



Using a Multimedia Social Skills Intervention to Increase Social Engagement of Young Children With Autism Spectrum Disorder

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Abstract

Children with autism spectrum disorder (ASD) display impairments in social interactions and communication that appear at early ages. Fewer social engagements of children with ASD with peers often lead to long-term negative outcomes, such as social isolation and restricted language and cognitive skills. Although there is a clear need for social skills training for children with ASD, evidence-based practices are often not implemented for young children in school settings. The authors describe the Superheroes Social Skills program, a social skills intervention that combines multiple evidence-based practices, for use with young children with ASD. A case example is provided to describe the implementation and utility of the program for addressing social engagement skills of children with ASD and peers. Results of the case example suggest that the intervention contributed to greater engagement of children with ASD with peers during a free-play period.

Keywords

social, skills, early intervention, intervention(s), autism, disabilities, preschool, early childhood

As children with autism spectrum disorder (ASD) reach preschool, deficits in social skills often impede typical interaction with peers (Bellini, Peters, Brenner, & Hopf, 2007). Abnormal social play, restricted interests, and impaired conversational skills can limit opportunities to establish social relationships with peers. During these years, children with ASD receive fewer social initiations, respond to fewer initiations, and, when interacting, do so for shorter periods (McConnell, 2002). These limited opportunities to interact and establish relationships with peers can restrict the development of intelligence, language, and other related skills essential to normal childhood development (Garrison-Harrell, Kamps, & Kravits, 1997). Often, impairments in interaction and communication abilities early in life lead to social isolation and difficulty functioning in everyday life in adulthood. By failing to successfully use social skills typically acquired at a young age, adults with ASD often experience mental health problems, higher rates of unemployment, poor school achievement, and cognitive deficiencies (Howlin, Mawhood, & Rutter, 2000; Strain & Schwartz, 2001). Because of negative outcomes associated with poor social skills, it is important that effective intervention strategies be used for young children with ASD.

Several strategies, such as peer-mediated interventions (Zhang & Wheeler, 2011) and video modeling (Wang, Cui, & Parrila, 2011), have been found to be useful in addressing social deficits of children with ASD. Peer-mediated interventions describe the use of peers as agents of behavioral change. To promote social skill use in children with ASD, peers may be trained to model appropriate behaviors, initiate social interactions, or reinforce social skill use (Zhang & Wheeler, 2011). The use of peer-mediated interventions is particularly effective in promoting generalization of social skill use, as children with ASD have opportunities to use target social skills in more naturalistic settings (i.e., with peers instead of adults). Video modeling is an intervention strategy in which children with ASD watch videos

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demonstrating the successful use of target social skills and then imitate the observed skill (Ganz, Earles-Vollrath, & Cook, 2011). Because children with ASD have been found to learn best through visual processes (e.g., Mesibov & Shea, 2008), video modeling strategies represent a strength-based approach for improving social skills of children with ASD (Bellini & McConnell, 2010).

Self-monitoring (Lee, Simpson, & Shogren, 2007) and social narratives (Wang & Spillane, 2009) have also been found to be beneficial for promoting social skill acquisition and use in children with ASD. Applied to social skills training, self-monitoring is an intervention procedure in which a child with ASD observes and collects data regarding social skill use (Jenson, Rhode, & Reavis, 1995). For children with ASD, self-monitoring serves to increase self-awareness regarding social skill use and provides self-mediated performance feedback regarding use of target social skills. Social narratives are short stories that describe complex social information, such as perspectives of others and expected behaviors, in simple and concrete terms (Gray, 1998). Although social narratives are not considered a tool for behavioral change (Gray, 2004), the use of narratives that describe thoughts and feelings of others facilitates social interactions and overall social competence. Similar to video modeling, social narratives rely on strengths of children with ASD as they are visual, situation specific, and concrete (Quirnbach, Lincoln, Feinberg-Gizzo, Ingersoll, & Andrews, 2009).

