Effects of social skill training for high-functioning adolescents with autism spectrum disorder

Barbara Jane Webb

University of Nevada, Las Vegas

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EFFECTS OF SOCIAL SKILL TRAINING FOR HIGH-FUNCTIONING
ADOLESCENTS WITH AUTISM SPECTRUM DISORDER

by

Barbara Jane Webb

Bachelor of University Studies
Idaho State University
1989

Master of Education Specialties
Idaho State University
1990

Education Specialist
Idaho State University
1992

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Barbara Jane Webb

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Examination Committee Chair

Dean of the Graduate College

Examination Committee Member

Examination Committee Member

Graduate College Faculty Representative
ABSTRACT

Effects of Social Skill Training for High-Functioning Adolescents with Autism Spectrum Disorder

by

Barbara Jane Webb

Dr. Susan Miller, Examination Committee Chair
Professor of Special Education
University of Nevada, Las Vegas

The purpose of the study was to investigate the efficacy of using the SCORE Skills Strategy to teach high-functioning adolescents with autism spectrum disorder five social skills that are needed to work in cooperative groups. Ten male subjects ranging in age from 12 to 17, participated in a 10-week evening program. The subjects were in grades 6 through 11, and spent 17% to 100% of their school day in general education classes. The effects of the intervention were evaluated using a multiple-baseline across-skills and a multiple probe design. Data were collected to answer seven research questions related to subjects' abilities to learn and use the SCORE Skills, subjects' perceptions about group work, subjects' perceptions about the SCORE Skills Strategy, parents' perceptions about their adolescents' social competence, and parents' perceptions of the SCORE Skills Strategy. The results indicate that all of the subjects made significant gains in the performance of the five social skills after training. The multiple probe design results provide evidence that the subjects' changes in performance occurred
only after training had been completed on each skill and that they were able to generalize
the use of the skills across novel situations. The subjects’ satisfaction with the social
skills group was very positive. A successful social skills training program should result
in the subjects becoming more skilled and their improved skills being noticeable to
others. The parents were generally satisfied that the SCORE Skills program benefited
their adolescent, although their ratings on social competence were not statistically
significant. The subjects demonstrated significant gains in the performance of the social
skills within the class environment, but the generalization factor of skill mastery was not
noticeable to their parents. The results of this research indicate that the SCORE Skills
Strategy is a viable social skill curriculum to use with high-functioning adolescents with
autism spectrum disorder and that consumer satisfaction is high resulting in a positive
experience for the subjects and their parents. The results further indicate the importance
for additional intervention for generalization of skills.
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CHAPTER 1

INTRODUCTION

Autism spectrum disorder (ASD) is a severe disruption of the normal developmental processes that occurs in the first two years of life. It leads to impaired language, play, cognitive, social and adaptive functioning, causing children to fall further and further behind their peers as they grow older. The cause is unknown, but evidence points to physiological causes such as neurological abnormalities in certain areas of the brain. The incidence and prevalence figures are controversial with 15-20 in 10,000 births being the current figures quoted by the National Information Center for Children and Youth with Disabilities (2001).

Autism is characterized by deficits in the communication and social skill areas. Calloway, Myles, and Earles (1999) conducted a review of the literature to identify published studies concerning the development of communication in persons with autism. This review resulted in the identification of common patterns that occur in communicative behaviors of individuals with autism. Specifically, researchers found that communication is primarily used to request objects or to control the behavior of others rather than as a means for social interaction. The failure to develop normal socialization among children with autism appears to be pervasive. Specifically, deficits in interpersonal relationships, use of play and leisure time, and coping skills are found to distinguish children with autism from other developmental disorders (Rodrique, Morgan,
One of the most difficult skills for children with autism is the ability to socially interact with others and to generalize this skill across environments. Just knowing what to do in a social situation is not sufficient, there must be some degree of proficiency in the action. Individuals who have difficulty with social skills are at high risk for social rejection. Social rejection increases the potential for more serious behavioral problems to develop. Research on the communicative function of inappropriate behaviors lends support to the hypothesis that difficulty in using effective social behaviors may cause a child to use more socially inappropriate means of communication to achieve such goals as seeking attention or avoiding difficult situations (Carr & Durand, 1985; Day, Horner & O’Neill, 1994; Hunt, Alwell, & Goetz, 1988).

Several researchers have been interested in studying the characteristics of individual with autism over time. For example, Sigman (1999) studied the extent to which there was continuity and change in diagnosis, level of intelligence, and language skills of 70 children with autism, 93 with Down syndrome, 59 with developmental delays, and 108 typically-developing children. The results showed that all the children with autism continued to have severe problems in the areas of social and language development. Church, Alisansi, and Amanullah (2000) described the experiences of 40 children (ages 3-15) with Asperger syndrome. They found both variability and consistency in the characteristics of this disorder over time and during specific developmental stages. Results indicated that social skills deficits were variable but remained the greatest challenge for these intellectually bright and verbal children.
Loveland, Pearson, Tunali-Kotoski, Ortegon, and Gibbs (2001) examined the circumstances of social misjudgments and the effect of verbal and nonverbal modes of communication on judgment of social behaviors with 19 participants with autism and 19 without autism, ages 6-14. The groups were matched with age, IQ, and mental age. The average full-scale IQ was 97. The two groups were asked to make judgments of the social appropriateness of 24 videotaped, staged scenes with adult actors. Each scene depicted an appropriate or an inappropriate interaction. Half contained verbalizations, and half did not. After each scene, the participant was asked to judge if the scene was O.K. or if something was wrong with it. If the participant judged it as wrong, they were asked what was wrong and why it was wrong.

Results of this study suggest that children and adolescents with autism may understand and reason about social-conversational interactions differently than do those without autism of similar age and IQ. This research supports earlier studies (Baron-Cohen, O’Riordan, Stone, Jones, & Plaisted, 1999; Russell, Stokes, Jones, Czogalik, & Rohleder, 1993) that persons with autism have, to a varying degree, an impaired understanding of others’ internal states and tendencies to behave. This was demonstrated by the difficulty of giving explanations that revealed an appreciation for others’ feelings, point of view, or likely actions.

Loveland et al. (2001) raised several pertinent questions about the performance of individuals with autism within research studies and the continuing inability to behave appropriately in daily life and concluded that “it is likely that both the ability to reason about others’ mental states and to use this and other information to regulate one’s own
behavior are impaired in autism, and that these impairments help to account for the inappropriate social behavior of people with autism" (p. 375).

Early identification of autism has presented the educational community with opportunities to explore a variety of treatment methodologies. Autism also is associated with many fads that have promised recovery but consistently failed under the rigors of research (Delmolino & Romancyk, 1995; Green, 1996; Olley & Gutentag, 1999; Smith, 1996). Instructional methods derived from applied behavior analysis (ABA) have shown considerable promise for many young children with autism. According to this approach, behavior is functional and purposeful even if the observer cannot immediately discern its purpose. Moreover, behavior is viewed as a complex blend of variables that include the individual and environment (Romanczyk & Matthews, 1998).

The objective of intervention is to teach children those skills that will facilitate their development and help them achieve the greatest degree of independence and the highest quality of life possible. Curricula for subjects with autism have been developed through decades of research. While the models on which the curricula are based differ widely in philosophy and practice, they do share a number of very critical dimensions (Strain, Wolery, & Izeman, 1998). It is important to build on a child's successes and expand the use of existing skills, and encourage the development of new ones. Instruction designed specifically to teach individual skills is essential. There are well-established teaching methods for instructing young children with complex learning needs, including those with autism (Bondy & Frost, 1993; Harris & Handleman, 1993; Koegel & Koegel, 1995; Lovaas, 1987; McClannahan & Krantz, 1993; McGee, Daly, & Jacobs, 1993). The specific features of these methods (e.g., task analysis, motivational incentives, and
planned opportunities) are to be applied in the home, community, and school settings with adequate intensity and quality.

Mesibov (1984) conducted a social skills training program applying the principles of modeling, coaching, and role-playing to teach social skills to 15 adolescents and adults with autism. These essential principles are found in the extensive literature on remediating social skill deficits in other populations of children with disabilities. Given the importance of social and interpersonal skills for adolescents and adults with autism, Mesibov noted that he was surprised that the literature on improving these skills was so sparse.

Major long-range goals of Mesibov's social skills training program were for the participants to have positive peer-related experiences in a supportive atmosphere, and to learn useful interpersonal skills to enhance self-esteem. Individual assessments to determine individualized, short-term training objectives included a role-play social situation, self-report measures, and skill measures. These assessments generated the specific training activities that would be used in the group sessions. The group met weekly in the evening for 10 to 12 weeks with one sequence in the fall and one in the spring. Each group session lasted for 60 minutes and was preceded by a 30-minute individual session with a counselor to practice the lesson for the day.

Informal feedback from the participants and parents suggested that the major long-range goal of providing positive peer-related social experiences in a supportive atmosphere had been met. Parents commented that the group had filled an important void in their children's lives. They also stated that skills were generalizing to other social situations. Mesibov reported that the participants improved their abilities to initiate and
maintain a conversation. The author reported that based on the self-concept measure, the participants were changing their self-perceptions. Although Mesibov's social skills training program appears to have strong instructional components and reportedly was successful, no specific data were included in his program description. Apparently rigorous data collection did not occur. Mesibov did, however, offer several conclusions based on his observations throughout the implementation of his training program. First, as adolescents with autism grow older they continue to face the major problem of lack of social skills. Second, that role-playing can be an effective technique for teaching social skills to persons with autism. And third, that persons with autism can, with practice, improve their ability to understand and express emotions, which is essential to the development of friendships.

Children develop friendships in the context of common interests, activities, and the mutual pleasure of being together. These friendships and quality peer interactions may lay the groundwork for later healthy and satisfying relationships (Mize, Ladd, & Price, 1985). Positive social connections may improve the quality of the child's life. Deficiencies in this area often lead to isolation, boredom and even depression. Being able to interact with other children in a meaningful way has the potential to increase the child's happiness and provide him or her with a vehicle to learn important lessons about the world and how to get along with people, as well as help in the development of abstract cognitive skills.

Today's educators face the challenge of building safe, caring, and learning communities of connected subjects. A key to building this environment is teaching the basic skills needed to work in cooperative groups. For subjects with autism, the inability
or lack of desire to interact with peers influences the quality of their school experience. Strategies to encourage greater competence in these skills are necessary to achieve improved social integration.

Purpose of the Study

The purpose of this study was to investigate the efficacy of using the SCORE Skills Strategy to teach high-functioning adolescents with autism spectrum disorder five social skills that are needed to work in cooperative groups.

Research Questions

1. Given instruction in the SCORE Skills Strategy, do high-functioning adolescents with autism spectrum disorder (ASD) improve their skill performance of cooperative group skills?

2. Given instruction in the SCORE Skills Strategy, do high-functioning adolescents with ASD improve their written skill knowledge of cooperative group skills?

3. Given instruction in the SCORE Skills Strategy, do high-functioning adolescents with ASD improve their ability to discriminate which social skill to use in a given situation?

4. Do high-functioning adolescents with ASD change their opinions about group work after receiving instruction in the SCORE Skills Strategy?

5. What is the extent to which high-functioning adolescents with ASD are satisfied that their participation in the instruction helped them: (a) learn each of the five
social skills, (b) get along better with other subjects, (c) handle difficult situations, and (d) use the SCORE skills outside of the group sessions?

6. Do parental ratings of social skills of high-functioning adolescents with ASD change after implementation of the SCORE Skills Strategy?

7. To what extent are the parents satisfied that their adolescents' participation in the instruction: (a) benefited the adolescent, (b) helped the adolescent to get along better with other subjects, (c) enabled the adolescent to handle difficult situations, and (d) taught the adolescent to use the SCORE skills in home and community settings.

Significance of Study

The development of social competence is an important goal of the schooling process for all subjects. However, some subjects are at risk for failure in social competence domains because of their deficient social skills (Gresham, 1981; Odom, McConnell, & McEvoy, 1992). Evidence indicates that social skills deficits characteristically are associated with autism spectrum disorder. Subjects with autism spectrum disorder often make serious errors in the decoding and interpreting of social information and act on these errors in their social relations with others. The long-term implications of these deficits can be extremely serious. This can lead to social rejection in the child's environment by parents, teachers, and peers.

The majority of research in the field of autism has focused on either treating behavior difficulties or increasing language abilities; however, social isolation is one of the most dominant aspects seen in autism. Children with autism have a great amount of
difficulty with interpersonal interaction, and many of the behavioral problems seen in children with autism have been found to serve the function of maintaining social avoidance. The social disability that results from these behavior problems appears to grow at a rapid rate as children with autism mature. Reciprocity, the basic component to social interaction, is often not carried out by these children. This characteristic of not taking into account the actions of others, and reciprocating accordingly can be one of the most severe difficulties associated with autism (Rutter, 1983). Subsequent behavioral, communication, and social disabilities that result from a failure to integrate social cues can be devastating in the global development of a child. Moreover, difficulty attending to and processing social information or engaging in social modeling will impede the child's ability to learn (Koegel, Koegel, Freia, & Smith, 1995). While the cause and cure of autism remains unknown, interventions have positively influenced the opportunity for children with autism to function independently as adults. Success on the job or in community living depends largely on the ability to get along with others. Deficiencies in social skills are much more likely to cause termination of employment than are nonsocial factors (Jackson, Jackson, & Bennett, 1998).

When considering social skill intervention, it is important to recognize the difference between acquisition and performance deficits. Social skills acquisition deficits refer to the absence of particular social skills from a behavioral repertoire. Social skills performance deficits refer to the presence of social skills in a behavioral repertoire but the failure to perform these skills at acceptable levels in given situations (Gresham, 1981a, 1981b). The SCORE Skills Strategy (Vernon, Schumaker, & Deshler, 1996) is designed to help subjects acquire, master, and use five social skills in a systematic manner. These
social skills help subjects succeed in cooperative group work. The five social skills are: Share Ideas, Compliment Others, Offer Help or Encouragement, Recommend Changes Nicely, and Exercise self-control. The acronym “SCORE” is used to help subjects remember the names of each skill. In order for subjects to become socially strategic and apply appropriate social skills fluently and automatically, they need to be taught to use these skills in a systematic fashion. That is, they must become aware of the skills, and when, where, and how to use them. They need to memorize the steps of each social skill and practice using all of the steps in both role-play interactions and everyday activities. The intent is for subjects to use these fundamental skills during their daily experiences and through repeated use, modify them to meet their needs as they progress through the school and into employment and other postsecondary settings as adults. Social skills never become obsolete.

These SCORE social skills prepare individuals to work successfully in group situations. The Score Skills Strategy has been validated for use with subjects with learning disabilities, but not with subjects who have autism. This study has helped determine whether or not the Score Skills Strategy is a viable curriculum to be used for high-functioning subjects with ASD and provides direction to teachers and therapists in the use of the SCORE Skills Strategy.

Limitations of Study

Limitations of this study included the small number of participants drawn from a relatively small population of low incidence disabilities within one regional area. ASD affects approximately 1% of the population of children with disabilities in the United
States, which is approximately 12% of the total subject population (NICHCY, 2001). The study was further limited by the willingness of families to participate in a 10-week evening program; therefore caution should be used in generalizing to all adolescents with ASD regardless of family involvement. The study took place in the evening at a school that initially was unfamiliar to the subjects, therefore, generalization to their home school settings may be limited.

Definition of Terms

1. **Applied Behavior Analysis** – “…the use of methods that change behavior in systematic and measurable ways” (Anderson & Romanczyk, 1999, p. 167).

2. **Autism Spectrum Disorder (ASD)** – A neurobiological disorder of development that causes discrepancies or differences in the way information is processed, specifically in the areas of communication and social interaction (APA, 1994).

3. **Children with Disabilities** – Children who are identified as having a disability and in need of special education and/or related services. (Federal Register Number 48, Volume 6434 C.F.R. §300.7 March 12, 1999, p. 12421).


5. **Communication** – An interactive process that conveys information and ideas from one person to another. Communication is a social skill that has
the potential for influencing others and gaining some control over one's environment (Bernstein & Tiegerman-Farber, 1997).

6. Cooperative Strategies Series – Curriculum developed at The University of Kansas Center for Research on Learning. This curriculum includes instruction in the skills subjects need to cooperate successfully with others. Each cooperative strategy consists of a series of steps that subjects can use to effectively participate in and cope with the demands of a teaming situation (Schumaker & Vernon, 2000).

7. Direct Instruction – An instructional method of breaking a skill into smaller parts and teaching to mastery (Lloyd, 1988).

8. High-Functioning – “Refers to the cognitive ability of the individual. High functioning persons with autism have mental abilities in the average to above-average range (Fullerton, Stratton, Coyne, & Gray, 1996, p. 1).” However, there is a wide range in the severity of autistic characteristics. The term “high-functioning” is often extended to include those with mild mental retardation, because individuals with ASD who’s IQ is in the mildly retarded range tend to have patchy profiles on psychological testing with one or more subscale scores in the average or high range. (Ehlers, Gillberg, Wing, 1999).

9. Instructional Sequence – A systematic teaching plan that specifies the materials, settings, variation, adaptations, and teaching strategies to ensure effective learning (Ellis, Deschler, Lenz, Schumaker, & Clark, 1991).
10. Generalization – The ability to learn a skill or a rule in one situation and be able to use or apply it flexibly to other similar but different situations (Koegel & Koegel, 1995).

11. Pivotal behaviors – The behaviors that seem to be central to wide areas of functioning (Koegel & Frea, 1993).

12. SCORE Skills – A set of five social skills that are foundational to effective cooperative group work. The five social skills are: Share Ideas, Compliment Others, Offer Help or Encouragement, Recommend Changes Nicely, and Exercise self-control. The acronym “SCORE” is comprised of the first letters of the names of the skills (Vernon, Schumaker, & Deschler, 1996).

13. Social Cognition – “The social cognition process provides a mechanism for the developing child to integrate and to generalize the rules established within the family microsystem in order to make social decisions within broadening contextual environments as he or she gets older. Social cognition maps out the development of social independence, which requires an awareness of self as a decision maker” (Bernstein & Tiegerman-Faber, 1997, pp. 27-28).

