identified positive traits in their peers. Anecdotal evidence indicated that skills and friendships carried over outside of the training environment.
Author(s)	Gaylord-Ross, R. J., Haring, T. G., Breen, C., & Pitts-Conway, V. (1984).
Participant characteristics	Participants were 3 male adolescents (17-20 years) diagnosed with autism. Two participants had moderate to severe mental retardation (cognitive data was not available for the third participant).

Description of intervention	Participants with autism were initially taught how to play with a handheld electronic game and a walkman radio, and how to chew gum. They were then taught how to initiate interactions with non-disabled peers during shared unstructured times in an outdoor courtyard using these materials. Non-disabled peers were provided training regarding how to respond and reinforce initiations from their peers with autism.
Length/duration of intervention	The intervention was implemented once or twice daily for approximately 5-minute periods of time during the social skills training phase. Training phase intervention took place on average between 5 and 15 sessions.
Outcome	Participants demonstrated increased frequency and duration of interactions with non-disabled peers, including both familiar and non-familiar peers. There was also an increase in initiations made by non-disabled peers toward their peers with autism, suggesting that the disabled adolescents were perceived more favorably than they had been prior to intervention.

**Summary of Studies Investigating Individual Social Skills Therapy**

Author(s)	Silver, M. & Oakes, P. (2001).
Participant characteristics	Participants were 22 children and adolescents (10-18 years) diagnosed with autism or Asperger's Syndrome who had an age equivalency score of 7 years or greater on the British Picture Vocabulary Scale (Dunn et al., 1982). Half of the participants received the intervention; the other half served as a control group. Data for adolescent participants were not reported separately.
Description of intervention	Participants used a computer program to learn to identify emotions based on seeing facial expressions, hearing about situations that are likely to trigger a specific type of emotion, viewing pictures of what a person wants and gets, and hearing descriptions of mental states. Participants accessed the computer program in their special education school.
Length/duration of intervention	Participants used the computer program daily for 10 sessions over a 2-3 week period, with some variability (range 2-15 sessions). The authors did not indicate how long each session lasted.
Outcome	There were significant improvements in the ability of participants to predict emotions generated by external stimuli and mental states after intervention. There were also significant improvements in the ability of participants to complete non-computerized perspective taking tasks such as Happe's (1994) Strange Stories and Emotion Recognition Cartoons. Improvements were not related to BPVS scores.

Author(s)	Koegel, R. L., & Frea, W. D. (1993).
Participant characteristics	Participants were 2 male adolescents (13 and 16 years) diagnosed with autism. One participant had a full scale IQ of 102 on the WISC-R, and the other had an IQ score of 71 on the Stanford Binet. Both participants had significantly delayed adaptive behavior scores as measured by the Vineland Adaptive Behavior Scales.

Description of intervention	Participants were first taught to identify and discriminate appropriate and inappropriate instances of the target behavior (eye gaze and non-verbal mannerisms for one participant, and appropriate perseveration of topic for the other) and were then taught self-management techniques to monitor the target behaviors. Participants were rewarded for positive behavior with the use of checks which, when accumulated, resulted in access to a preferred video game. A doctoral level clinician conducted treatment sessions in naturalistic settings (e.g., park or restaurant).
Length/duration of intervention	The treatment phase of the study began after approximately 35 and 40 sessions of baseline data collection for one participant (two behaviors) and after approximately 45 baseline data collection sessions for the other participant. Fading procedures were initiated almost immediately and were completed by the 75 <sup>th</sup> sessions for both participants.
Outcome	Participants demonstrated rapid improvement (attained near 100% appropriate responding within 1 or 2 sessions) during treatment for all treated behaviors. Participants also demonstrated generalization of skills to untreated behaviors.

Author(s)	Harris, S. L., Handleman, J. S., & Alessandri, M. (1990).
Participant characteristics	Participants were 3 adolescent males (13, 13, and 14 years) who were diagnosed with autism and attended a special school for students with autism. Age equivalent scores on a measure of receptive vocabulary ranged from 2.1 years to 2.5 years.