Although several social skills training strategies have been found to be beneficial for children with ASD, these evidence-based approaches are often not systematically implemented (Bellini & McConnell, 2010; Shernoff, Kratochwill, & Stoiber, 2003) or implemented as designed (Stahmer, 2007) in school settings. Instead, unsupported interventions are often used (Hess, Morrier, Heflin, & Ivey, 2008). Failure to adopt and implement evidence-based practices with fidelity may be due to the fact that many evidence-based social skills training approaches represent instructional strategies without a curriculum, an important component for intervention adoption (Dingfelder & Mandell, 2011). Additionally, factors such as feasibility, availability of resources, training required for implementation of the intervention, and availability of technology can affect the adoption of evidence-based practices for social skills training for individuals with ASD (Bellini & McConnell, 2010; Dingfelder & Mandell, 2011).

Superheroes Social Skills

Superheroes Social Skills (Jenson et al., 2011) was designed to address factors that may limit the use of evidence-based practices in school settings through the incorporation of several strategies found to be effective in improving social functioning in children with ASD in one practice-ready

package. The program uses a number of evidence-based practices to increase social skill acquisition:

- the inclusion of typically developing peers who function as models of skill use,
- video modeling of target skills,
- self-monitoring of target skill use, and
- social narratives.

The program also aims to increase fidelity and decrease demands on personnel through “manualization” of intervention procedures and the use of premade video models and social narratives of target social skills. Participation in the intervention allows opportunities to use target skills in role-plays and social games, and participants are encouraged to self-monitor and record skill use outside the training setting on self-monitoring cards. Superheroes Social Skills also incorporates social narratives in the form of comic books, supplied as homework.

Superheroes Social Skills has been found to be beneficial in increasing social engagement among elementary-age children with ASD with peers during free-time periods when the program was facilitated by trained and coached parents (Radley, Jenson, Clark, & O’Neill, 2014). In an evaluation of the program in a school setting, it was found that elementary-age participants increased initiations and responses with peers during a recess period, successfully generalizing skills to a nontraining environment (Block, 2010). Checklists completed by teachers found ratings of social skills to significantly improve following the intervention. The observed increases in social initiations and responses were also found during a 2-week follow-up in treatment and generalized settings. Although few studies have evaluated the Superheroes Social Skills program, extant studies suggest its utility in improving key areas of social functioning of children with ASD. In the present article, we describe the benefits of the intervention for Nicole and Brian, two preschool-age students with ASD referred by their teacher for social skills training, and describe step-by-step implementation for young children with ASD (see Note 1).

Nicole was a 4.9-year-old who had previously been diagnosed with autism, receiving an *Autism Diagnostic Observation Schedule* (ADOS; Lord, Rutter, DiLavore, & Risi, 1999) total score of 14. Nicole had a full-scale IQ score of 101. Nicole’s parent reported that she used minimal expressive language, had abnormal adherence to routine, and exhibited difficulty when placed in new situations or frustrating activities. In social situations in school and the community, Nicole exhibited extreme difficulty regulating her emotions. Nicole’s teacher also reported that she rarely interacted with classroom peers. Brian was a 4.8-year-old who was previously diagnosed with pervasive developmental disorder—not otherwise specified, receiving an ADOS total score of 11. Brian had a full-scale IQ score of 120.

Table 1. Foundational Skills Included in Superheroes Social Skills.