14. Social Skills – “Goal-oriented, rule-governed learned behaviors that are situation specific and vary according to social context; they also involve both observable and non-observable cognitive and affective elements that assist in eliciting positive or neutral responses and avoiding negative responses from others” (Chadsey-Rausch, 1992, p. 408).

16. Target Behavior – That behavior to be achieved at the end of a behavioral program, whether it's the learning of a new behavior, the elimination of a behavior, or the maintenance of a behavior (Koegel & Koegel, 1995).

Summary and Overview of Remaining Chapters

High-functioning adolescents with autism spectrum disorder frequently have social skill deficits and therefore need social skills training if they are to experience success in social interactions. Researchers have reported some success for social skills groups for children, adolescents and young adults with autism and Asperger syndrome (Andron & Weber, 1998; Marriage et al., 1995; Mesibov, 1984; Ozonoff & Miller, 1995; Williams, 1989). This strategy provides a venue for teaching the importance of certain skills, and practicing those skills using modeling, role-play, video recordings and constructive feedback. Outcome measures have primarily been qualitative and unable to demonstrate generalizability to natural settings; but are perceived as valuable by parents, teachers, and participants (Attwood, 2000).

Researchers who have studied social skills have focused on conversation skills, reading and interpreting body language, understanding the perspective of others and friendship skills; unfortunately, little is known about the effectiveness of specific social skills programs for adolescents with autism. Many of the marketed social skill programs have been validated for children with learning or behavioral disorders but few have

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specifically included children with autism. Therefore, additional research is needed in this area. In Chapter 2, a review of literature pertinent to this study is presented. Chapter 3 contains a discussion of the methodology used in the study. The results of the study and related implications are provided in Chapters 4 and 5.
CHAPTER 2

REVIEW OF LITERATURE

Literature Review Procedures

Studies included in this review were located through a comprehensive search of studies in the Education Resources Information Center (ERIC), PsychINFO, and Digital Dissertations. The following descriptors were used: autism, asperger syndrome, adolescents, applied behavior analysis, behavior disorders, language disorders, social language, social skills, social interactions, and social competence.

A manual search through selected journals, and an ancestral search through the reference lists of obtained articles was also conducted. Included in these journal searches were Journal of Applied Behavior Analysis, Journal of Autism and Developmental Disorders, Focus on Autism and Other Developmental Disabilities, Autism: The International Journal of Research and Practice, Journal of Speech and Hearing Research, Journal of Child Psychology and Psychiatry, and Exceptional Children.

Selection Criteria

Experimental studies were included in this review if they: (a) involved subjects with autism, (b) involved at least one subject within the age range of 12 to 18 years, (c) examined teaching of at least one social skill, and (d) included a clear description of the subjects involved, research settings, research design used, how the data were analyzed.
and significance of results. Additional studies were included that examined developing and teaching the SCORE Skills Strategy to school-age children. Studies were excluded from this review if: (a) the purpose of the study was to identify characteristics of social skill deficits, or (b) the purpose of the study was to compare adaptive behavior in children and adolescents with autism. As a result of this search and selection process, ten experimental studies were located and reviewed.

Social Skill Training of Adolescents with Autism

McGee, Krantz, and McClannahan (1984) investigated the use of a naturalistic social skills training program to teach positive and negative assertive responses to three adolescents with autism in the context of naturally occurring leisure activities. The three adolescent males were enrolled in the Princeton Child Development Institute and resided at the institute’s Teaching-Family Model group home. Their chronological ages were 13, 14, and 15 years and their mental ages as scored on the Peabody Picture Vocabulary Test ranged from 4.2 to 6.3 years. The three boys had acquired basic direction-following skills, and all demonstrated delayed but functional expressive language. They were selected based on observed deficits in cooperative play, social interaction, and assertive skills.

The research was conducted during eighteen daily sessions at the school, in a 15-minute card game in a classroom, followed by a 15-minute ball game on the playground. Observers were seated round the perimeter of the activity areas. Verbal assertions to peers were recorded in four response categories, (1) “positive assertions in a card game,”
(2) "negative assertions in a card game." (3) "positive assertions in a ball game." and (4) "negative assertions in a ball game." (p.322).

Daily data collection was done simultaneously for all three boys using a 15-second interval time-sampling procedure. Each assertion was scored in the interval in which it ended. Two independent observers assessed inter-observer agreement for each child in each condition. Agreement was assessed in 34% of the sessions and mean inter-observer agreement ranged from 92% to 94%.

Each session began with the three boys jointly participating in a teaching session. During the 5 to 10 minute pre-game sessions, a teacher modeled target assertive responses and discussed the context in which each response would be appropriate (e.g., "That's not fair, let's start over" possibly could be used when a game rule had been violated). The teacher also prompted and praised behavioral rehearsals to target responses. The boys were instructed to begin the game after demonstrating all target assertions in the appropriate situational context. Games were divided into 2-minute intervals to deliver token reinforcement and behavior-specific praise. At the end of class, the boys could exchange their tokens for pre-selected backup reinforcers. Assessment and training occurred during a simple card game called "Battle" and during an outdoor ball game. A follow-up assessment was conducted 4.5 months after the final class. No pre-game teaching occurred but token reinforcement was given during breaks.

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 the follow-up assessment. Effects of "modeling", "behavioral rehearsal", and "contingent reinforcement"(p.325) on the four categories of assertions
were analyzed. Although both positive and negative assertions in card games and ball games increased for all three boys when teaching was introduced, the most marked increases occurred in positive assertions in card games and positive assertions in ball games. A 15-second interval time sampling procedure was used to record assertions. A total of 24 intervals were scored. Results revealed that Subject 1 displayed positive assertions while playing the card games in 33% of the intervals. Subject 2 displayed positive assertions in 21% of the intervals, and Subject 3 displayed positive assertions in 71% of the intervals. Negative assertions were displayed in 21% of the intervals for Subject 1, 0% of the intervals for Subject 2, and in 29% of the intervals for Subject 3.

Results for the ball games revealed that Subject 1 displayed positive assertions in 46% of the intervals. Subject 2 displayed positive assertions in 29% of the intervals, and Subject 3 displayed positive assertions in 96% of the intervals. Subject 1 displayed negative assertions in 75% of the intervals. Subject 2 displayed negative assertions in 46% of the intervals, and Subject 3 displayed negative assertions in 54% of the intervals. Thus, above-baseline assertive responses were maintained for all three boys in each of the response categories, with the exception of Subject 2 in negative assertions while playing the card games.

The findings reported were consistent with previous findings on the learning characteristics of children with autism. The four response classes were independent and generalization across response categories did not occur until such skills were directly trained. 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. Further anecdotal records supported the findings.

The authors concluded that teaching assertive responses to adolescents with autism in a naturalistic environment is likely to be successful. Results demonstrated the effectiveness of the procedure in generating high levels of positive and negative assertions that were maintained during a 4.5-month follow-up period.

This study would have been stronger if the researchers had defined the social parameters for the use of positive and negative verbal assertive behavior more clearly. Only responses to peers were recorded, while statements to the teacher or observers, nonverbal gestures, and verbalizations other than assertions were not recorded. The study would have been stronger if more emphasis had been placed on discriminating the appropriate uses of negative assertions. For example, a use of the negative assertion, "It's my turn now," followed by a physical assertion of grabbing the ball would be inappropriate. Additionally, the subjects in the study were taught response but not initiation.

The primary strength of this study was the 4.5-month follow-up assessment. This identified the skills the boys were able to maintain within the structured situation and the skills they were able to generalize to other settings.

Williams (1989) conducted a study in Britain to evaluate the effectiveness of a social skills training group. There were 10 subjects with autism. The subjects were 9 to 15 year old males. These subjects spent a portion of their school day in general education classes and a portion of the school day in a Resource Unit (i.e. special education
classroom) sited within a primary school. The study took place in and around the
Resource Unit in an after-school program.

The social skill training group was started in the summer term of 1981 and met
for 13 school terms over a period of 4 years. The training sessions were held once a
week after school for 45-minutes. The social skills group was designed to enable the
subjects to discover effective means of interacting with other people. Three types of
activities were used: “recreational games, role-play exercises, and modeling” (p. 146).

The staff identified initial skill deficits and problematic social situations for the
subjects. Over time additional difficulties were identified both by the staff and by the
subjects. Changes in behavior were effected by means of “direct instruction, discussion
of the consequences of behavior both in terms of behavior and feeling, and also trying to
think of new ways to accomplish the same goals (e.g., by brainstorming)” (p. 146). The
initial strategy in Term 1 was to provide opportunities for the subjects to try their own
tactics for social interaction. Videotape and verbal feedback was used to show that some
methods of interaction were unsuccessful. An attempt was made to persuade the subjects
to organize activities for themselves, but it was found that clear rules needed to be set to
ensure that all subjects participated.

Term 2 started with simple activities such as pretending to be an animal. The
subjects then role-played classroom situations in which they were the teachers. The role-
plays were increased in complexity and the importance of eye contact was emphasized.
Role-play situations that involved meeting someone for the first time and asking for
things such as a bus ticket or grocery item were practiced. In Term 3 this was extended
to include asking for help in a library. Discussion was introduced here so the subjects
could tell the staff when they faced particular difficulties. Next they worked on identifying emotions and role-playing emotions for the other subjects to identify.

In Term 4 the subjects progressed to the skills involved in holding a conversation. Term 5 started with voice exercises to teach the subjects the use of voice tone. Here they practiced meeting strangers, introducing themselves, and holding a short conversation. In Term 6 they practiced leave taking, how to say goodbye without becoming distracted. They also practiced strategies for conversation to establish friendships. This was continued through Term 7.

Term 8 began with the subjects examining the different ways people give the impression of being rude or uncaring about other people. A difficulty the subjects seemed to be having at school was pushing past other people who were standing in the way rather than asking to go past. In the last few sessions, the differences between pestering and asking for something from another child were examined. This led into the subject of teasing, in which these subjects were usually the victims. At the beginning of Term 9, the group focused on situations that evoke anger. They also explored the importance of understanding another person's point of view. In Term 10 the subjects continued to work on flexibility in verbal replies and behaviors. The theme of understanding the other person's point of view was continued in Term 11 with exercises giving precise instructions using speech alone. Term 12 concentrated on listening skills and self assertion. In Term 13 the topic of teasing arose again. An emphasis was placed on avoiding reactions that tend to exacerbate the teasing. The subjects were encouraged to ignore teasing.
The Social Behavior Questionnaire (Spence, 1980) was completed by the subjects’ teachers to evaluate the effectiveness of the social skill training group. This questionnaire is designed to identify social skills deficits in children. It is comprised of 24 items, each of which is rated on a 5-point scale. The items are blocked into 3 subscales that are described as peer relationships, relationships with staff, and general social behavior. The questionnaire was administered at the beginning of the first term and after the social skills group had been running for 4 years. Due to staff retiring, questionnaires on only 7 subjects were completed. If one examines solely the direction of change, it is clear that all 7 subjects showed improvements. The probability of such a pattern of changes occurring by chance is 0.008. A multivariate analysis of variance (MANOVA) was used to compare the scores of the three subscales of the Social Behavior Questionnaire (Spence, 1980) using the pre-assessment, post-assessment, and subjects as the independent variables. The analysis revealed a significant $F$ ratio for “peer relationships.” The same procedure was used to generate $F$ ratios for all 24 questions; 8 were statistically significant.

In the beginning of the social skills group, the children stated that they would like to know how to make friends. By the end of the study, 8 of the 10 children had 1 or more friends. The researcher noted there was an overall improvement in peer relationships. In addition, the adolescents talked more freely and frequently to peers and staff, and used facial expressions more appropriately.

The strength of this study was the length of the intervention. The researchers successfully organized and maintained a social skills group over a period of 4 years. The primary weaknesses of this study were the lack of on-going data collection and the lack
of a control group to effectively measure the significance of the social skill growth. Additionally, generalization of the skills to situations outside the classroom or specialized center was not assessed. If the parents had completed pre and post intervention measures, important information regarding generalization may have emerged.

Koegel and Frea (1993) examined the acquisition of individual social communicative behaviors as part of a larger functional response class. They hypothesized that an intervention focused on only one or two target behaviors, would generalize to other social communicative behaviors without the need for additional treatment. The participants of the study were two high-functioning adolescents with autism. Subject 1 was 13 years old and Subject 2 was 16 years old.

Individual language samples were recorded while the subjects interacted with an adult who was introduced as a friend. Data were collected on five 5-minute sessions recorded one day per week for 14 weeks. A modified continuous 10-s interval recording procedure was used. These sessions occurred in the adolescent’s natural community environment (e.g., restaurant, park). The selected community settings were near video games that were used as reinforcers after the subject earned enough points by exhibiting the appropriate behavior. Three social and communicative behaviors were targeted for each subject based on parent and teacher reports. Subject 1’s targeted behaviors were perseveration of topic, intensity of voice volume, and facial expression. Subject 2’s target behaviors were eye gaze, nonverbal mannerisms, and preservation of topic. Within any given 10-s interval target behaviors for each subject were scored. For example, nonverbal mannerisms were scored if Subject 2 exhibited only gestures or mannerisms that were related to the conversational topic. Nonverbal mannerisms scored as
inappropriate typically consisted of persistent rubbing of objects or body parts, persistent limb movements, or exaggerated or unrelated gesturing.

Treatment was implemented within a multiple baseline design across behaviors and subjects. Of the six behaviors selected, Subject 2 received treatment for two narrowly defined behaviors “eye gaze and nonverbal mannerisms.” and Subject 1 received treatment on one broadly defined behavior of “appropriate perseveration of topic.” A doctoral level clinician conducted the treatment sessions. Following baseline measures, each subject was taught to differentiate appropriate from inappropriate instances of the target behavior. First the clinician modeled the behaviors and had the subject imitate the appropriate and inappropriate behaviors and then identify each behavior as being appropriate or inappropriate. After approximately 10 minutes the subjects were able to discriminate the behaviors. Next, a digital watch with a preset countdown alarm was given to each subject. They were instructed to listen for an alarm sound and then place a checkmark on their recording sheet if they had exhibited only the targeted appropriate behavior during the interval. As treatment progressed, the amount of time between alarms and the number of checkmarks required for reinforcement were increased. Interval length for Subject 1 was increased from 1 to 9 minutes and from 1 to 7 minutes for Subject 2. Most of the fading was accomplished within 1 day for each subject. Although the criterion was raised, it was always possible to earn at least one reinforcer per day.

The results of the treatment showed that the Subject’s treated social behaviors improved rapidly and that there were generalized changes in untreated social behaviors. Their appropriate behaviors increased 95% to 100% during treatment for all treated
behaviors. Generalization to the untreated behaviors increased 80% to 100% during treatment and fading of treated behaviors. Independent observers scored videotapes of pre- and post-assessments. The improvements in behaviors were accompanied by increases in the subjective ratings by the observers of the overall appropriateness of the subject’s social interactions. Koegel and Frea concluded that (a) “high-functioning children with autism were able to modify their social communicative behaviors during conversational interactions following training.” (b) “the behaviors appeared to be part of a response class in that changes also occurred in untreated behaviors.” and (c) “these changes were broad enough to be markedly noticeable and favorably judged” by independent observers (p. 373).

The strength of this study was the identity of pivotal response classes of social communicative behavior that may facilitate the understanding of social behavior in autism as well as improve peer interactions, social integration, and social development. The generalization to untreated behaviors suggests that conversation skills may be a part of a larger response class.

An obvious weakness in the reporting of the study results was the lack of specificity related to the percentage score. The authors reported the percentages as “100% or near.” The reader must estimate the graphs to determine the ranges of improvement (i.e. 95%-100% and 80%-100%).

Ozonoff and Miller (1995) examined the effectiveness of a social skills training program for five high-functioning male adolescents with autism. In addition to teaching interactional and conversational skills, the program was designed to provide explicit instruction in theory of mind, which is defined as the ability to infer the mental states of
others. Nine male adolescents were recruited through a newsletter. Five participated in the treatment condition and four made up the no-treatment control group. The four in the control group were selected because they were unable to attend the weekly sessions.

All nine subjects were administered a battery of theory of mind test before the training sessions and again afterwards. There was a 4½ month period between pre- and post-intervention measurements. Specific measures used were: *M&Ms False Belief Task* (Perner et al., 1989), *Second-Order Belief Attribution Task* (Baron-Cohen, 1989), *Overcoat Story* (Bowler, 1992), and *Prisoner Story* (Happe, 1994). The Social Skills Rating System (SSRS; Gresham & Elliott, 1990) was given to the parents and teachers both pre- and post-treatment.

The training for the treatment group was conducted in two units of 7 sessions that met one time per week over a period of 4½ months. Each meeting was 90 minutes long beginning with a snack period where the subjects could practice their conversational skills, a group discussion of the day's topic, and video-taped role-plays where each subject received reinforcement and constructive feedback on his performance. The sessions ended with a group game. The first unit covered conversational skills, nonverbal signals, how to negotiate and share, listening skills, compliments, and how to express interest in others. The second unit focused on perspective taking and theory of mind skills. They first demonstrated how visual and physical perspectives might differ, then introduced how cognitive points of view could differ. They ended with second-order perspective taking.

In addition to teaching social skills, another goal of the program was to demonstrate that social interactions could be enjoyable and desirable. This was
integrated within the program using games, community outings to places chosen by the group, and several parties with invited adults and children.

Performance on the theory of mind measures was summed to form an overall performance composite. ANOVAs were used to examine the composite as a function of both group and time. There was no main effect of group, but a marginally significant main effect of time and interaction of group and time. \( F(1, 7) = 12.84, p < .11 \) was obtained. Planned contrasts of the cell means indicated that there were no differences between the two groups at pre-treatment testing; however, the treatment group’s performance had improved at post-treatment assessment. \( t(4) = -2.43, p < .08 \), while the control group demonstrated no improvement. Effect size was 1.6 for group difference in change scores suggesting that the intervention was effective in improving performance on false belief tests. Eighty percent of the treatment group (4 of 5 subjects) demonstrated improvement on the theory of mind composite in comparison to only 25 percent (1 of 4) in the no-treatment control group.