Description of intervention	<p>Participants were first taught to say the phrase, “Can I help you?” and the skills needed to offer assistance (e.g., screwing a lid on a jar, opening a baggie). Then, participants were trained to use the trained phrase to offer assistance in response to an expressed need for help. Participants were praised for offering help. During a maintenance phase of training, participants were not prompted to make offers of help, and were praised when they did make offers. Intervention took place in a special education classroom at the participants’ day school and was facilitated by a professional with expertise in autism. Generalization training took place in a research office and a parent’s kitchen with undergraduate students and parents as confederates.</p>
Length/duration of intervention	<p>The training phase of the intervention lasted for 15 days for Participant 1, 5 days for Participant 2, and 7 days for Participant 3. The specific amount of time daily or weekly spent providing treatment was not included in the study description.</p>
Outcome	<p>Participants demonstrated increased offers of assistance across settings following intervention. There was some generalization of skills outside of the classroom, and positive changes persisted for at least several weeks.</p>

Author(s)	<p>Scattone, D., Silczynski, S. M., Edwards, R. P., &amp; Rabian, B. (2002).</p>
Participant characteristics	<p>Participants were 2 children and 1 adolescent (15 years) diagnosed with autism. The adolescent participant had a score of 82 on a measure of IQ and communicated with verbal language.</p>
Description of intervention	<p>A Social Story was developed to decrease an inappropriate behavior that was limiting social opportunities (staring at girls during recess) for the adolescent participant. The social story was developed by a professional with expertise in working with students with special needs. The student read the story with a teacher or teacher’s aid.</p>

Length/duration of intervention	The adolescent participant read the story once daily, an hour prior to participating in recess. The story took only minutes to read. The treatment phase of intervention lasted for 12 sessions.
Outcome	There was a decrease in inappropriate staring after intervention. The participant showed some evidence of replacing the staring behavior with another inappropriate behavior (covering his face with his shirt).

Author(s)	Groden, J. & Cautela, J. (1988).
Participant characteristics	Participants were 2 children and 1 adolescent (13 years) diagnosed with autism. The adolescent participant had an IQ score of 49.
Description of intervention	Participants reclined in a lounge chair while the therapist described scenes in which the student imagined himself engaging in peer verbal interactions with a pleasant consequence or for which a pleasant consequence followed. Scenes were individualized for students. Demand procedures were also used, although these were not described. A professional with expertise in teaching students with autism provided the intervention in a specialized (day treatment) setting.
Length/duration of intervention	Treatment was conducted twice daily for 15 minutes for approximately 70 sessions for the adolescent participant.
Outcome	The adolescent participant demonstrated an increased number of verbal initiations within the clinical setting and during interactions with the two other study participants after treatment.

Author(s)	LeBlanc, L. A., Coates, A. M., Daneshvar, S, Charlop-Christy, M. H., Morris, C., & Lancaster, B. M. (2003).
Participant characteristics	Participants were 2 children and 1 adolescent (13 years) diagnosed with autism. The adolescent participant had a verbal mental age of 15 years and was served primarily in a special education setting with inclusion in regular education for at least part of each day.

Description of intervention	Video modeling was used to teach perspective-taking skills to students with autism. Participants viewed videos of an adult correctly completing perspective-taking tasks with a focus on relevant information and a model explaining strategies. The video was then paused and the participant was asked to respond to perspective taking questions immediately following the correct response being modeled. Correct responses were rewarded and incorrect responses resulted in a replay of the video until a correct response was elicited. Sessions ended after three correct responses. The training phase ended when a participant responded correctly in the testing session on three consecutive trials. Treatment was provided by a professional with expertise in autism in a clinical setting.
Length/duration of intervention	The intervention was implemented 2-3 times weekly, for 4-10 minutes per session, with a total of approximately 11 sessions.
Outcome	The adolescent participant demonstrated increased perspective taking ability, which was maintained (with one booster session for one of the perspective taking activities) at follow up one month after the cessation of intervention.