Lesson	Steps	Social Game
Get Ready	<ol style="list-style-type: none"> 1. Listen to the "Get Ready" request 2. Put feet on the floor 3. Put hands on knees 4. Give eye contact 5. Count to three 	Musical Chairs
Following Directions	<ol style="list-style-type: none"> 1. Look at the person 2. Listen to the person 3. Nod your head 4. Do what the person asked 	Simon Says
Anxiety Reduction	<ol style="list-style-type: none"> 1. Stop and count to 10 2. Tell yourself, "I can be cool" 3. Take several deep breaths 4. Choose a way to be cool 	The Turtle Game
Participation	<ol style="list-style-type: none"> 1. Look at the person 2. Listen to what they say 3. Watch what they do 4. When it's your turn, join in 	Frog Detective
Generalized Imitation	<ol style="list-style-type: none"> 1. Look at the person 2. Listen to the person 3. Copy what the person said or did 	The Mirror Game
Body Basics	<ol style="list-style-type: none"> 1. Face the person 2. Make eye contact 3. Use an appropriate voice 4. Use the right expression 5. Use the right posture 	Follow the Leader
Expressing Wants and Needs	<ol style="list-style-type: none"> 1. Decide what you want or need 2. Wait for a pause 3. Give a signal 4. Wait for the person to respond 5. Say what you want 	Go Fish
Joint Attention	<ol style="list-style-type: none"> 1. Watch the person 2. Look where they are looking 3. Listen to what they say 	I Spy

Brian's behaviors were described as rigid and inflexible, with Brian often engaging in behavior inappropriate for social situations. Similar to Nicole, Brian was reported to engage infrequently with classroom peers.

The students' teacher consulted with the social skills group facilitator, a doctoral student in school psychology, to identify social skills to be taught. Although the Superheroes Social Skills program includes 18 social skills lessons, consultation identified the first 8 lessons as being applicable for preschool-age participants. These lessons correspond with the foundational skills of the Superheroes Social Skills program (Table 1). Because the inclusion of typically developing peers in social skills training groups has been found to promote skill acquisition and use (Zhang & Wheeler, 2011), two classroom peers were identified for inclusion in the group. Classroom peers were nominated for inclusion if they demonstrated age-appropriate social skills and followed the teacher's directions.

Before beginning the social skills group, parental consent was obtained for the children with ASD and the classroom peers.

Because social engagement behaviors represent key social skills for children with ASD (McMahon, Vismara, & Solomon, 2012), social engagements with peers were used to monitor progress during intervention. Observations of social engagements prior to social skills training were conducted three times during a free-play period in which the two participants with ASD and the two classroom peers had access to a variety of toys. Free-play periods were video recorded and coded using 10-second partial interval recording. Social engagement was defined as a child with ASD engaged in direct social behavior with a peer, such as giving, sharing, or showing objects or toys; engaging in conversation; taking turns; or playing a game. Behaviors not coded as social engagement included parallel play or observing others. Following the collection of baseline data,

social skills lessons were taught two times per week for approximately 30 minutes each lesson. Each skill was presented in two lessons: A new social skill was presented at the beginning of each week, with a second social skills lesson on the same target skill occurring near the end of each week. Observations of social engagement during free-play periods were conducted twice per week throughout social skills training. Occasionally, regular social skills instruction was interrupted by school holidays. In these cases, social skills instruction was presented on the next available day.

Regular observations during free-play periods during social skills training revealed increases in social engagement behaviors of both Nicole and Brian. Prior to social skills training, Nicole demonstrated social engagement during an average of 5.5% of intervals. After implementation of the social skills intervention, Nicole demonstrated social engagement during an average of 15.8% of intervals. Brian's average percentage of intervals of social engagement during the intervention was 42.3%, increasing from an average of 20.0% of observation intervals prior to the intervention.

Steps to Implementation

Superheroes Social Skills uses manualized lessons in which each lesson is presented using the same format. Although the social skills program was designed for elementary-age students with ASD (Jenson et al., 2011), no modifications to the lessons are required for use of the program with preschool-age children. Each lesson consists of the following nine steps:

- check in with participants;
- review the group rules and introduce the social skill to be targeted;
- teach three to five discrete steps to the target skill, presented by animated superheroes via DVD;
- watch video models of skill use via DVD;
- role-play the target skill;
- watch an animated social narrative of target skill use;
- play a game that reinforces skill use;
- provide and explain homework; and
- provide reinforcement for group participation.