Generalization of change was assessed with parent and teacher SSRS scores using repeated measures of ANOVAs as a function of group and time. There was no significant main or interaction effects for either parent or teacher ratings. No difference was found at either initial assessment or post-treatment assessment. The size of group and time differences was very small and not always in the predicted direction. Correlations between post-treatment performance on the theory of mind composite and post-treatment SSRS scores were negative and moderate in magnitude (-.2 to -.6 range), indicating that subjects scoring high on theory of mind measures were rated low by both
parents and teachers on general social skills. Thus, the SSRS results seem to reflect a
genuine lack of treatment effects on this measure.

The researchers concluded that the subjects were probably taught the task rather
than the ability to solve false belief problems. Although the performance on paper and
pencil tasks improved, the overall impression was that the subjects lacked the ability to
generalize these principles into actual performance of these skills in daily activities.
They concluded further, that the study did demonstrate that strategies for solving false
belief tasks could be taught to adolescents with autism.

Primary strengths of this study were the use of a control group and length of the
study. Additionally, specific pre- and post-treatment measures were given to the
subjects, their teachers, and their parents.

The primary weakness of the study was that number of skills taught seemed
excessive considering the number of sessions. Content was not taught to mastery. There
is a possibility that there was too much information to learn without adequate practice for
the individual skills, thus a lack of generalization due to non-mastery of skills.

Barber (1996), a special needs teacher, described in a case study the
mainstreamed and accelerated educational program being provided to a 15-year old male
in England who was highly gifted and had Asperger’s Syndrome. Soon after he
transferred into secondary education the staff shared concerns about his frequent
interruptions during lessons, difficulty with conversations, difficulty remaining in his seat
and or working in a group of peers. His behavior was described as disruptive and
attention getting. Although his intellectual capability was great, the absence of key social
skills was a deterrent to his educational progress.
The case study began with interviews of the subject, his parents, staff, and the educational psychologist. Barber was convinced that the accelerated program for the subject had certain advantages but it did not remove the need for continued support, which required careful planning. A program to develop independent skills and modify behaviors was designed.

The subject's independence needs first involved the need for independent transportation. A bus journey to a nearby town was agreed upon. On the first trip the teacher modeled the necessary skills for the subject, and discussed situations that might occur such as, what would happen if someone stopped us and asked for directions, or tried to persuade us to change our route. Next time the subject paid the fare and took the teacher using the same route. This was repeated until the subject felt comfortable enough to try the bus trip on his own with his teacher following the bus in a car. The subject finally completed a complete journey with bus transfers on his own. Shortly afterwards he reported that his parents had allowed him to go on his own, on the bus, to a nearby town to go swimming.

The Subject's behavior ranged from somewhat unusual to, at worst, bizarre and anti-social. The team decided that he needed to work on acceptable behavior in the classroom and elsewhere. They identified: (a) "how to conduct a conversation," (b) "recognize that it involves listening as well as talking," or (c) "asking questions" (p. 22). Two individual sessions were conducted, first to identify behaviors that were causing problems and then to identify what was appropriate and inappropriate with these behaviors. He was then instructed to write down why he behaved as he did in certain
circumstances, what effects it had on other subjects, teacher, and himself. The subject then was instructed to write some suggestions for changing these behaviors.

The subject agreed that it was important to involve other members of the staff in order to reinforce more appropriate behaviors that occurred in the classroom. He chose a reward for improvements of his behavior, which was "to see wild animals in their natural environment." Over the next four weeks, the members of the staff reported back on a questionnaire about his behavior. The results were recorded in a series of graphs that the subject completed. He became excited when he plotted the two final graphs that showed an overall improvement in 8 of the 10 identified behaviors. The last graph summarized the pattern of all behaviors for all of his classes and revealed an overall improvement.

Based on the results from the case study, Barber (1996) concluded that structured programs are needed to develop social skills, promote acceptable behavior, and prepare adolescents with autism for life in the adult world. Barber also noted the importance of ongoing collaboration between parents, subject, school staff, and outside agencies.

The primary strength of this case study was the successful identification of an important skill for the subject's independence. The skill was taught to mastery through task analysis, modeling, and guided practice. A further strength was the full involvement of the subject throughout the case study. He participated in identifying his needs, compiling the data collected, and summarizing the data.

A weakness of the case study would be that lack of baseline data collection. The subject identified the problem behaviors from a list of behaviors. There was no input from the teachers or parents. Although the subject recognized problem behaviors that he had, there may have been more significant ones that were not addressed.
Kyparissos (1996) conducted a study to evaluate the effectiveness of using confederate peers to teach conversational skills to adolescents with autism. The five subjects were 15 to 20 years old. There were two females and three males. The subjects had been enrolled in the Princeton Child Development Institute's Education Program for ten to eighteen years. The subjects had attended class together for three or more years. Only three of the five subjects were targeted for the intervention. The other two subjects were trained in the role of confederate peers. The sessions were conducted in a classroom setting at the Princeton Child Development Institute's Education Program.

All subjects had adequate language to permit engagement in conversations with others and sufficient reading skills to allow script following. The three subjects targeted for intervention were identified by their teachers as never initiating and participating in extended verbal exchanges with others. The teachers suggested the other two subjects would benefit from participating in structured conversations.

The treatment package used conversational scripts, a script-fading procedure, and a supporting motivational system to enable the adolescents to participate in extended conversations with their peers. Kyparissos (1996) hypothesized that these procedures could be used to teach adolescents with autism to engage in extended conversations with each other on topics of common interest.

Prior to the study, the researcher constructed 36 conversation scripts. The scripts were constructed from conversations among four normally-developing adolescents between 14 and 16 years of age. The topics were: (a) show and tell, (b) remote events, (c) recreational activities, (d) favorite things, (e) school activities, and (f) talking about people. Each script contained a wh-question, began with a wh-word, and provided 10...
exchanges for the target subject. Active voice, positive, and simple vs. complex forms of speech were used in the sentences.

The role of the confederate peers was to initiate and conduct conversations on different topics by following scripts. Prompts were included in the script that cued the confederate peers to pause for 3 seconds. Targeted subjects were to respond during these 3-second pauses. Response was defined as one turn-taking episode in which the target subject asked a question or made a statement relevant to the statements of the confederate peers. An exchange was scored if the response was: (a) not prompted, (b) audible, (c) grammatical and longer than one word, and (d) contextual. Exchanges were scored as scripted, unscripted, or other.

Each session lasted approximately 20 minutes with 4 scripts on different topics. The subjects averaged 100 sessions over 5 months. Altogether, each target subject received the intervention of complete scripts on 12 out of the 36 scripted conversations, but all target subjects learned to extensively participate in the remaining 24 untrained conversations of 6 treatment and 18 generalization probe scripts.

Implementation of the treatment package resulted in an increase in the number of exchanges emitted by the target subjects in conversations with their peers. All target subjects learned to have extended conversations with the confederate peers in the presence of full or faded (to the wh-question prompt) scripts. All target subjects acquired the targeted skills of listening to peers and asking related questions, as demonstrated by their performance during the treatment and generalization probes. Although, individual differences did exist among the target subjects, all target subjects reached an average
level of 10 unscripted exchanges during the treatment probes and an average level of 8 unscripted exchanges during generalization probes.

Treatment outcomes were further examined by conducting two separate social validity measures. The procedures used were designed to assess whether teachers of other adolescents with autism and graduate psychology subjects naïve to autism could detect a positive change in the target subjects’ participation in conversation with their peers. Videotaped conversations at the end of treatment were compared with baseline conversations. The evaluators had an 87% agreement that the target subjects’ conversational skills had “greatly improved” and 13% agreement that they had “improved.”

Kyparissos (1996) concluded that peers with autism could play a supportive role in teaching conversational skills. The primary strength of this study was the detailed description of the treatment package and the specific utilization of natural conversation to teach skills. Additionally, the 5-month study included a generalization component.

Ben-Tall (1998) extended previous literature by identifying and treating social-communicative behaviors that are associated with repetitive restricted patterns of interest in high-functioning adolescents with autism. The study consisted of two parts: first, the researcher attempted to determine “whether the participants’ inappropriate pragmatic behaviors showed a pattern of occurring more frequently during periods of restricted repetitive interests” (pp. 22-23). Secondly, the researcher implemented a treatment for “one of the behaviors identified in the first part as showing a likely relationship with restricted repetitive interests and to assess whether the other behaviors would improve without direct treatment” (p. 23).
The first three subjects that met the criteria were accepted for participation. The subjects were 10, 12, and 15 years old. They attended general education classes for the majority of the school day. They had average cognitive ability and below average language test scores. According to parental and professional reports, each subject had social and pragmatic difficulties and restricted repetitive interests within conversations. All sessions were conducted and videotaped in a clinical room with a one-on-one conversational format.

A multiple baseline design across subjects was used for the study. During part one of the study possible patterns of variation of pragmatic behaviors were identified; part two of the study involved treatment of one behavior identified in part one. The untreated behaviors also were measured to assess whether improvement would occur in these behaviors without treatment. Baseline ranged from 8 to 14 sessions and duration of treatment ranged from 27 to 30 sessions. A pattern of variation of pragmatic behaviors was defined as meeting minimum criteria of an individual’s mean points falling at least 1.5 standard deviations from the total mean points.

Following the baseline sessions, each subject was taught to differentiate appropriate from inappropriate instances of the targeted pragmatic behavior (e.g., appropriate eye contact vs. looking away). The clinician modeled the behavior, instructed the subject to imitate the appropriate and inappropriate behaviors, and then to identify each as being appropriate or inappropriate. After the subject demonstrated an ability to differentiate between the two, he or she was provided a digital watch with a preset countdown alarm beginning at 1-minute intervals. After the alarm sounded, the subject was instructed to place a mark on a sheet with numbered boxes if the targeted
appropriate behavior had occurred during the interval. Positive reinforcement, consisting of items or activities that the participant enjoyed, was provided once the subject had earned enough points by exhibiting the appropriate target communicative behavior. Self-recording errors were infrequent and appropriate behavior occurred at high levels under these conditions. As treatment progressed, the amount of time between alarms and the number of points required for reinforcement was increased and the interval length extended to at least 5 minutes in duration. The post-intervention session consisted of a conversational interaction with a naïve conversation partner.

A pragmatic protocol developed by Prutting and Kirchner (1987) was used to score the initial conversational session. The protocol evaluates 30 pragmatic behaviors under verbal, paralinguistic, and nonverbal areas. A subjective rating of appropriate conversational interaction was used as the second dependent measure. Several social-communicative behaviors for each of the three subjects were rated as inappropriate. Of these behaviors, two to three behaviors indicated a pattern of association with restricted repetitive interests during the baseline phase. Treatment of one inappropriate social-communicative behavior associated with restricted repetitive interests resulted in improvements in the other related behaviors.

The findings indicated that restricted repetitive interests within conversational interactions in high-functioning adolescents with autism are accompanied by other inappropriate pragmatic behaviors. The findings also show that since these behaviors are related, treatment of one behavior will lead to improvement in a response class of behaviors without directly targeting those behaviors for treatment. This study did not attempt to change the participant’s preservative verbal behavior directly but taught
appropriate pragmatic behavior when speaking about their favorite interests; this lead to improvement in the appropriateness level of their conversation topics, as well as their overall conversational interactions.

This study lends further support to previous research in the area of self-management treatment approaches and the identification and treatment of pivotal behaviors. However, generalization to the natural settings and environment were not demonstrated. A weakness of the study was the failure to assess the functional use of the behaviors under investigation.

Silver and Oakes (2001) conducted a study to evaluate a new computer program designed to teach individuals with autism to better recognize and predict emotional responses in others. Twenty-two children with autism from two special schools catering to children with autism were selected to participate in the study. All subjects had moderate language ability equal to or greater than 7 years old as measured by the British Picture Vocabulary Scale. They ranged in age from 12 to 18 years old. Subjects were divided into two groups and paired by age, gender, and school class. One of each pair was randomly selected to receive the computer intervention.

The experimental group used the Emotion Trainer multimedia computer program during 10 daily sessions over 2 to 3 weeks. The program consists of five sections. The user must complete 20 items correctly in a section to move onto the next section. Correct responses receive a ‘well done’ message and incorrect responses are immediately given a ‘try again’ message and a hint to the correct response. Each incorrect response receives a more direct cue until the correct response is made. The first section begins with photographs of facial expressions and the user is asked to choose one of four options.
below the picture: happy, sad, angry or afraid. The second section includes photographs with captions referring to a person in a situation that is likely to trigger an emotion. The task is to pick whether the situation would make the person happy, sad, angry or afraid and click on the appropriate button. Section three shows pictures of what a character wants and a picture of what they get and the user is asked to choose what emotion best describes how the person would feel. Section four is similar to section two but mental states rather than physical events are described. Section five shows an illustration of an object or event that the character is either said to like or dislike. The caption states if this object or event occurred and the task is to choose whether the result would make the character pleased or disappointed.

Subjects were assessed pre-intervention and post-intervention using facial expression photographs, cartoons depicting emotion-laden situations, and non-literal stories. Data from the program were analyzed between the first attempt and the last attempt. Within program data showed a significant reduction in errors made from first to last use, however there was a lot of individual variation. The improvement reached statistical significance on sections two and four (t = 1.90, p = 0.045 and t = 3.37, p = 0.004 respectively). The number of times on the program was directly related to their improvement score. Pre- and post-intervention measures showed a significant improvement for Emotion Recognition Cartoons and on the non-literal stories. Both groups increased on facial expression photographs. Lack of significant growth on the other sections could be attributed to the limitations of the program or measure.

The strength of this study lies in the innovation of a computer program to teach emotions to individuals with autism. Each section is taught to mastery before allowing
the user to move on. The randomized controlled trial revealed significant positive effects for children with autism. The computer design is efficient in terms of not requiring any teacher input to be successful but offering an individualized format of teaching.

The weakness of the study is a very small homogeneous sample of participants and the lack of measurement for generalization.

Initial Field-Testing of the Score Skill Strategy

Vernon and Schumaker (1993) examined social skill instruction in two sixth-grade mainstream classrooms in which subjects with exceptionalities were enrolled. There were two purposes for this study. The first purpose was to determine whether elementary subjects, including subjects with exceptionalities, could master and generalize their use of specific social skills when instruction was provided to the whole class. The secondary purpose was to determine whether the instruction was acceptable to teachers and subjects.

Subjects in two sixth-grade classes in the same school participated. The comparison classes had 21 and 22 subjects, respectively. The teachers ranked their subjects from “most socially skilled” to “socially isolated.” The eight subjects who were ranked the lowest in the experimental class were selected as subjects for individual analysis of their performance. They were randomly selected to participate in probes associated with one of the four given skills. Three of these subjects were formally classified as “gifted,” one as “learning disabled gifted,” and four had not been identified as needing special services.
Instructional materials consisted of a developed set of six lessons that were used to teach four selected social skills: "Responding to Negative Comments or Bullying," "Helping or Encouraging Others," "Making Positive Comments," and "Including Others" (p. 14). A teacher's manual was developed that used empirically validated procedures for training social skills that included: describing, modeling, memorizing the skill steps, and practicing the skill. Instruction occurred with the whole class and in small work groups of four individuals. Generalization activities were completed as homework for each lesson. Each subject compiled a notebook throughout the program.

A pretest-posttest comparison group design and a multiple probe design were used to evaluate the effects of the intervention. Skill performance was measured on behavioral role-plays that were videotaped or audio taped. A Skill Knowledge Test was used to assess if the subjects remembered the four skills and the steps of each skill. A Situation Discrimination Test was used to determine if the subjects were able to correctly discriminate what skill to use in a given situation. A Subject Report Questionnaire was used to determine the frequency of appropriate and inappropriate behaviors between subjects as perceived by the subjects. Teacher and Subject Satisfaction Questionnaires were completed regarding how satisfied they were with the instruction.

A comparison group design was used to evaluate the effects of the social skill instruction on the whole class. A multiple probe design was used and replicated once simultaneously on the eight targeted subjects. The targeted subjects were probed a total of five to six times throughout the ten sessions. A minimum of two data points was gathered per subject per skill before and after training of the skill.
All the subjects in the experimental class made substantial gains in the performance of the four instructed social skills. Their mean pre-intervention score of 45° increased to a mean post-intervention score of 86°. The comparison subjects mean scores remained the same for pre and post-intervention. Individual subjects in the experimental class made at least a 20° gain and the majority made gains at or above 30°. Results of an analysis of covariance indicated that the experimental class performed significantly more skills steps than the comparison class.

A post-intervention comparison between performance and written knowledge of the skill components was done for the experimental class. Results indicate a maximum difference of 9° with the Making Positive Comments Skill where subjects performed an average of 84° but identified 93° on the written test. The lowest difference of 1° was reported on the Helping or Encouraging Others Skill. Discrimination of when to use a correct skill ranged from 75-100°. Subjects reported that they made substantially more positive comments and engaged in fewer fights following intervention. Teachers were very positive about the social skills training and generally satisfied that the subjects actually learned all the skills taught. The teachers did comment that it was difficult to assess if the subjects were generally avoiding problematic situations, as sixth graders typically do not engage in problematic situations in the presence of an adult. The subjects' average satisfaction rating was above 5.0 on a 7-point scale and 67% of the subjects answered that the program would be beneficial to other subjects.

The study results indicate that subjects can master social skills taught in an elementary classroom by whole class discussions and small group activities. Moreover, the subjects maintained their knowledge and performance of skills up to five weeks after
instruction had been provided. Additionally, findings for subjects with exceptionalities and other subjects were similar. It is also important to note the high consumer satisfaction in that two-thirds of the class recommended the training for other children. The high satisfaction ratings from the teachers support the ease of using the training program in a regular classroom setting.

Strengths of this study include the use of a control group, the integration of the study within the natural environment of a school setting, and multiple sources of data collection. The study supports the use of a systematic social skills training program and resulted in the development of a teacher-friendly instruction manual. The authors accurately identify four limitations to the study which include: (1) no measure of spontaneous skill use in other environments, (2) subjectiveness of self-measures, (3) short-term follow-up data, and (4) the possibility that the sixth-grade experimental class was unique.

Vernon (2001) conducted a field test to study the effectiveness of the instructors videotape package for SCORE Skills instruction. Eighteen fourth-grade teachers and their subjects participated in the study. The teachers were divided into three groups: Group A (six teachers) received the SCORE Skills instructor's manual, videotape and videotape guide; Group B (six teachers) received the SCORE Skills instructor's manual only; and Group C (six teachers) received no materials. The subjects in groups A, B, and C were pre-tested on the SCORE Skills before the study began. Teachers in groups A and B provided instruction in the SCORE Skills to their subjects.

Posttest data were collected in all the classes at the end of the study. Subjects with and without exceptionalities in groups A and B demonstrated significant
improvements in the SCORE Skills. Significant differences at $p = .002$ were found between groups A and C. Although the goal of this project was to design and validate learner-managed professional development packages, it also supports the use of the SCORE Skills strategy in a group setting.

Summary of Literature

The amount of research on autism has increased over the past decade. Unfortunately, few studies have focused on the adolescent population. Although social skill deficits are an integral part throughout the life of a person with autism, the modality of treatment must be age appropriate. Given the importance of social and interpersonal deficits in high-functioning adolescents with autism, it is surprising that the literature on remediating these deficits is so limited.

The most comprehensive study that involves social skill training for adolescents with autism appears to be that described by Williams (1989). Weekly sessions were held for thirteen school terms over a period of four years. The techniques of modeling, coaching, and role-playing, which have been used with other disabilities, were found to help adolescents with autism develop their social skills and interpersonal behaviors.

Studies have focused on teaching pivotal behaviors resulted in an improvement in untreated social skills or a generalized improvement in behaviors that were not directly targeted in the treatment (McGee, Krantz, & McClannahan, 1984; Kogel & Frea, 1993; Ben-Tall, 1998). Studies occurring in naturalistic settings (McGee, Krantz, & McClannahan, 1984; Kyparissos, 1996) clearly resulted in an increase of skill level. It also is important to note the importance of teaching a skill to mastery. Based on the
results of Ozonoff and Miller (1995), teaching an excessive number of skills within a limited time period results in non-mastery of skills and a lack of generalization. Although Silver and Oakes (2001) demonstrated the effectiveness of an innovative computer program to teach emotions to individuals with autism, they too lacked the generalization phase of instruction.

Barber (1996) reported a case study of a 15-year old male with Asperger Syndrome in England. Although his intellectual capability was great, the absence of key social skills was a determent to his educational progress. The program to develop his social, communication and independence skills incorporated the techniques of modeling, coaching, and guided practice. Each skill was taught to mastery through task analysis, modeling, and guided practice. Based on the results from the case study Barber (1996) concluded that structured programs are needed to develop social skills, promote acceptable behavior, and prepare adolescents with autism for life in the adult world.

Based on this review of literature, several instructional procedures emerged as effective: direct instruction, modeling, guided practice, independent practice, teaching to mastery, and positive feedback. These procedures form the core of instructional methodology used in the SCORE Skills Strategy. Clearly, researchers need to conduct more studies that investigate the remediation of social deficits of high-functioning adolescents with autism. Specifically, studies are needed that incorporate research-based social skill training.
CHAPTER 3

METHODOLOGY

The purpose of this study was to investigate the efficacy of using the SCORE Skills Strategy to teach five social skills to high-functioning adolescents with autism spectrum disorder. The five social skills are designed to prepare subjects to work effectively in cooperative groups. This chapter is organized into six sections related to the methodology for this study: (1) research questions; (2) description of the subjects and setting; (3) description of the research instrumentation; (4) instructional program; (5) description of procedures; and (6) treatment of the data.

Research Questions

1. Given instruction in the SCORE Skills Strategy, do high-functioning adolescents with autism spectrum disorder (ASD) improve their skill performance of cooperative group skills?

2. Given instruction in the SCORE Skills Strategy, do high-functioning adolescents with ASD improve their written skill knowledge of cooperative group skills?

3. Given instruction in the SCORE Skills Strategy, do high-functioning adolescents with ASD improve their ability to discriminate which social skill to use in a given situation?
4. Do high-functioning adolescents with ASD change their opinions about group work after receiving instruction in the SCORE Skills Strategy?

5. What is the extent to which high-functioning adolescents with ASD are satisfied that their participation in the instruction helped them: (a) learn each of the five social skills, (b) get along better with other subjects, (c) handle difficult situations, and (d) use the SCORE skills outside of the group sessions?

6. Do parental ratings of the social competence of high-functioning adolescents with ASD change after implementation of the SCORE Skills Strategy?

7. To what extent are the parents satisfied that their adolescents' participation in the instruction: (a) benefited the adolescent, (b) helped the adolescent to get along better with other subjects, (c) enabled the adolescent to handle difficult situations, and (d) taught the adolescent to use the SCORE skills in home and community settings.

Description of the Subjects and Setting

Participant Pool

The December 2001 Nevada state child count for the category of autism identified 152 children between the ages of 12 and 20. Of these 152 children, 102 attended school in Clark County School District. They are served in a range of programs from specialized self-contained programs for children with autism to general education classes in their neighborhood school.
Subject Selection

The participants for this study were recruited through school and community announcements of the research study. Flyers about the study were distributed to local parent group organizations, posted on local disability organization web pages, and faxed to special education teachers in middle schools and high schools throughout the school district. The research announcements included a brief statement of screening criteria that would be used to select the subjects to be included in the project. The announcements also stated that interested parents should contact the researcher by email or phone. When parental contact occurred, further screening of criteria was done using the participant-screening questionnaire (see Appendix A). Parental questions were answered and a mailing was sent that briefly outlined the project giving the date of the introductory meeting and the subject information that was to be brought to the meeting.

Specifically, participation criteria included the following: (1) current educational eligibility of autism spectrum disorder; (2) age, 12-17 years old; (3) receptive and expressive language ability above 70 standard score, as measured within the previous 3 years; (4) currently attending a regular education classroom for at least one period a day; (5) deficit in social skills; and (6) parent agreement to transport their child to and from sessions twice a week for the 10-week project. If the number of subjects identified was greater than 12, participants would be identified first by gender, reflecting that approximately one out of every four children identified with autism is female; second by ethnicity that reflects the ethnic ratios of the local school district; and or third, by random selection.
**Subject Demographics**

Based on the previously described criteria, ten subjects were selected for the study. All subjects had the educational eligibility of autism spectrum disorder; and were considered high functioning, as indicated by intellectual capabilities. Additionally, all subjects had social skills deficits (e.g., few interactions with normally-achieving peers, frequent periods of isolation, limited spontaneous speech, and few initiations of conversations) based on parent report, multidisciplinary team report, and/or goals on their IEPs.

Table 3.1 displays demographic data for each subject. All ten subjects were male. Nine of the subjects were white and one was Asian. The ages of the subjects ranged from 12.3 to 17.2. The mean age for the subjects was 14.8 years. The subjects were in grades six through eleven, and the percentage of time per day they each spent in general education classes as identified on their IEPs ranged from 17% to 100%. Receptive and expressive language ability standard scores were above 75, and cognitive verbal standard scores ranged from 74 to 126.

**Setting**

The study took place in a community public agency building located in Northwest Las Vegas, which was available to the researcher at no cost. Two adjacent rooms were used: one for instructional purposes and one for assessment purposes. The instructional room had 3 tables with 4 chairs at each table. The tables were designated with 3 different colors. The assessment room had two chairs opposite each other for the subject and researcher. Off to the side was a third chair next to a video camera that the data collector used during role-play tests.
Table 3.1

Subject Demographics

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Ethn.</th>
<th>Age</th>
<th>Grade</th>
<th>% of Day in General Ed.</th>
<th>Verbal I.Q.</th>
<th>Performance I.Q.</th>
<th>Full Scale I.Q.</th>
<th>Expressive Language</th>
<th>Receptive Language</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1</td>
<td>W</td>
<td>14.6</td>
<td>8</td>
<td>66</td>
<td>102</td>
<td>100</td>
<td>101</td>
<td>105&lt;sup&gt;d&lt;/sup&gt;</td>
<td>104&lt;sup&gt;d&lt;/sup&gt;</td>
</tr>
<tr>
<td>S2</td>
<td>W</td>
<td>13.9</td>
<td>7</td>
<td>24</td>
<td>74</td>
<td>93</td>
<td>81</td>
<td>81&lt;sup&gt;a&lt;/sup&gt;</td>
<td>75&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>S3</td>
<td>W</td>
<td>12.3</td>
<td>6</td>
<td>66</td>
<td>126</td>
<td>95</td>
<td>112</td>
<td>115&lt;sup&gt;c&lt;/sup&gt;</td>
<td>106&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
<tr>
<td>S4</td>
<td>W</td>
<td>12.9</td>
<td>8</td>
<td>100</td>
<td>105</td>
<td>111</td>
<td>108</td>
<td>106&lt;sup&gt;a&lt;/sup&gt;</td>
<td>103&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
<tr>
<td>S5</td>
<td>Asian</td>
<td>13.4</td>
<td>8</td>
<td>100</td>
<td>112</td>
<td>136</td>
<td>132</td>
<td>98&lt;sup&gt;d&lt;/sup&gt;</td>
<td>82&lt;sup&gt;d&lt;/sup&gt;</td>
</tr>
<tr>
<td>S6</td>
<td>W</td>
<td>15.5</td>
<td>10</td>
<td>83</td>
<td>83</td>
<td>98</td>
<td>87</td>
<td>88&lt;sup&gt;a&lt;/sup&gt;</td>
<td>79&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
<tr>
<td>S7</td>
<td>W</td>
<td>15.2</td>
<td>8</td>
<td>17</td>
<td>108</td>
<td>102</td>
<td>106</td>
<td>119&lt;sup&gt;c&lt;/sup&gt;</td>
<td>106&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>S8</td>
<td>W</td>
<td>16.5</td>
<td>10</td>
<td>100</td>
<td>119</td>
<td>53</td>
<td>85</td>
<td>105&lt;sup&gt;d&lt;/sup&gt;</td>
<td>98&lt;sup&gt;d&lt;/sup&gt;</td>
</tr>
<tr>
<td>S9</td>
<td>W</td>
<td>16.8</td>
<td>10</td>
<td>17</td>
<td>107</td>
<td>110</td>
<td>107</td>
<td>108&lt;sup&gt;d&lt;/sup&gt;</td>
<td>110&lt;sup&gt;d&lt;/sup&gt;</td>
</tr>
<tr>
<td>S10</td>
<td>W</td>
<td>17.2</td>
<td>11</td>
<td>34</td>
<td>75</td>
<td>100</td>
<td>86</td>
<td>83&lt;sup&gt;e&lt;/sup&gt;</td>
<td>110&lt;sup&gt;e&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

Average age: 14.8 yrs.

List of Tests:

Cognitive:  Weschler Intelligence Scale for Children – 3<sup>rd</sup> edition
            I.Q. = Intelligence Quotient

Language:  "Expressive One-Word Picture Vocabulary Test
            "Peabody Picture Vocabulary Test-3<sup>rd</sup> edition
            "Receptive One-Word Picture Vocabulary Test
            "Comprehensive Assessment of Spoken Language
            "Oral Expression and Listening Comprehension Scales

Note. Subjects were assessed on a variety of language assessment instruments. Test scores may not be equivalent.
Description of the Research Instrumentation

Skill Performance

Behavioral role-play tests were used to assess each subject's skill level with regard to performing the five targeted social skills prior to and after the intervention (see Appendix B). Five parallel role-play situations were designed for each of the five skills. Two sets of the five role-play situations were used during prior research at the University of Kansas Center for Research on Learning (Vernon & Schumaker, 1993). Three additional sets of role-plays were adapted by the researcher from Jackson's (1998) social competence program. One situation for each skill was randomly selected from the pool of situations and the five situations chosen for a given test probe were randomly sequenced. All subjects received the same situations in the same order in a given test probe. For each role-play situation, the researcher read a description of a situation that required the use of one of the targeted skills to an individual subject in private. The subject was instructed to act or respond as he normally would in the situation. The researcher began the interaction with a predetermined statement and used two predetermined prompting statements, if needed, to encourage responses from the subject. All pre-intervention and post-intervention sessions were videotaped.

A checklist listing the components of each skill was used to record the subject's performance in the role-play situations (see Appendix B). Nonverbal and verbal components of the skill were listed on the checklist, and all of the steps were scored immediately following the role-play performance. Verbal statements were recorded verbatim on the checklist to facilitate later scoring by the research assistants. Each component of the skill was scored on the checklist using a “0”, “1”, or “2” based on the
quality of the subject's performance (Hazel, et al., 1981). For example, when
"Complimenting Others" a "pleasant" facial expression was to be used. The subject
received "2" points if he smiled or appeared sincerely interested. "1" point if he had a
neutral facial expression. and "0" points if he had an unpleasant facial expression (e.g.,
appears unhappy, annoyed, uninterested). The percentage of points earned on a given
skill performance for each subject was calculated by totaling the number of points earned
on all items on the checklist, dividing by the number of points available for the skill (two
times the number of skill components listed on the checklist), and multiplying by 100.

Skill Knowledge Test

A Skill Knowledge Test (Vernon & Schumaker, 1993) was used to assess the
subjects' knowledge social skills and behavioral components that are important in
cooperative group work (see Appendix C). Subjects were instructed to write the verbal
and nonverbal components for each skill on the lines provided and to complete their work
individually. Each item on the test was scored using a "2", "1", "0" scoring system,
identifying the written response as correct, an approximation, or incorrect. A percentage
score was calculated for each subject. All written tests were read aloud by the researcher
and each test had three examples that the group completed together to ensure
understanding of the task.

Situation Discrimination Test

The purpose of the Situation Discrimination Test was to determine if the subjects
were able to correctly discriminate which skill should be used in a given situation. The
written test (see Appendix C) was administered pre-intervention and post-intervention.
The test consisted of 20 narrative descriptions of specific situations and the subject
selected the name of the skill that should be used in that situation from the list of the five SCORE skills. The first three situations were used as examples to ensure the subjects understood how to complete the test. Each correct answer received one point (17 points were possible) and a percentage score was calculated for each subject.

*Subject Opinion Survey*

The Subject Opinion Survey (Vernon, Schumaker, & Descher, 1995) is a 17-question survey with a 3-point Likert-type scale that was given prior to and after training (see Appendix C). The questions on this survey were designed to measure subject perceptions related to working in small groups in the school setting. Scores of the pre-test were compared to the post-test to see if the social skills training changed their perceptions of small group work.

*Subject Satisfaction Questionnaire*

At the end of the ten weeks, the ten subjects completed the SCORE Skills Subject Satisfaction Questionnaire (Vernon & Schumaker, 1993), to measure their satisfaction with the instructional program (see Appendix C). Specifically, subjects evaluated whether their participation in the instruction helped them: (a) learn each of the five social skills, (b) get along better with other subjects, (c) handle difficult situations, and (d) use the SCORE skills outside of the group sessions. Subjects answered the questions using a 3-point Likert-type scale (yes – maybe – no). The mean rating for the class was calculated for each item on the questionnaire.
Social Skills Rating System (SSRS)

A parent of each participant completed the SSRS before and after the social skill instruction. The Social Skills Rating System (SSRS), (Gresham & Elliott, 1990), was used as an index of the change in the social skills of the subjects as viewed by their parents. The SSRS is a multi-rater norm-referenced assessment of child social behaviors. The SSRS components include teacher, parent, and subject behavior rating forms. Each questionnaire is designed to measure how often a child exhibits certain social skills. For this study, the SSRS parent form for Secondary level subjects was used. The questionnaire contains 52 questions addressing four subscales including cooperation, assertion, responsibility, and self-control. All social skills are rated for frequency and for importance. Appendix D outlines the specific scales and subscales. Standard scores and percentile ranks are determined based on parental responses.

Parent Satisfaction Questionnaire

At the end of the ten weeks, the parents of the ten subjects completed a questionnaire regarding their satisfaction with the instruction (see Appendix D). This instrument was adapted from the subject satisfaction questionnaire. Specifically, they were asked if: (a) the training benefited their adolescent, (b) their adolescent was able to get along better with other subjects, (c) their adolescent understood the need for improvement, and (d) their adolescent could use the SCORE skills outside of group sessions. Parents answered the questions using a 7-point Likert-type scale (“7” – “Extremely Satisfied”; “1” – “Extremely Dissatisfied”). The mean rating for the parent responses was calculated for each item on the questionnaire.
Measurement Reliability

Reliability of the scoring systems was assessed by having two observers independently score 20% of the pre-intervention and post-intervention role-play performances and written Skill Knowledge Tests. An agreement was tallied when both observers recorded the same score for a given answer. The percentage of agreement was calculated by dividing the number of agreements by the number of agreements plus disagreements and multiplying by 100. Interscorer reliability for the Situation Discrimination Test, Subject Opinion Test, and SSRS scores was conducted to ensure correct scoring. The primary researcher and a research assistant independently scored all of the pretests and posttests. Interval agreement was calculated using the point-by-point method (Tawny & Gast, 1984).

SCORE assessment instruments have been developed and field-tested over the past ten years in several unpublished SCORE Skills studies conducted by researchers affiliated with the University of Kansas Center for Research on Learning. Samples of these instruments were mailed to the researcher and used in the development of the current instruments.

The Social Skills Rating System (SSRS). (Gresham & Elliott, 1990), is reported to have satisfactory reliability. Three methods were used to estimate the reliability or the consistency of the test scores obtained from repeated testing of a subject with the same or a similar test. Teacher and parent forms for the preschool, elementary, and secondary levels and the subject form for the elementary and secondary levels were included in the calculation of reliability. Across all forms and levels, "the median coefficient alpha reliability for the Social Skills Scale was .90 and for the Problem Behaviors Scale was
The internal consistency estimates for the teacher, parent, and subject forms ranged from .83 to .94 for the Social Skills Scale and .73 to .88 for Problem Behaviors Scale (Gresham & Elliott, 1990, p. 110). The test-retest reliability of the SSRS was measured by having samples of parents, teachers, and subjects from the elementary standardization sample rate the same subjects four weeks after their original standardization ratings (Gresham & Elliott, 1990). The test-retest reliability correlations for the parent ratings were .87 for total scale of Social Skills and .65 for the total scale of Problem Behaviors (Gresham & Elliott, 1990, p. 111). The results suggest high test-retest reliability for the Social Skills and Problem Behaviors Scales for the parent form. Studies that were conducted to evaluate the validity of the SSRS provide strong evidence in support of the construct validity of the SSRS (Gresham & Elliott, 1990). The parent version of the behavior rating form specifically designed for secondary subjects was used in this study.