Using Nicole and Brian as examples, the steps to implementation with preschool-age students are described using the Participation skill.

The first steps in each lesson included welcoming group participants, reviewing the daily schedule and group rules, and introducing a new skill. At the beginning of the first social skills lesson of the week, the group facilitator welcomed Nicole, Brian, and the two peers to social skills training. The group facilitator then reminded students to follow the social skills group rules, which consisted of being ready to learn, following the facilitator's directions, being cool and relaxed, and participating in group activities.

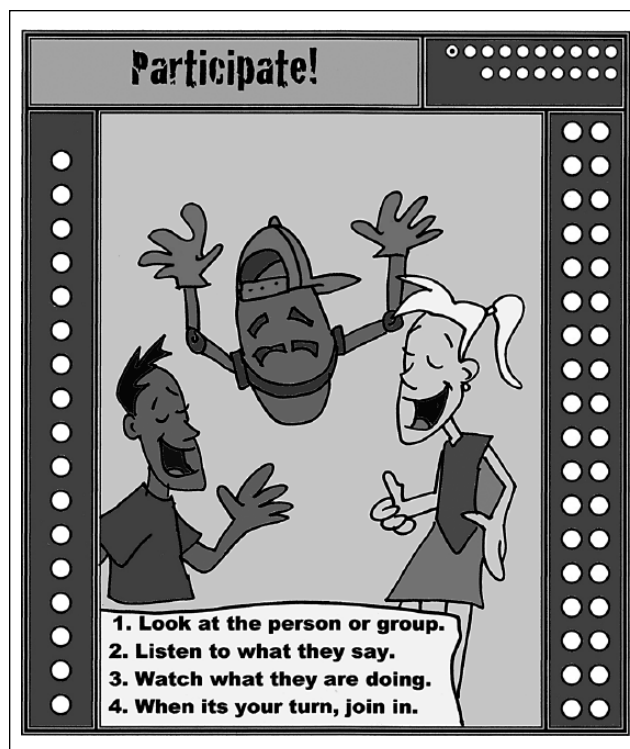


Figure 1. Self-monitoring card for the Participation skill.

The group facilitator then informed participants that they would be talking about how to participate, and the skill was further described by animated superheroes via DVD. The animated superheroes presented a rationale for using the Participation skill: Participating helps you learn new things, have fun, and be part of a group. The animated superheroes then presented four discrete steps for correct demonstration of the target social skill: Look at the person, listen to what the person says, watch what the person is doing, and join in when it is your turn. After watching the DVD, a self-monitoring card on which steps to skill demonstration were printed was distributed to each social skills participant (Figure 1). A lanyard was provided to children during the social skills lesson to allow quick access to the self-monitoring card. Participants then watched three video models of successful skill use by school-age peers. If children became distracted while watching video models, the group facilitator prompted them to attend to the video.

The next step in each social skills lesson is role-play of the target social skill. The group facilitator role-played a nonexample of the Participation skill (e.g., failing to use skill steps when invited to participate by a peer) and asked participants, "Did I do a good job participating? Did I miss any steps?" The participants with ASD and peers responded, and feedback was provided to participants unable to identify all skill steps. The group facilitator then role-played a correct example of the Participation skill and asked

participants, “Did I do a good job using our skill? Did I miss any steps?” and allowed children to respond. Because Nicole used minimal expressive language, the group facilitator would ask yes-or-no questions, such as “Nicole, did I remember to look at the person?” and allow nodding or shaking her head as a response. The facilitator then engaged participants in role-plays of the skill. For example, the group facilitator began to play a board game and prompted the participants to use the skill steps to join in. When participants correctly demonstrated the four skill steps, the group facilitator encouraged participants to record successful demonstrations on their self-monitoring cards. Brian was initially unsuccessful in waiting his turn to participate during the first role-play. As such, the facilitator provided error correction and delivered repeated one-on-one practice until Brian could successfully demonstrate the skill.