Instructional Program

The SCORE Skills Strategy includes instruction in five skills that subjects need to cooperate successfully with others. Each skill consists of a series of steps that subjects can use to effectively participate in and cope with the demands of a teaming situation. Each skill also has three body language expectations: voice sound, facial expression, and eye contact. The five social skills are: Share Ideas, Compliment Others, Offer Help or Encouragement, Recommend Changes Nicely, and Exercise self-control. The acronym "SCORE" is comprised of the first letters of the names of the skills. See Table 3.2 for a list of the steps and body language expectations associated with each skill in the SCORE Strategy.
Table 3.2

SCORE Skills, Strategy Steps, and Body Language Expectations

<table>
<thead>
<tr>
<th>Social Skills</th>
<th>Step(s)</th>
<th>Body Language Expectations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Share Ideas</td>
<td>Tell your Idea</td>
<td>Sound: pleasant</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Expression: pleasant</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Eye contact</td>
</tr>
<tr>
<td>Compliment Others</td>
<td>Say something nice</td>
<td>Sound: pleasant</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Expression: pleasant</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Eye contact</td>
</tr>
<tr>
<td>Offer Help or</td>
<td>Ask if the person wants help.</td>
<td>Sound: pleasant</td>
</tr>
<tr>
<td>Encouragement</td>
<td>Give help.</td>
<td>Expression: pleasant</td>
</tr>
<tr>
<td></td>
<td>Offer encouragement.</td>
<td>Eye contact</td>
</tr>
<tr>
<td>Recommend Changes</td>
<td>Say what was good.</td>
<td>Sound: pleasant</td>
</tr>
<tr>
<td>Nicely</td>
<td>Explain what could be changed.</td>
<td>Expression: pleasant</td>
</tr>
<tr>
<td></td>
<td>Make a suggestion.</td>
<td>Eye contact</td>
</tr>
<tr>
<td>Exercise Self-</td>
<td>Count to 5.</td>
<td>Sound: pleasant</td>
</tr>
<tr>
<td>Control</td>
<td>Ask a question.</td>
<td>Expression: pleasant</td>
</tr>
<tr>
<td></td>
<td>Say “thanks” or “okay.”</td>
<td>Eye contact</td>
</tr>
</tbody>
</table>

Description of Procedures

At the beginning of the study, a group meeting of the parents and adolescents was held to give an overview of the studies' procedures, explain the importance of regular attendance of the subjects, complete permission forms, collect subject information, and answer any questions the parents and subjects had. The ten-week session schedule describing the activities and assessments that occurred each session is outlined in Appendix A.
Phase I: Training of Teacher and Research Assistants

The teacher in this study received training in the University of Kansas Strategy Instruction Model (SIM) while enrolled as a doctoral subject at the University of Nevada Las Vegas. The SCORE Strategy is one of the strategies in the Cooperative Strategies Series of SIM. The teacher in this study also attended specialized training at the University of Kansas to become a certified trainer of the SIM. Subsequently, she has trained approximately 60 pre-service teachers to implement various components of the model. The researcher also has received training in SIM. The teacher, researcher, and research assistants have all received training in applied behavioral strategies for working with children and adolescents with autism. They have worked with individuals with autism for the past three years.

For the purposes of this study, the teacher and two research assistants were trained using the SCORE Skills Videotape Package, which is a professional development videotape and guide (Vernon, Schumaker, & Deshler, 2001). The suggested use of the SCORE Skills Videotape includes three steps: (1) Read the instructor’s manual before you watch the videotape, (2) Watch the videotape one time without stopping, and (3) Watch the videotape another time and pause after major segments to think about how you might apply the procedures or techniques with your class. This training was done during two 1-hour sessions, one week prior to the beginning of the study. Additionally, the two research assistants spent a 2-hour practice session scoring demonstration videos of subject role-plays until 90% agreement was reached consistently between the assistants and researcher.
Phase II: Baseline.

Baseline consisted of three 60-minute sessions. These three sessions included pre-intervention assessments and individual and/or group participation in table games. When the subjects arrived, they drew a colored piece of paper from a box that was used to assign them randomly to a specific table for two sessions. This random assignment occurred at the beginning of each week throughout the ten weeks. During the sessions, the subjects were divided into 3 groups of 2, 4, and 4 subjects each to facilitate working in pairs. The subjects were told they were selected to participate in a social skills research study. Furthermore, they were told that the first three sessions would be used to become acquainted with each other, and to complete several pre-intervention assessments. In addition to completing pre-assessments, a primary goal of the four baseline sessions was to help subjects feel more comfortable in the group since they would be spending 10 weeks together. The rules of the sessions (see Table 3.3) were explained and the subjects were asked if they had any questions. Instructions were given to stay in their group, be polite to others, and participate with the designated activities. No prompts were given during baseline, except to ask a subject to return if he left the group. The researcher, teacher, and one assistant were present at all pre-intervention sessions to assist subjects if questions arose or inappropriate behaviors occurred.
Table 3.3

Class Rules

1. Arrive on time
2. Stay in your group
3. Be polite
4. Raise your hand to ask questions
5. Play only with games given to your table
6. Clean up your table before we leave

The parents and adolescents attended session one together. It began with introductions of everyone, an overview of the project and behavioral expectations during sessions, completion of permission forms, collection of subject data, answering of questions, and some free time for participants to become acquainted.

Session two for the subjects began with introductions of everyone, a review of the overview of the project and behavioral expectations during sessions, and the individual written Skill Knowledge Test. The subjects were taught how to role-play and practiced several novel situations with the teacher. The remainder of the session was spent playing table games (e.g., checkers, yahtzee, shuttles, and uno). From an assortment of pre-selected items, each table group selected several items that they were interested in. Items included puzzles that a subject could play individually and games that required participation of 2 or more players. The parents also attended session two and sat at tables in the second room to complete pre-intervention assessments. They completed the SSRS.
and all additional information forms. The researcher answered any further questions, and confirmed with each parent that all subject information had been received.

Session three began with a review of everyone's name and behavioral expectations followed by the individual written Subject Opinion Test. All subjects also participated in the videotaped individual role-play sessions covering the five SCORE skills. They rotated individually into the second classroom for a 5-7 minute session. The subjects responded to role-play situations presented by the researcher. A research assistant scored the responses. During this time, the remainder of the group participated in table games that required participation of 2 or more players. From the assortment of pre-selected games, each table group chose several to play. Session four began with a review of everyone's name and behavioral expectations followed by an introduction lesson of SCORE Skills. The subjects completed an individual written Situation Discrimination Test. The remainder of the session the groups participated in table games that required participation of 2 or more players.

Phase III: Social Skills Instruction

Instruction consisted of thirteen 60-minute sessions held two times per week for six and a half weeks (see Appendix A). The SCORE Strategy from the Cooperative Strategies Series developed at University of Kansas Center for Research on Learning was used throughout this instructional phase. This program was selected because the instructional sequence is systematic and the lesson content includes clear, concise steps for each social skill. Additionally, the scripted lessons provide instruction on when, where, and how to use the social skills. The program has been validated with subjects.
who have not learned the prerequisite skills of cooperation and teamwork, which are necessary to become effective members of a team.

Lesson format. Each session follows a predictable format based upon the methodology outlined in the SCORE Skills Strategy Instructional Manual (Vernon, Schumaker, & Deshler, 1996). Each lesson consists of eight instructional procedures:

- **Advance organizer** – This procedure includes a review of skills previously learned, identification of the daily objective, and a clear explanation of what subjects are expected to learn during the lesson.

- **Introduction of the skill** – A brief introduction includes naming the skill, defining the important words associated with the skill, and providing a rationale for why the skill is important.

- **Discuss the skill steps** – The steps of the targeted skill are clearly defined and explained to the subjects. The importance of each step is emphasized.

- **Model the skill** – This procedure involves providing a precise, clear-cut model of how the skill should be performed and showing how easy it is to perform the skill.

- **Conduct verbal practice** – Subjects verbally rehearse the skill steps so that they can name the steps at an automatic level. Mastery of the skill steps is important if the subjects are to move through the next instructional procedure successfully.

- **Role-play practice** – Subjects engage in role-playing activities with a partner. During role-playing, they have an opportunity to try out the social skill and get a feel for how all the steps of the skill go together.
- **Post-organizer** – This instructional procedure involves a review of the skills just learned, provides subjects with assignments to demonstrate their knowledge of these skills, and identifies the skill to be learned in the next lesson.

- **Application Activity** – The purpose of this procedure is to give the subjects practice in applying the SCORE Skills in "real-life" situations, and reinforce the expectation that the SCORE Skills should be used during every group activity.

**Lesson Sequence.** There are seven lessons in the SCORE Strategy. The first lesson involves an introduction to the concept of social skills; the body language expectations associated with social skills, and a general overview of the SCORE Skills. Lessons two through six consist of instruction on the five SCORE Skills (i.e., one skill per lesson), and lesson seven contains instructional procedures for using all the SCORE Skills together, as well as suggestions for how to generalize and maintain the skills over time. The ten subjects were selected randomly to participate in probes associated with a given skill for the multi-probe design. Thus, two subjects participated in individual role-plays for each skill. At any given session, three SCORE Skills would be assessed. These role-play sessions were conducted on the second session of each skill and were videotaped. A research assistant scored the role-play sessions when they occurred. The second research assistant scored the videos the following week. Scores were compared for reliability.
Phase IV: Post-Assessments

In the final 2 weeks, four 60-minute sessions were held. At the beginning of each of the first three sessions (see Appendix A), all of the subjects participated in individual written post-intervention assessments: (1) Skill Knowledge Test, (2) Situation Discrimination Test, (3) Subject Opinion Test, and (4) Subject Satisfaction Test. After subjects completed their written assessments, they were given table games to play for the remainder of the session. During the table games, all subjects were pulled from the group one at a time to participate in videotaped role-play sessions covering the five SCORE skills. Four subjects participated in these role-play assessments during session two and six subjects participated during session three. Each role-play session took place in the second classroom for 5-7 minutes. The researcher presented the role-play situations and asked the subject to respond. A research assistant scored the responses.

At the beginning of the three post-assessment sessions, the instructor briefly restated the social skills learned and the subjects were encouraged to practice their new skills. The final evening there was a party that the subjects had planned from their groups, each group deciding what they were responsible to bring. The subjects invited their parents to attend the party.

Treatment of the Data

Skill Performance

Given instruction in the SCORE Skills Strategy, do high-functioning adolescents with autism spectrum disorder (ASD) improve their skill performance of cooperative group skills?
A multiple-baseline across-skills design was used to assess the subjects' entry-level and acquisition of the five skills. All subjects participated in individual videotaped role-play sessions covering the five skills at the beginning and end of the study. Mean performance scores were compared for each of the five skills.

A multiple-probe design was used and replicated once simultaneously throughout the thirteen training sessions to measure performance of a given skill. The ten subjects were randomly selected by drawing their name from a basket to participate in probes associated with a given skill. Thus, Subject 1 performed the Share Ideas Skill, Subject 2 performed the Compliment Others Skill, Subject 3 performed the Offer Help or Encouragement Skill, Subject 4 performed the Recommend Changes Nicely Skill, and Subject 5 performed the Exercise Self-Control Skill. This design was replicated for Subjects 6, 7, 8, 9, and 10 at the same time the probes for Subjects 1, 2, 3, 4, and 5 took place. A minimum of two data points (i.e., scores on two role-play performances) was gathered per subject per skill before and after training of that skill. After each skill was trained, a role-play test was conducted immediately following training on the second day of training (Mastery Probe).

**Skill Knowledge Test**

Given instruction in the SCORE Skills Strategy, do high-functioning adolescents with ASD improve their written skill knowledge of cooperative group skills?

Pre-intervention and post-intervention mean scores were compared by t-tests for subjects on the five SCORE skills. Subjects were instructed to write the verbal and nonverbal components for each social skill that is important in cooperative group work.
**Situation Discrimination Test**

Given instruction in the SCORE Skills Strategy, do high-functioning adolescents with ASD improve their ability to discriminate which social skill to use in a given situation?

A mean comparison between pre-intervention and post-intervention was completed on this written test. The test consisted of 20 narrative descriptions of specific situations and the subject selected the name of the skill that should be used in that situation from the list of the five SCORE skills. Each correct answer received one point and a percentage score was calculated for each subject.

**Subject Opinion Test**

Do high-functioning adolescents with ASD change their opinions about group work after receiving instruction in the SCORE Skills Strategy?

Pre-intervention and post-intervention mean scores on the Subject Opinion Test were compared to see if the social skills training changed the subjects’ level of comfort with group work.

**Subject Satisfaction Test**

What is the extent to which high-functioning adolescents with ASD are satisfied that their participation in the instruction helped them: (a) learn each of the five social skills, (b) get along better with other subjects, (c) handle difficult situations, and (d) use the SCORE skills outside of the group sessions?

Subject satisfaction regarding how their participation in the instruction helped them was reported. The mean rating for the class was calculated for each item on the questionnaire.
Social Skills Rating System

Do parental ratings of the social competence of high-functioning adolescents with ASD change after implementation of the SCORE Skills Strategy?

Pre-intervention and post-intervention mean scores from the Social Skills Rating System completed by the parents was compared to determine if the parental ratings of social competence change.

Parent Satisfaction Test

To what extent are the parents satisfied that their adolescents' participation in the instruction: (a) benefited the adolescent, (b) helped the adolescent to get along better with other subjects, (c) enabled the adolescent to handle difficult situations, and (d) taught the adolescent to use the SCORE skills in home and community settings.

Parent satisfaction of the training program was reported. The mean rating for the parents was calculated for each item on the questionnaire.
CHAPTER 4

DATA ANALYSIS

The purpose of this study was to investigate the efficacy of using the SCORE Skills Strategy to teach high-functioning adolescents with autism spectrum disorder five social skills that are needed to work in cooperative groups. Data were collected to answer seven research questions related to subjects' abilities to learn and use the SCORE Skills, subjects' perceptions about group work, subjects' perceptions about the SCORE Skills Strategy, parents' perceptions about their adolescents' social competence, and parents' perceptions of the SCORE Skills Strategy. Interscorer reliability for the various measures in this study is reported in the last section of chapter 4. The first seven sections of the chapter are organized by the research questions. Each section provides the results of statistical analysis of data obtained in this study.

Research Questions

Skill Performance

Given instruction in the SCORE Skills Strategy, do high-functioning adolescents with autism spectrum disorder (ASD) improve their skill performance of cooperative group skills?

A multiple-baseline across-skills design was used to assess the subjects' entry-level and acquisition of the five skills. All subjects participated in individual videotaped
role-play sessions covering the five skills at the beginning and end of the study. Mean performance scores were compared for each of the five skills.

A multiple-probe design was used and replicated once simultaneously throughout the thirteen training sessions to measure performance of a given skill. The ten subjects were randomly selected by drawing their name from a basket to participate in probes associated with a given skill. Thus, Subject 1 performed the Share Ideas Skill, Subject 2 performed the Compliment Others Skill, Subject 3 performed the Offer Help or Encouragement Skill, Subject 4 performed the Recommend Changes Nicely Skill, and Subject 5 performed the Exercise Self-Control Skill. This design was replicated for Subjects 6, 7, 8, 9, and 10 at the same time the probes for Subjects 1, 2, 3, 4, and 5 took place. One to three data points (i.e., scores on individual role-play performances) were gathered per subject per skill before training of that skill. After each skill was trained, a role-play test was conducted immediately following training on the second day of training (Mastery Probe) and a minimum of two additional probes were gathered per subject.

Group mean scores for the subjects' pre- and post-intervention performance on each of the five skills are shown in Table 4.1. The results indicated that the difference between pre-treatment ($M = 5.7$) and post-treatment ($M = 6.8$) on the “Share ideas” skill was not statistically significant, $t(9) = 2.181, p = .057$. The results between pre- and post-intervention on the remaining four skills were statistically significant. Pre-intervention ($M = 5.7$) and post-intervention ($M = 7.5$) on the “Compliments others” skill was statistically significant, $t(9) = 4.070, p = .003$; “Offer help or encouragement” skill ($M = 6.2$) and ($M = 8.8$), $t(9) = 5.750, p = .000$; “Recommend changes nicely” skill ($M = 5.5$)
and \( M = 7.8 \), \( t(9) = 4.867, p = .001 \); and "Exercise self-control" skill \( M = 4.5 \) and \( M = 6.9 \), \( t(9) = 7.060, p = .000 \).

Table 4.1

Group means of paired samples \( t \)-tests for pre- and post-intervention of the five SCORE Skills.

<table>
<thead>
<tr>
<th>Skill</th>
<th>Pre-treatment ( M )</th>
<th>Post-treatment ( M )</th>
<th>( t )</th>
<th>( p )</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>5.7</td>
<td>6.8</td>
<td>2.181</td>
<td>.057</td>
</tr>
<tr>
<td>C</td>
<td>5.7</td>
<td>7.5</td>
<td>4.070</td>
<td>.003*</td>
</tr>
<tr>
<td>O</td>
<td>6.2</td>
<td>8.8</td>
<td>5.750</td>
<td>.000*</td>
</tr>
<tr>
<td>R</td>
<td>5.5</td>
<td>7.8</td>
<td>4.867</td>
<td>.001*</td>
</tr>
<tr>
<td>E</td>
<td>4.5</td>
<td>6.9</td>
<td>7.060</td>
<td>.000*</td>
</tr>
</tbody>
</table>

\* \( p < .05 \)

The Multiple Probe Design of the pre- and post-intervention percentage of skill components performed correctly by individual subjects across the five social skills is shown on Table 4.2. Individual subject results indicate that 6 (60%) of the subjects made a 20% or more gain between pre- and post-intervention scores. Their gains ranged from 20% to 50%. Gains from the other 4 subjects were 10%, 10%, 16%, and 18%. The data results of the Multiple Probe Design are plotted in Figures 4.1 and 4.2. In each figure,
each graph displays the performance scores of one of the five social skills by a targeted subject. The plotted data show the percentage of skill components performed by the subjects in pre-intervention probes (dots), mastery probes, and post-intervention probes (triangles). In all cases, baseline performance was stable and the subjects improved their performance of the skills after training.

Table 4.2
Percentage of skill components performed correctly by individual subjects across the five social skills.

<table>
<thead>
<tr>
<th>Skill</th>
<th>Subject</th>
<th>Pre-Intervention</th>
<th>Post-Intervention</th>
<th>Gain</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>s5</td>
<td>75%</td>
<td>85%</td>
<td>10%</td>
</tr>
<tr>
<td>S</td>
<td>s7</td>
<td>50%</td>
<td>100%</td>
<td>50%</td>
</tr>
<tr>
<td>C</td>
<td>s4</td>
<td>50%</td>
<td>100%</td>
<td>50%</td>
</tr>
<tr>
<td>C</td>
<td>s6</td>
<td>34%</td>
<td>75%</td>
<td>41%</td>
</tr>
<tr>
<td>O</td>
<td>s1</td>
<td>70%</td>
<td>100%</td>
<td>30%</td>
</tr>
<tr>
<td>O</td>
<td>s8</td>
<td>80%</td>
<td>100%</td>
<td>20%</td>
</tr>
<tr>
<td>R</td>
<td>s2</td>
<td>67%</td>
<td>85%</td>
<td>18%</td>
</tr>
<tr>
<td>R</td>
<td>s9</td>
<td>34%</td>
<td>50%</td>
<td>16%</td>
</tr>
<tr>
<td>E</td>
<td>s3</td>
<td>50%</td>
<td>60%</td>
<td>10%</td>
</tr>
<tr>
<td>E</td>
<td>s10</td>
<td>40%</td>
<td>80%</td>
<td>40%</td>
</tr>
</tbody>
</table>
Figure 4.1

Percentage of skill components performed correctly by targeted subjects 1, 2, 3, 4, and 5 across the five social skills

![Graph showing the percentage of skill components performed correctly by targeted subjects across five social skills. The graph includes baseline and post-intervention data for each skill component: Share Ideas, Compliment Others, Offer Help or Encouragement, Recommend Changes Nicely, and Exercise Self-Control. The x-axis represents test probes, and the y-axis represents the percentage correct.](image-url)
Figure 4.2

Percentage of skill components performed correctly by targeted subjects 6, 7, 8, 9, and 10 across the five social skills

Baseline

Post-intervention

Share Ideas (50)

Compliment Others (50)

Other Help or Encouragement (50)

Recommend Changes Nicely (50)

Exercise Self-Control (50)

Test Probes

Key
- Pre-Intervention Probe
- Post-Intervention Probe

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**Skill Knowledge**

Given instruction in the SCORE Skills Strategy, do high-functioning adolescents with ASD improve their written skill knowledge of cooperative group skills?

Subjects’ pre- and post-intervention written knowledge of cooperative group skills were measured using a 10-point scale. Subjects were instructed to write the verbal and nonverbal components for the five social skills that are important in cooperative group work. Pre-intervention and post-intervention mean scores were compared by *t*-tests for subjects on the five SCORE skills. The results indicated that the difference between pre-intervention (*M* = 2.4) and post-intervention (*M* = 8.2) on the skill knowledge tests was statistically significant. *t*(9) = 5.074, *p* = 0.001.

**Situation Discrimination**

Given instruction in the SCORE Skills Strategy, do high-functioning adolescents with ASD improve their ability to discriminate which social skill to use in a given situation?

Subjects’ ability to discriminate which social skill to use in a given situation was measured by a test that consisted of 17 situations described and the subject selected the name of the skill that should be used in that situation from the list of the five SCORE skills. Each correct answer received one point and a percentage score was calculated for each subject. A mean comparison between pre-intervention and post-intervention was completed on this written test.

The post-intervention mean score earned by the subjects when discriminating the correct skill to be used in the situations listed on the test was 91%. Scores ranged from 71% to 100%. The difference between pre-intervention (*M* = 11.4) and post-intervention
results on the skill knowledge tests was statistically significant, \( t(9) = 3.721, p=0.005 \). Out of the 10 subjects, 8 subjects raised their scores and the remaining 2 subjects retained the same scores at 77% and 94%.

**Student Opinion**

Do high-functioning adolescents with ASD change their opinions about group work after receiving instruction in the SCORE Skills Strategy?

Pre-intervention and post-intervention mean scores on the Student Opinion Test were compared to see if the social skills training changed the subjects' opinion about working with peers in small groups. There were 17 questions with a possible total score of 34.

The results indicated no statistical significant difference between pre-intervention \( (M = 21.6) \) and post-intervention \( (M = 23) \) on the Student Opinion Test, \( t(9) = .774, p=.459 \). The subjects generally did not change their opinion about working in a small group with classmates at school. The mean score for pre- and post-intervention was 64% and 68%, respectively. Inspection of the data for two individual questions specifically about working in a small group rather than alone, indicates a change in opinion in a positive direction of 25%.

**Student Satisfaction**

What is the extent to which high-functioning adolescents with ASD are satisfied that their participation in the instruction helped them: (a) learn each of the five social skills, (b) get along better with other subjects, (c) handle difficult situations, and (d) use the SCORE skills outside of the group sessions?
Student satisfaction was measured on a 14-question rating scale. The questions were answered on a 3-point scale of “Not Satisfied” to “Very Satisfied.” The mean rating for the class was calculated for each item on the questionnaire. Questions 5-9 asked how satisfied the subject was with learning each of the five social skills; 54% (27/50) of the subjects’ responses on these five questions indicated they were “Very Satisfied with learning the five social skills.” When the subjects were asked to rate their ability to get along better with others, 60% (6/10) indicated they were “Very Satisfied,” 30% (3/10) indicated they were “Satisfied,” and 10% (1/10) indicated “Not Satisfied.” With regard to handling difficult situations 50% (5/10) of the subjects indicated they were “Very Satisfied.” When asked how satisfied they were with using the SCORE skills outside of the group sessions, only 40% (4/10) of the subjects stated that they were “Very Satisfied.”

When asked if other adolescent students could benefit from learning the SCORE skills, 70% (7/10) of the subjects answered yes. The overall mean rating for the Student Satisfaction Questionnaire was 70% (7/10) “Very Satisfied,” and 30% (3/10) “Satisfied.”

When asked what they liked the most about the SCORE Skills Program, comments included: “I liked the Share Ideas,” “That you can be nice to other people, and that you can make the world nicer!” “Game times, videos we role-played.” Learned to make new friends with others of the same disability.” “Hanging out with friends.” and “I like the teachers, they’re all really nice.”

Social Skills Rating System

Do parental ratings of the social competence of high-functioning adolescents with ASD change after implementation of the SCORE Skills Strategy?
Pre-intervention and post-intervention mean scores from the Social Skills Rating System completed by the parents was compared to determine if the parental ratings of social competence changed. The results on the Social Skills Rating System indicated that the difference between pre-intervention ($M = 34.6$) and post-intervention ($M = 37.3$) for social skills was not statistically significant, $t(9) = 1.287, p = .230$. The difference between pre-intervention ($M = 15.1$) and post-intervention ($M = 13.5$) for problem behaviors was not statistically significant, $t(9) = 1.170, p = .272$.

Further examination of the subscales for social skills indicated that the subscale for "Assertion" had the greatest difference between pre- and post-intervention, although it was not statistically significant, $t(9) = 1.406, p = .191$. Further examination of the individual questions resulted in finding a statistical significance in question number 21, "Acknowledges praise from peers" with pre-intervention ($M = .7$) and post-intervention ($M = 1.3$), $t(9) = 3.674, p = .005$.

Examination of the problem behavior subscales indicated a significant change in externalizing behavior compared to internalizing behavior. Further examination of the questions under the externalizing behavior subscale indicated a statistical significance in question number 42, "Fights with others" with pre-intervention ($M = 1.4$) and post-intervention ($M = .6$), $t(9) = 4.0, p = .003$.

Although the social skill and problem behavior scales were not statistically significant, there was a reported increase of social skills and a decrease in behavior problems.
Parent Satisfaction

To what extent are the parents satisfied that their adolescents' participation in the instruction: (a) benefited the adolescent, (b) helped the adolescent to get along better with other subjects, (c) enabled the adolescent to handle difficult situations, and (d) taught the adolescent to use the SCORE skills in home and community settings.

A questionnaire measured the parents' satisfaction of their adolescents' participation in the instruction. Twelve questions were rated on a 7-point scale to indicate how satisfied the parents were with the social skill training. The mean score was calculated for each item on the questionnaire. Qualitative results to several additional questions were summarized.

In general, the parents were positive about the SCORE Skills Strategy. Their overall mean ratings (on a 7-point scale) indicated that they were satisfied that the SCORE Skills program benefited their adolescent (\( M = 5.4 \)), helped the adolescent to get along better with other subjects (\( M = 5.5 \)), enabled the adolescent to handle difficult situations (\( M = 5.4 \)), and taught the adolescent to use the SCORE skills in home and community settings (\( M = 5.1 \)).

They were generally satisfied that learning the SCORE Skills was fun and interesting for their adolescent (\( M = 5.9 \)), that their adolescent actively participated in learning about the SCORE Skills (\( M = 6.3 \)), and their adolescent understood what he needed to learn about the SCORE Skills (\( M = 5.5 \)). They were neither satisfied nor dissatisfied that their adolescent knew what he was doing well and what he needed to improve when performing the SCORE Skills (\( M = 4.7 \)). Of the five SCORE Skills, the
parents rated their adolescents the lowest in knowing and able to use the “Exercise Self-Control Skill” ($M = 4.5$).

The parents were asked if they thought other adolescent subjects could benefit from learning the SCORE skills. 100% of the parents responded yes. Comments about what the parents liked most about the SCORE Skills Program included: “One step at a time, it’s concrete;” “His ability to actively interact with other teenagers, he enjoyed coming to class;” “I liked that he had an opportunity to meet other children with like disability, he is less argumentative when I redirect him... and is generally more cooperative at home;” and “His increased ability to work toward compromise with his brother and sisters – this program seems to have helped.” There were several comments about what the parents liked least about the program. “I hated driving across town during rush hour traffic;” and “Not willing to review at home.” Additional comments reflected the need for an ongoing training over a longer period of time.

**Interscorer Reliability**

Reliability of the scoring systems was assessed by having the two research assistants independently score 20% of the pre- and post-intervention role-play performances. Each subject was assessed on two skills, one during pre-intervention and one during post-intervention. An agreement was tallied when both observers recorded the same score (“0,” “1,” or “2”) for a given skill step. The percentage of agreement was calculated by dividing the number of agreements by the number of agreements plus disagreements and multiplying by 100. On the role-play tests, there were 233 agreements out of 256 opportunities (91% agreement). The Skill Knowledge Tests were
independently assessed by the two research assistants; there were 96 agreements out of 100 opportunities for agreement (96% agreement).

Interscorer reliability for the Situation Discrimination Test, Student Opinion Test, Student Satisfaction, SSRS, and Parent Satisfaction scores was conducted to ensure correct scoring. The primary researcher and a research assistant independently scored all of the pretests and posttests. Interval agreement (i.e., Agreements – (Agreements – Disagreements) x 100 = Percent of Agreement) was calculated using the point-by-point method (Tawny & Gast, 1984). Interscorer reliability was 100%. See Table 4.3 for a summary of all reliability measures.

Table 4.3
Interscorer Reliability

<table>
<thead>
<tr>
<th>Measure</th>
<th>Interscorer Reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Role- Plays</td>
<td>91%</td>
</tr>
<tr>
<td>Skill Knowledge</td>
<td>96%</td>
</tr>
<tr>
<td>Situation Discrimination</td>
<td>100%</td>
</tr>
<tr>
<td>Student Opinion</td>
<td>100%</td>
</tr>
<tr>
<td>Student Satisfaction</td>
<td>100%</td>
</tr>
<tr>
<td>Social Skills Rating System (SSRS)</td>
<td>100%</td>
</tr>
<tr>
<td>Parent Satisfaction</td>
<td>100%</td>
</tr>
</tbody>
</table>
CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

The purpose of this study was to investigate the efficacy of using the SCORE Skills Strategy to teach high-functioning adolescents with autism spectrum disorder five social skills that are needed to work in cooperative groups. In this chapter, findings related to the seven research questions and subject and parent perceptions are discussed, conclusions are stated, and recommendations for future research are provided.

Discussion

The seven research questions that were answered in this study are presented below. Following each question is a summary of the results and related discussion.

Skill Performance

Given instruction in the SCORE Skills Strategy, do high-functioning adolescents with autism spectrum disorder (ASD) improve their skill performance of cooperative group skills?

Group mean scores for the subjects' pre- and post-intervention performance on four of the five skills, “Compliments others,” “Offer help or encouragement,” “Recommend changes nicely,” and “Exercise self-control” were statistically significant. The “Share ideas” skill was not statistically significant, although the group mean score at
$p=.057$, was near the significant level. Individual subject results indicate that all
subjectseither maintained or raised their skill performance. In all cases of the multiple
probe design, baseline performance was stable and the subjects improved their
performance of the skills after training. Therefore, subjects improved their skill
performance of cooperative group skills.

The "Share Ideas" skill was the first skill taught in the series. It is a relatively
easy skill to understand and model. The subjects' verbal abilities fell within the range of
average to above average ability. Thus, it is not particularly surprising that the subjects
scored relatively high on the pre- and post-intervention role-play for the "Share Ideas"
skill. Analysis of the scoring for the individual subjects indicates that although the
subjects were generally able to tell their idea, they had difficulty maintaining eye contact
and often their expression was neutral rather than pleasant; all necessary components of
the skill.

The analysis of the data relative to the use of role-playing indicates that this is a
viable instructional methodology. This finding concurs with pervious research that also
supports the use of role-playing as an effective instructional procedure for adolescents
with autism to learn social skills (McGee, Krantz, & McClannahan, 1984; Williams,
1989; Koegel & Frey, 1993; Ozonoff & Miller, 1995; and Ben-Tall, 1998).

**Skill Knowledge**

Given instruction in the SCORE Skills Strategy, do high-functioning adolescents
with ASD improve their written skill knowledge of cooperative group skills?

Subjects were instructed to write the verbal and nonverbal components for the
give social skills that are important in cooperative group work. The results indicated
that the difference between pre-intervention and post-intervention on the skill knowledge
tests was statistically significant.

Before the intervention phase, the subjects had a difficult time writing possible
social skills that are important in cooperative group work. A common answer was
“listening” which may be attributed to instructional practices in the school setting. The
subjects had difficulty writing the nonverbal component or description of the skills.
Although they could list one or more skills they could not describe or define them. The
post-intervention assessment demonstrated that some of the subjects’ had the ability to
memorize and could write verbatim the five skills they had learned. Two subjects were
unable to remember all of the skills, only writing down the last two skills they had
learned. It is important to note that at the beginning of each session the teacher had
quickly reviewed all the previous skills. Clearly, some subjects would have benefited
from more extensive reviews and or additional practice with each skill.

Situation Discrimination

Given instruction in the SCORE Skills Strategy, do high-functioning adolescents
with ASD improve their ability to discriminate which social skill to use in a given
situation?

Subjects’ ability to discriminate which social skill to use in a given situation was
measured by the subject selecting the appropriate SCORE skill that should be used in a
specific situation. The difference between pre- and post-intervention results on the skill
knowledge tests was statistically significant. Out of the 10 subjects, 8 subjects raised
their scores and the remaining 2 subjects retained the same scores at 77% and 94%.
On this written test the five SCORE skills were listed at the top of each page. The subjects were required to choose which skill to use and write the letter of that skill in the blank. When provided with choices to complete the questions, the subjects demonstrated a higher level of social skill knowledge. A part of mastery is being able to choose the appropriate skill. Having a repertoire of skills but not being able to choose the appropriate skill to use in a given situation will place the adolescent at high risk for social rejection.

Student Opinion

Do high-functioning adolescents with ASD change their opinions about group work after receiving instruction in the SCORE Skills Strategy?

Pre- and post-intervention results on the Student Opinion Test indicated no statistical significant difference. The subjects generally did not change their opinion about working in a small group with classmates at school. Inspection of the data for two individual questions specifically about working in a small group rather than alone indicates a change in opinion in a positive direction of 25%.

Adolescents with autism are generally not comfortable in group settings. One of the most difficult skills for adolescents with autism is the ability to socially interact with others and to generalize this skill across environments. Just knowing what to do in a social situation is not sufficient, there must be some degree of proficiency in the action. Friendships are developed in the context of common interests, activities, and the mutual pleasure of being together. These friendships and quality peer interactions may lay the groundwork for later healthy and satisfying relationships (Mize, Ladd, & Price, 1985). The subjects formed friendships within the group because they were involved in common
activities over a period of time. Several of the comments made by the subjects about their satisfaction with the program included the word "friends." The questions on the subject opinion questionnaire related to working with peers in the school setting. It can be concluded that the subjects had formed friendships with peers in the social skills group due to the commonality of activities and mutual pleasure of being together but that this opportunity has not occurred in their individual school settings.

**Student Satisfaction**

What is the extent to which high-functioning adolescents with ASD are satisfied that their participation in the instruction helped them: (a) learn each of the five social skills, (b) get along better with other subjects, (c) handle difficult situations, and (d) use the SCORE skills outside of the group sessions?

Subject satisfaction was measured on a 14-question rating scale. The questions were answered on a 3-point scale of "Not Satisfied" to "Very Satisfied." The mean rating for the class was calculated for each item on the questionnaire. Questions 5-9 asked how satisfied the subject was with learning each of the five social skills; 54% of the subjects' responses on these five questions indicated they were "Very Satisfied with learning the five social skills." The subjects were generally very satisfied that participating in the instruction helped them to learn the five social skills and get along better with other subjects. With regards to handling difficult situations 50% (5.10) indicated they were "Very Satisfied," and all of the subjects discussed how difficult it was to exercise self-control. When asked how satisfied they were with using the SCORE skills outside of the group sessions, only four out of ten subjects stated that they were "Very Satisfied."

When asked if other adolescent subjects could benefit from learning the SCORE skills
seven of the ten subjects answered yes. Seven subjects had a mean rating on the Subject Satisfaction Questionnaire that indicated they were “Very Satisfied,” and three subjects had ratings that indicated they were “Satisfied,” and no one indicated they were “Dissatisfied.” When asked what they liked the most about the SCORE Skills Program, comments included: “I liked the Share Ideas.” “That you can be nice to other people, and that you can make the world nicer!” “Game times, videos we role-played.” “Learned to make new friends with others of the same disability.” “Hanging out with friends.” and “I like the teachers, they’re all really nice.”

The subjects’ comments reflect their overall satisfaction that the group sessions were beneficial in learning new skills and making new friendships. They liked being videotaped and enjoyed participating in the role-plays. The game-time each week was a high point for all the subjects. Although they viewed it primarily as just having fun, it gave them opportunities to practice their new skills. Each group had to decide what game they wanted to play that evening. “I have an idea.” was often heard throughout the room. The comment about making new friends with others of the same disability indicates that often these high-functioning adolescents with autism do not have the opportunity to meet other adolescents with the same disability. A parent reported that her son made the comment at home that he now understood what autism was.

Social Skills Rating System

Do parental ratings of the social competence of high-functioning adolescents with ASD change after implementation of the SCORE Skills Strategy?

Pre- and post-intervention mean scores from the Social Skills Rating System completed by the parents were not statistically significant. The difference between pre-
and post-intervention for problem behaviors was not statistically significant. Further examination of the subscales for social skills indicated that the subscale for "Assertion" had the greatest difference between pre- and post-intervention, although it was not statistically significant. Further examination of the individual questions resulted in finding a statistical significance in question number 21, "Acknowledges praise from peers." Examination of the problem behavior subscales indicated a significant change in externalizing behavior compared to internalizing behavior. Further examination of the questions under the externalizing behavior subscale indicated a statistical significance in question number 42, "Fights with others." Although the social skill and problem behavior scales were not statistically significant, there was a reported increase of social skills and a decrease in behavior problems.

There are several concerns with parental assessment. First, there are few standardized assessments on the market that directly measure parents' perceptions of social skills. The Social Skill Rating System was the closest match to the specific skills that were taught in the SCORE Skills Strategy. Second, parents were assessing their adolescents' skills for generalization of the SCORE Skills in the home and community. Third, the parents were not able to assess if these skills had changed within the school environment, but commented that during the past month there were fewer notifications of misbehavior sent home from teachers at their adolescents' schools. Additional assessment pre- and post-intervention by the subjects' teachers would have provided additional information concerning generalization of the skills in the school setting.
Parent Satisfaction

To what extent are the parents satisfied that their adolescents' participation in the instruction: (a) benefited the adolescent, (b) helped the adolescent to get along better with other subjects, (c) enabled the adolescent to handle difficult situations, and (d) taught the adolescent to use the SCORE skills in home and community settings.

A questionnaire measured the parents' satisfaction of their adolescents' participation in the instruction. Twelve questions were rated on a 7-point scale to indicate how satisfied the parents were with the social skill training. In general, the parents were positive about the SCORE Skills Strategy. Their overall mean ratings indicated that they were satisfied that the SCORE Skills program benefited their adolescent, helped the adolescent to get along better with other subjects, enabled the adolescent to handle difficult situations, and taught the adolescent to use the SCORE skills in home and community settings.

They were generally satisfied that learning the SCORE Skills was fun and interesting for their adolescent, that their adolescent actively participated in learning about the SCORE Skills, and their adolescent understood what he needed to learn about the SCORE Skills. They were neither satisfied nor dissatisfied that their adolescent knew what he was doing well and what he needed to improve when performing the SCORE Skills. Of the five SCORE Skills, the parents rated their adolescents the lowest in knowing and able to use the "Exercise Self-Control Skill." The subjects also rated this skill the lowest. A parent commented, "For my son it's been an opportunity for him to see his shortcomings. Until now he's been unaware." Being able to understand and
reason about social-conversational interactions will provide more positive peer-related social experiences.

The parents were asked if they thought other adolescent students could benefit from learning the SCORE skills. 100% of the parents responded yes. Consumer satisfaction with the instruction raises the probability that the instruction will be valued and parents will seek to have the instruction provided for their adolescents. Comments about what the parents liked most about the SCORE Skills Program included: “One step at a time, it’s concrete;” “His ability to actively interact with other teenagers, he enjoyed coming to class;” “I liked that he had an opportunity to meet other children with like disability, he is less argumentative when I redirect him...and is generally more cooperative at home;” and “His increased ability to work toward compromise with his brother and sisters – this program seems to have helped.”

Parents commented that the group had filled an important need in their adolescents’ lives. They stated it was important for their adolescent to have the opportunity to meet other adolescents with the same disability and to work together on social skill deficits in a safe environment. Positive peer-related experiences in a supportive environment supports learning of interpersonal skills. There were several comments about what the parents liked least about the program, “I hated driving across town during rush hour traffic;” and “Not willing to review at home.” Additional comments reflected the need for an ongoing training over a longer period of time.

Parent consumer satisfaction in this study concurs with high satisfaction ratings by teachers who provided SCORE Skills training in previous research (Vernon & Schumaker, 1993; Vernon, 2001). Thus, data from multiple studies indicate there is a
high level of consumer satisfaction with parents and teachers for the SCORE Skills Strategy.

Conclusions and Related Discussion

The results of this research indicate that high-functioning adolescents with autism spectrum disorder can master the five social skills of the SCORE Skills Strategy. The results also indicate that high-functioning adolescents with autism spectrum disorder can master the skills working in a cooperative group setting. All of the subjects made substantial gains in the performance of the five social skills after training. Further, their performance of the five social skills was significantly better at the end of the study. The Multiple probe design results provide evidence that the subjects’ changes in performance occurred only after training had been completed on each skill and that they were able to generalize the use of the skills across novel situations.

Each skill was scored on the required step(s) and three body language expectations (sound, expression, and eye contact). Not only was the subject required to produce a correct verbal response; the subject also was required to demonstrate the correct body language expectations. The ability to socially interact with others is a complex interaction between knowing what to do and the degree of proficiency in the action. The subjects scored the highest on the Situation Discrimination Test demonstrating their ability to identify the correct skill to use in a specific situation. The subjects scored lower in the role-play situations where they had to identify the correct skill and demonstrate a degree of proficiency in the action.
This research supports earlier studies that persons with autism have, to a varying degree, an impaired understanding of others’ mental states and to use this and other information to regulate one’s own behavior are impaired in autism (Loveland, et al. 2001). Loveland and Tunali (1991) and Sigman, Kasari, Kwon, and Yirmiya (1992) both found that persons with autism were less likely than comparison subjects to respond appropriately to an examiner’s expression of distress. Some studies have found that understanding of facial affect is related to the level of social skills in children with autism (Braverman, Fein, Lucci, & Waterhouse, 1989; Fein, Lucci, Braverman, & Waterhouse, 1992; Hauck, Fein, Waterhouse, & Feinstein, 1995).

The subjects’ opinion of group work did not significantly change after treatment. Although the subjects were not acquainted before the study began, they soon formed friendships and were delighted when the card they drew placed them at the same table with a friend. Each evening during the instruction, the subjects practiced the skills in role-plays with a peer sitting at the same table. A high level of adult assistance was necessary to facilitate this interaction. If the subjects had difficulty practicing skills in a small group with peers they had formed friendships with, it is possible that their proficiency of the social skills would decrease in a school setting. The subjects’ satisfaction with the social skills group was very positive at the end of the ten weeks. Several parents shared with the researcher that early in the sessions they had to demand that the subject attend. Within a few weeks all the subjects were willingly participating.

A successful social skills training program should result in the subjects becoming more skilled and their improved skills being noticeable to others. In this study the parents were asked to rate the social competence of their adolescent both pre- and post-
intervention. They also were asked their opinions and level of satisfaction with the social skills training. The parents were generally satisfied that the SCORE Skills program benefited their adolescent. Their ratings on social competence were not statistically significant. Although the subjects demonstrated significant gains in the performance of the social skills within the class environment, the generalization factor of skill mastery was not noticeable to their parents. As one parent stated, “This training needs to continue.”

The results of this research indicate that the SCORE Skills Strategy is a viable social skill curriculum to use with high-functioning adolescents with autism spectrum disorder. The results further indicate that consumer satisfaction is high resulting in a positive experience for the subjects and their parents.

Recommendations for Future Research

This study represents an initial contribution to literature involving the use of the SCORE Skills Strategy for high-functioning adolescents with autism spectrum disorder. Reflection on the procedures used in this study, as well as the results obtained, led to the following recommendations for future study.

1. Research is needed to determine appropriate methods to promote generalization of learned skills.

2. Further measurement of maintenance of skills is necessary before endorsing the curriculum for all subjects with autism.

3. Research is needed to determine the long-term effects of the SCORE Skills Strategy instruction.
4. Research is needed to determine if simultaneous parent training of the SCORE Skills Strategy would facilitate greater generalization of the skills in the home and community settings.

5. Researchers need to examine how the SCORE Skills Strategy program can be integrated into secondary school curricula.

6. Research is needed to determine if the SCORE Skill Strategy instruction is provided over more sessions, there will be a significant statistical difference on parents' ratings of social competence.

7. Research is needed to continue with the Cooperative Strategies Series to determine if continuation of the series will promote a greater degree of group competence for high-functioning adolescents with autism.
APPENDIX A

SUBJECT INFORMATION
Participant Screening Questionnaire

To be considered for this study, your son or daughter must meet the participation criteria which includes the following:

1. Does your son daughter have a current educational eligibility of Autism Spectrum Disorder (which includes Aspergers Syndrome)?

2. Is your son daughter between the ages of 12-17 years old?

3. Does your son daughter have receptive and expressive language ability above 70 standard score, as measured within the previous 3 years? This can be recorded on the I.E.P., speech report, or educational report.

4. Does your son daughter currently attend a regular education classroom for at least one period a day?

5. Does your son daughter have a documented deficit in social skills, either by assessment report or I.E.P. goals and benchmarks?

6. Do you agree to transport your adolescent to and from the 1-hour sessions twice a week for the 10-week study?

7. Do you agree to attend the first 2 sessions and the last 2 sessions of the 10-week program? The purpose is to complete subject information forms, subject social skill assessment forms, and the final evening will be a party with the students.
Subject Information Sheet

Subject Name: ____________________________  Age: ______

Date of Birth: ____________________________  Sex: Male _____  Female _____

Grade: _______  School Attending: ____________________________

Parents’ Names: __________________________________________

Address: ________________________________________________

City, State, Zip: __________________________________________

Phone Numbers: __________________________________________

Emergency Phone: __________  Emergency Person: __________

Medical conditions medication that we should be aware of in case of emergency:
________________________
________________________
________________________

Any other information that we need to be aware of:
________________________
________________________
________________________

________________________
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________________________
________________________

___________________________________________  date

Parent Signature
Subject Assessment Information

Subject Name: _____________________________________________

I.Q. Test Date: ________________________________

I.Q. Test Name: ________________________________________

FSIQ: _____________ (standard score)

VIQ: _____________ PIQ: _____________

Speech Language Assessment Date(s): ________________

Test Names: _____________________________________________

_______________________________________________________

Receptive Score: ____________

Expressive Score: ____________

Pragmatics Score: ____________

I.E.P. documentation of social skill deficit:

Present Levels: yes ___ No ___

Goals and Benchmarks: yes ___ No ___

% of time in Regular Education Classes: ____________

Regular Education Classes: ______________________________

_______________________________________________________

_______________________________________________________
Video Taping Permission

Subject: ____________________________

Dear Parents:

Throughout the Social Skill Training, we will videotape individual role-play situations. The purpose of these tapes is to provide data collection for evaluation of subject progress during the 10-week study. The videotapes will be included with the records of the study and stored in a locked facility at UNLV for at least 3 years after completion of the study.

_____ I have no objection to my son/daughter being video taped for the purpose described above.

_____ I object to my child being video taped for the purposes described above.

Date: ____________

(Signature of Parent Guardian)

(Signature Title of person explaining process)

At the end of the study, you will be asked to sign this part:

As we discussed at the beginning of this study, it is important to share the findings of this study with educators and other service providers. Additional use of these tapes will be for training purposes. Individual names of subjects will not be shared with viewers other than those with expressed written release of confidential information.

_____ I have no objection to my son/daughter's video tapes to be used for the purpose described above.

_____ I object to my child's video tapes to be used for the purpose described above.

Date: ____________

(Signature of Parent Guardian)

(Signature Title of person explaining process)
<table>
<thead>
<tr>
<th>Week</th>
<th>Session</th>
<th>Activity</th>
<th>Assessments</th>
<th>Video Tapes</th>
<th>Parents</th>
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<tr>
<td>1 18</td>
<td>1</td>
<td>Introductions &amp; Overview</td>
<td>s1 - s12</td>
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<td>Introductions &amp; Overview</td>
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<tr>
<td>12 20</td>
<td>2</td>
<td>Games</td>
<td>Pre-Test: Skill Knowledge</td>
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<td>Pre-Test: SSRS</td>
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<td>2 08</td>
<td>3</td>
<td>Games</td>
<td>Pre-Test: Student Opinion</td>
<td>s1-s10</td>
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<tr>
<td>1 10</td>
<td>4</td>
<td>Lesson 1 - Intro</td>
<td>Pre-Test: Sit. Discrim.</td>
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<td></td>
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<tr>
<td>3 15</td>
<td>5</td>
<td>Lesson 2 - S</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>1 17</td>
<td>6</td>
<td>(Review - 2)</td>
<td>s2, s5, s7, s9</td>
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<tr>
<td>4 22</td>
<td>7</td>
<td>Lesson 3 - C</td>
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<td></td>
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<tr>
<td>1 24</td>
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<td>s1, s3, s4, s6, s8, s10</td>
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<td>5 29</td>
<td>9</td>
<td>Lesson 4 - O</td>
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<td>6 05</td>
<td>11</td>
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<td>s1, s2, s3, s5, s7, s8, s9, s10</td>
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<tr>
<td>2 14</td>
<td>14</td>
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<td>s1, s3, s4, s6, s8, s10</td>
<td></td>
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<td>Lesson 7 - Generalization</td>
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<td>2 21</td>
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<td>9 26</td>
<td>17</td>
<td>Plan Party Games</td>
<td>Post-Tests: Skill Know. &amp; Std. Opin.</td>
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<td></td>
</tr>
<tr>
<td>2 28</td>
<td>18</td>
<td>Games</td>
<td>Post-Test: Sit. Discrim.</td>
<td></td>
<td>Post-Tests: s4, s5, s7, s8</td>
</tr>
<tr>
<td>10 05</td>
<td>19</td>
<td>Games</td>
<td>Post-Test: Student Satisfaction</td>
<td>s1, s2, s3, s6, s9, s10</td>
<td>SSRS, Parent Satisf.</td>
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<tr>
<td>3 07</td>
<td>20</td>
<td>Party</td>
<td></td>
<td></td>
<td>Party</td>
</tr>
</tbody>
</table>
APPENDIX B

ROLE-PLAY SITUATIONS
Behavioral Role-Play Situations

Explain to the subject the role-play activity with the following description:

“I’d like you to do a role-play activity with me. A role-play is a pretend situation. In some of these role-plays, I’d like you to pretend that I’m also a student; in others, I’d like you to pretend that I’m a teacher. I’ll read some situations and I’d like you to think what you would say or do working together with me and a group of other student.”

“S” Skill – Share Ideas

1. We are working on an assignment to list the names of different fruits. You have just thought of one. What would you say?

2. Your class is discussing how to be safe on the bus. You have an idea. What would you say?

3. You are with your friends. They are talking about buying a new game. You have just seen a new game. What would you say?

4. You see some friends at the mall. They are talking about their favorite music. What would you say?

5. You are at the bus stop. Two subjects are trying to figure out which bus to take to the mall. You know which one to take. What would you say?

“C” Skill – Compliment Others

1. We just finished playing basketball in P.E. “That game was really fun! I even made three free throws!”

2. Our group studies hard for a test. The teacher just returned the test to us. “That was a hard test! I can’t believe I got an ‘A’!”

3. You want to watch your favorite video for free time. Your classmate is looking through the stack of videos. “You can pick out the video to watch.”

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4. You drop your papers in the hall and your friend comes over to help pick them up. 
   “Let me help you pick up your papers!”

5. Your friend comes to class with a new haircut. You think it looks good. “How do you like my new haircut?”

“O” Skill – Offer Help or Encouragement

1. We are working on a social studies assignment and I am writing down the answers for the group. “Some of these words are impossible to spell!”

2. We are working on a math assignment. You are very good at math. I don’t understand how to do the problems. “This problem is so hard!”

3. Your teacher asks for volunteers to help clean up after class. You didn’t make the mess. “Are there any volunteers to help clean the room?”

4. Your friend tells you that he can’t go to lunch until he finishes putting the chairs back where they belong. You have time to help. “I have to put all these chairs back before I can go eat lunch!”

5. Some subjects are working on decorating the gym for the dance. You would like to help them. “We have a lot to do before the dance tonight!”

“R” Skill – Recommend Changes Nicely

1. We are writing the answer to a social studies question. You noticed that I have spelled everything correctly except for one word. “Could you please check my paper for me?”

2. We are naming and writing down the capitals of ten states. You notice that I got nine capitals correct, but missed one capital. “Could you please check my paper for me?”

3. You are playing basketball, and your teammate isn’t passing the ball to other players. You think he should give other players a chance to shoot. “I’m going to shoot again!”
4. You get on the bus. The only empty seats are against two windows. Two passengers are talking across the isle, not noticing that you want to sit in one of the empty seats. “You are interrupting our conversation!”

5. Two of you are working on a project. Your teacher tells the class you have 10 minutes left to finish up. Your partner is working really slowly. “There is a lot of work here.”

“E” Skill – Exercise Self-Control

1. You are writing on a book report and ask me to read it. “Your book report is really confusing. I don’t get it at the end.”

2. We are working on a social studies paper. “Your paper is full of mistakes. You’ve misspelled about four words.”

3. Yesterday you had an argument with a classmate. Today your teacher asks you to apologize and you don’t think it was your fault. “You need to apologize to your classmate.”

4. The bus driver asks you to sit in the back row of the bus because he has to pick up some new riders. You always sit in the front row. “Please sit in the back row today. I have to pick up some new riders.”

5. You have a substitute teacher who doesn’t understand it’s your turn to help pick up the math papers and she picks someone else. “Robert, will you pick up the math papers?”

Vernon and Schumaker (1993)
Adapted 11/20/01

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SCORE Role-Play Situations

Pre- and Post-Assessment

Explain to the subject the role-play activity with the following description:

"I'd like you to do a role-play activity with me. A role-play is a pretend situation. In these role-plays, I'd like you to pretend that I'm also a student. I'll read some situations and I'd like you to think what you would say or do working together with me and a group of other students."

1. "S" Skill – Share Ideas

You are with your friends. They are talking about buying a new computer game. You have just seen a new game. What would you say?

___ S – Sound is pleasant _____________________________________________
________________________________________

___ E – Expression is pleasant ________________________________________
________________________________________

___ E – Eye contact ___________________________________________________
________________________________________

___ Tell your idea ____________________________________________________
________________________________________

Score by giving a "0", "1", or "2" based on the quality of the subject's performance. Example: "0" if unpleasant; "1" if neutral; and "2" if pleasant

Total points _____ divided by 8 = _____ X 100 = _____%

Subject Name: _______________________________ Date: _________________

Rater: ____________________________
SCORE Role-Play Situations

Pre- and Post-Assessment

2. “C” Skill – Compliments Others

You drop your papers in the hall and your friend comes over to help pick them up.

"Let me help you pick up your papers."

___ S – Sound is pleasant

___ E – Expression is pleasant

___ E – Eye contact

___ Say something nice

Score by giving a “0”, “1”, or “2” based on the quality of the subject’s performance. Example: “0” if unpleasant; “1” if neutral; and “2” if pleasant

Total points _____ divided by 8 = _____ X 100 = _____ %

Subject Name: ______________________________ Date: ____________________

Rater: ____________________
SCORE Role-Play Situations

Pre- and Post-Assessment

3. “O” Skill – Offer help or encouragement

We are working on a math assignment. You are very good at math. I don’t understand how to do the problems.

“*This problem is so hard!*”

___ S – Sound is pleasant ________________________________

______________________________

___ E – Expression is pleasant ________________________________

______________________________

___ E – Eye contact ________________________________

______________________________

___ Asks if the person wants help ________________________________

______________________________

___ Gives help ________________________________

______________________________

___ OR – Offers encouragement ________________________________

______________________________

Score by giving a “0”, “1”, or “2” based on the quality of the subject’s performance. Example: “0” if unpleasant; “1” if neutral; and “2” if pleasant

Total points _____ divided by 10 = _____ X 100 = _____%

Subject Name: ______________________________ Date: __________________

Rater: __________________
4. "R" Skill – Recommend changes nicely

You are playing basketball and your teammate isn’t passing the ball to other players. You think he should give other players a chance to shoot.

"I’m going to shoot again!"

__ S – Sound is pleasant

________________________

________________________

__ E – Expression is pleasant

________________________

________________________

__ E – Eye contact

________________________

________________________

__ Say what is good

________________________

________________________

__ Explains what could be changed

________________________

________________________

__ Makes a suggestion

________________________

________________________

Score by giving a “0”, “1”, or “2” based on the quality of the subject’s performance. Example: “0” if unpleasant; “1” if neutral; and “2” if pleasant

Total points _____ divided by 12 = _____ X 100 = _____%

Subject Name: ______________________________ Date: ________________

Rater: ____________________
SCORE Role-Play Situations

Pre- and Post-Assessment

5. “E” Skill – Exercise self-control

You have a substitute teacher who doesn’t understand it’s your turn to help pick up the math papers and she picks someone else.

“Robert, will you pick up the math papers?”

_ S – Sound is pleasant ____________________________

_ E – Expression is pleasant or neutral ____________________________

_ E – Eye contact ____________________________

_ Pause (count to 5) ____________________________

_ Asks a question ____________________________

Score by giving a “0”, “1”, or “2” based on the quality of the subject’s performance. Example: “0” if unpleasant; “1” if neutral; and “2” if pleasant

Total points _____ divided by 10 = _____ X 100 = _____

Subject Name: _______________________________ Date: __________________

Rater: __________________

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Skill Knowledge Survey

Name: ___________________________  Date: ______________

Name the social skills that you think are important when you work with classmates in a small group.

Name of the skill: ___________________________  What it means: ___________________________

1. ___________________________  ___________________________

2. ___________________________  ___________________________

3. ___________________________  ___________________________

4. ___________________________  ___________________________

5. ___________________________  ___________________________

Vernon and Schumaker (1993)
Opinion Survey

Name: ___________________________ Date: ________________

Please circle the word next to each statement that best describes how much you agree or disagree with the statement using the following scale.

Yes - I agree
Maybe - Not sure
No - I do not agree

Examples: My favorite food is pizza.
Yes Maybe No
I like to go to school.
Yes Maybe No
The perfect day is sunny and hot.
Yes Maybe No

All of the next statements have to do with how you feel about working in a small group with classmates at school.

1. Working in a small group with three or four classmates is a good way to learn.
   Yes Maybe No

2. When I work in a small group, I usually end up doing most of the work.
   Yes Maybe No

3. I learn MORE when I work in a small group rather than when I work alone.
   Yes Maybe No

4. Working with my classmates is embarrassing because I usually don’t know what to do.
   Yes Maybe No

5. I get angry when I work with classmates.
   Yes Maybe No

6. Everyone tries to share ideas and information when we work or study in small groups.
   Yes Maybe No

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<table>
<thead>
<tr>
<th></th>
<th>I agree</th>
<th>Do not agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>7. I prefer to work with classmates rather than by myself.</td>
<td>Yes</td>
<td>Maybe</td>
</tr>
<tr>
<td>8. Working in a small group is a waste of time because we can't agree on what to do or how to do it.</td>
<td>Yes</td>
<td>Maybe</td>
</tr>
<tr>
<td>9. Classmates make fun of what I do when we work in small groups.</td>
<td>Yes</td>
<td>Maybe</td>
</tr>
<tr>
<td>10. Classmates in my group listen to my ideas.</td>
<td>Yes</td>
<td>Maybe</td>
</tr>
<tr>
<td>11. Classmates are helpful when we work in small groups.</td>
<td>Yes</td>
<td>Maybe</td>
</tr>
<tr>
<td>12. Almost everyone argues when we have to work together.</td>
<td>Yes</td>
<td>Maybe</td>
</tr>
<tr>
<td>13. When we work in small groups, classmates let me know in a nice way that I made a mistake.</td>
<td>Yes</td>
<td>Maybe</td>
</tr>
<tr>
<td>14. Classmates get mad at me when we work together.</td>
<td>Yes</td>
<td>Maybe</td>
</tr>
<tr>
<td>15. Classmates in my small group sometimes laugh at me, tease me, or call me names.</td>
<td>Yes</td>
<td>Maybe</td>
</tr>
<tr>
<td>16. Classmates say nice things to each other when we work in small groups.</td>
<td>Yes</td>
<td>Maybe</td>
</tr>
<tr>
<td>17. Most classmates ignore me when we work in small groups.</td>
<td>Yes</td>
<td>Maybe</td>
</tr>
</tbody>
</table>

*Vernon, Schumaker, and Desher (1995)*  
*Revised 11 20 01 from: Edge Enterprises 3 5 99*

Thank you.
Situation Discrimination Test

Name: ______________________________ Date: ______________

Instructions: Determine which skill is needed in each situation. Select the letter of a skill from the list and write it in the blank.

S – Share Ideas
C – Compliment Others
O – Offer Help or Encouragement
R – Recommend Changes Nicely
E – Exercise Self-Control

___ 1. Your class is discussing where to go on a field trip this month. A classmate wants to go to the museum. You want to go to McDonalds.

___ 2. Your teacher is wearing a new tie. You think he looks nice.

___ 3. You notice your co-worker forgetting to do part of the job you both were assigned.

___ 4. Your classmate drops a bunch of papers and asks for someone to help her pick them up. You hear her.

___ 5. At lunch you and a friend are talking about the new movies in town you want to see.

___ 6. At basketball practice your coach asks the team to list the rules of the game. You know them.

___ 7. You are in a hurry and try to get in the front of the line. Your teacher asks you to let the subjects who are lined up go ahead of you.

___ 8. In Living Skills class, three of you must plan a meal to cook. You all want to make the dessert.

___ 9. Your supervisor asks for volunteers to help him unload the truck. You’re still on break.

___ 10. In gym class, you miss the basket. You hear someone say, "What a lousy shot!"

___ 11. Your teacher asks your work group to talk about what jobs they want to try. You can think of many jobs to try.
S - Share Ideas
C - Compliment Others
O - Offer Help or Encouragement
R - Recommend Changes Nicely
E - Exercise Self-Control

12. You are talking to your teacher about something important when your classmate
interrupts to show you his new book.

13. Your teacher asks you and your classmate about the dance last night. You both
had a great time. Your classmate learned the newest line dance.

14. Your group has been asked to plan a balanced meal together. You want to make
spaghetti and salad.

15. Your supervisor asks you to mop the floor again because you didn’t do it
completely the first time.

16. At the store you see a woman with a bunch of bags struggling to get the door
open. She looks at you and asks if you can help her.

17. Your classmates are given the job of decorating the room for the holidays. You
think the lights are wrong.

18. You’re at a restaurant. The waitress gets your order wrong.

19. Your dad is working in the yard. He looks tired.

20. Another subject offers to let you have the last piece of chocolate cake in the
cafeteria.

Thank You

Adapted 11/1/01. Teaching Social Competence...PRO-ED, Inc. 1995
Subject Satisfaction Questionnaire
The SCORE Skills

Name: ___________________________ Date: __________________

Please circle the number next to each question that best describes how satisfied you feel.

1 = Not Satisfied
2 = Satisfied
3 = Very Satisfied

Examples: How satisfied are you that learning math is fun? 1 2 3
How satisfied are you that basketball is good exercise? 1 2 3
How satisfied are you that you know how to play checkers well? 1 2 3

1. How satisfied are you that learning and using the SCORE Skills helps you get along with others?

2. How satisfied are you that learning the SCORE Skills was fun and interesting?

3. How satisfied are you that you actively participated in learning about the SCORE Skills?

4. How satisfied are you that you learned to be a good team member?

5. How satisfied are you that you know and can use the Share Ideas Skill?

6. How satisfied are you that you know and can use the Compliment Others Skill?

7. How satisfied are you that you know and can use the Offer Help or Encouragement Skill?

8. How satisfied are you that you know and can use the Recommend Changes Nicely Skill?
9. How satisfied are you that you know and can use the **Exercise Self-Control Skill**?

10. How satisfied are you that you understood what you needed to learn about the SCORE Skills?

11. How satisfied are you that you knew what you were doing well and what you needed to improve when you performed the SCORE Skills?

12. How satisfied are you that you can use the SCORE Skills **outside** of the group sessions?

13. Overall, how satisfied are you with the SCORE Skills Program?

Do you think other adolescent subjects could benefit from learning the SCORE Skills? **Yes** **No**

What did you like most about the SCORE Skills Program?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

**Thank you.**

_Vernon and Schumaker (1993) Revised 11/20/01 from Edge Enterprises 2/01._
APPENDIX D

PARENT RATING SCALES
Scales and Subscales of the Social Skills Rating System Parent Form – Secondary Level

<table>
<thead>
<tr>
<th>Scales</th>
<th>Subscales</th>
<th>Behaviors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Skills</td>
<td>Cooperation</td>
<td>Behaviors such as helping others, sharing materials, and complying with rules and directions.</td>
</tr>
<tr>
<td></td>
<td>Assertion</td>
<td>Initiating behaviors, such as asking others for information, introducing oneself, and responding to the actions of others.</td>
</tr>
<tr>
<td></td>
<td>Responsibility</td>
<td>Behaviors that demonstrate ability to communicate with adults and show regard for property or work.</td>
</tr>
<tr>
<td></td>
<td>Self-Control</td>
<td>Behaviors that emerge in conflict situations, such as responding appropriately to teasing, and in nonconflict situations that require taking turns and compromising.</td>
</tr>
<tr>
<td>Problem Behaviors</td>
<td>Externalizing</td>
<td>Behaviors involving verbal or physical aggression toward others, poor control of temper, and arguing.</td>
</tr>
<tr>
<td></td>
<td>Internalizing</td>
<td>Behaviors indicating anxiety, sadness, loneliness, and poor self-esteem.</td>
</tr>
</tbody>
</table>

Parent Satisfaction Questionnaire

The SCORE Skills

Name: ___________________________ Date: _______________

Circle the number that best describes how satisfied you feel about that question.

1. How satisfied are you that learning and using the SCORE Skills helps your adolescent get along with others?

<table>
<thead>
<tr>
<th>Extremely Satisfied</th>
<th>Satisfied</th>
<th>Slightly Satisfied</th>
<th>Neither Satisfied nor Dissatisfied</th>
<th>Slightly Dissatisfied</th>
<th>Dissatisfied</th>
<th>Extremely Dissatisfied</th>
<th>No Opinion</th>
</tr>
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<tbody>
<tr>
<td>6</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Comments: ________________________________

2. How satisfied are you that learning the SCORE Skills was fun and interesting for your adolescent?

<table>
<thead>
<tr>
<th>Extremely Satisfied</th>
<th>Satisfied</th>
<th>Slightly Satisfied</th>
<th>Neither Satisfied nor Dissatisfied</th>
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<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Comments: ________________________________

3. How satisfied are you that your adolescent actively participated in learning about the SCORE Skills?

<table>
<thead>
<tr>
<th>Extremely Satisfied</th>
<th>Satisfied</th>
<th>Slightly Satisfied</th>
<th>Neither Satisfied nor Dissatisfied</th>
<th>Slightly Dissatisfied</th>
<th>Dissatisfied</th>
<th>Extremely Dissatisfied</th>
<th>No Opinion</th>
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</thead>
<tbody>
<tr>
<td>6</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Comments: ________________________________

4. How satisfied are you that your adolescent learned to be a good team member?

<table>
<thead>
<tr>
<th>Extremely Satisfied</th>
<th>Satisfied</th>
<th>Slightly Satisfied</th>
<th>Neither Satisfied nor Dissatisfied</th>
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<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Comments: ________________________________

5. How satisfied are you that your adolescent knows and can use the Share Ideas Skill?

<table>
<thead>
<tr>
<th>Extremely Satisfied</th>
<th>Satisfied</th>
<th>Slightly Satisfied</th>
<th>Neither Satisfied nor Dissatisfied</th>
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<td>2</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Comments: ________________________________

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Circle the number that best describes how satisfied you feel about that question.

6. How satisfied are you that your adolescent knows and can use the Compliment Others Skill?

<table>
<thead>
<tr>
<th>Extremely Satisfied</th>
<th>Satisfied</th>
<th>Slightly Satisfied</th>
<th>Neither Satisfied nor Dissatisfied</th>
<th>Slightly Dissatisfied</th>
<th>Dissatisfied</th>
<th>Extremely Dissatisfied</th>
<th>No Opinion</th>
</tr>
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<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

Comments: ____________________________

7. How satisfied are you that your adolescent knows and can use the Offer Help or Encouragement Skill?

<table>
<thead>
<tr>
<th>Extremely Satisfied</th>
<th>Satisfied</th>
<th>Slightly Satisfied</th>
<th>Neither Satisfied nor Dissatisfied</th>
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<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

Comments: ____________________________

8. How satisfied are you that your adolescent knows and can use the Recommend Changes Nicely Skill?

<table>
<thead>
<tr>
<th>Extremely Satisfied</th>
<th>Satisfied</th>
<th>Slightly Satisfied</th>
<th>Neither Satisfied nor Dissatisfied</th>
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<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

Comments: ____________________________

9. How satisfied are you that your adolescent knows and can use the Exercise Self-Control Skill?

<table>
<thead>
<tr>
<th>Extremely Satisfied</th>
<th>Satisfied</th>
<th>Slightly Satisfied</th>
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<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

Comments: ____________________________

10. How satisfied are you that your adolescent understood what he/she needed to learn about the SCORE Skills?

<table>
<thead>
<tr>
<th>Extremely Satisfied</th>
<th>Satisfied</th>
<th>Slightly Satisfied</th>
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<td>2</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

Comments: ____________________________

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11. How satisfied are you that your adolescent knew what he/she was doing well and what he/she needed to improve when performing the SCORE Skills?

<table>
<thead>
<tr>
<th></th>
<th>7</th>
<th>6</th>
<th>5</th>
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<td>Dissatisfied</td>
<td>Extremely Dissatisfied</td>
<td>No Opinion</td>
<td></td>
</tr>
</tbody>
</table>

Comments: ____________________________

12. How satisfied are you that your adolescent can use the SCORE Skills outside of the group sessions?

<table>
<thead>
<tr>
<th></th>
<th>7</th>
<th>6</th>
<th>5</th>
<th>4</th>
<th>3</th>
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<td>Dissatisfied</td>
<td>Extremely Dissatisfied</td>
<td>No Opinion</td>
<td></td>
</tr>
</tbody>
</table>

Comments: ____________________________

What did you like MOST about the SCORE Skills Program?

________________________________________

________________________________________

________________________________________

What did you like LEAST about the SCORE Skills Program?

________________________________________

________________________________________

________________________________________

Do you think other adolescent students could benefit from learning the SCORE Skills?

___ yes  ___ No

Why:

________________________________________

________________________________________

________________________________________

Do you have any other comments?

________________________________________

________________________________________

________________________________________

Thank you.

Vernon and Schumaker (1993)
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people with autism or Asperger syndrome to recognize and predict emotions in

299-316.


VITA

Graduate College
University of Nevada, Las Vegas

Barbara Jane Webb

Home Address:
1648 Silver Falls Avenue
Las Vegas, Nevada 89123

Degrees:
Bachelor of University Studies, 1989
Idaho State University

Master of Education, 1990
Idaho State University

Education Specialist, 1992
Idaho State University

Special Honors and Awards:


Publications:


Dissertation Title: Effects of Social Skill Training for High-Functioning Adolescents with Autism Spectrum Disorder

Dissertation Examination Committee:
  Chairperson, Dr. Susan P. Miller, Ph.D.
  Committee Member, Dr. Thomas Pierce, Ph.D.
  Committee Member, Dr. Sherri Strawser, Ph.D.
  Graduate Faculty Representative, Dr. Paul Jones, Ed.D.