The last steps in each social skills lesson are to emphasize use of the skill through viewing a social narrative, playing a game that requires using the target skill, providing homework to promote use of the skill in nontraining environments, and providing reinforcement for participation during the lesson. Once role-plays were completed, Nicole, Brian, and their peers watched an animated social narrative in the form of a comic book via DVD. The animated social narrative provided participants a scenario in which a cartoon superhero used the steps in the Participation skill to join a game. Participants then played Frog Detective, in which participants used the steps in the Participation skill to play and take turns in a social game. During the game, the group facilitator encouraged participants to use the self-monitoring card if they successfully used the Participation steps. The facilitator then provided reinforcement for involvement in the social skills group with a small tangible item (e.g., stickers) or snack, and participants were encouraged to self-monitor skill use in their classroom and at home. Participants were then provided with a paper copy of the social narrative to read at home and were returned to their classroom. To encourage use of the self-monitoring card and reading of the social narrative at home, a weekly note was sent home to parents (see Figure 2).

The second lesson of each week followed the same format as the first lesson but reviewed the same social skill instead of introducing a new skill. Participants were instructed to bring their Participation self-monitoring cards back to the group, allowing the facilitator to monitor skill use outside the social skills group. After reviewing participants’ self-monitoring cards, the facilitator reviewed the steps in the Participation skill presented during the first lesson, participants watched the DVD that described the rationale and steps for the target skill, and participants viewed video models of successful skill use. The facilitator then demonstrated a nonexample and an example of the skill and engaged the participants in several novel role-plays of the skill. Participants watched the animated social narrative via

Dear Parents,

This week in Superheroes Social Skills, we are learning about Participating. Participating is a skill that will help your child learn new things, have fun, and be part of a group. Your child has learned these steps to Participating:

1. Look at the person
2. Listen to the person says
3. Watch what they are doing
4. When it's your turn, join in

It is important that your child practices the Participation steps at home. Please prompt your child to use the Participation steps when joining in activities with friends and family, and help them record skill use on their self-monitoring card. Additionally, please read the social narrative comic book with your child at least twice during this week.

Thank you!

The Superheroes Social Skills Team

Figure 2. Home note for Participation skill.

DVD, played Frog Detective, received homework, and were reinforced for participation in the group.

Data collection is an essential component of social skills training for preschool-age children with ASD. Following each social skills training group, participants were observed during a free-play period to determine if the social skills intervention was effective in increasing social engagement of Nicole and Brian. Using a small digital camcorder, the group facilitator video recorded 10-minute free-play periods in which Nicole, Brian, and their classroom peers had access to a variety of toys. Recordings of free-play periods were then coded for social engagement using a 10-second partial interval recording system. The data collected allowed the group facilitator to determine if modifications to the intervention were needed (e.g., repeating previously presented lessons) or if the intervention could be discontinued because of improved social engagement behaviors.

Summary

In this article, we have explained the use of a particular social skills program for preschool-age children with ASD using a case example to describe procedures for implementation and measurement of clinically significant outcomes. Through consultation with school staff members, social skills were identified from the program’s curriculum that would promote social engagement abilities during free-play periods. Children with ASD spend significantly less time engaged with peers than typically developing peers (McConnell, 2002), limiting their ability to establish friendships and develop important cognitive and language skills (Garrison-Jarrell et al., 1997). The results of the case example suggested that Nicole and Brian made substantial

increases in the percentage of time spent engaged with peers during free-play periods, gains that may contribute to improved long-term outcomes. It is important to note that Nicole demonstrated smaller improvements in social engagement than Brian, suggesting that this program may be most beneficial for preschool-age children with ASD who demonstrate age-appropriate expressive language. However, substantial improvements in the percentage of intervals of social engagement were observed in both participants.

The case example demonstrates how the program may be used without modification as a targeted intervention for young children with ASD in preschool settings. Evidence-based practices are often not implemented in school settings, because of a lack of an accompanying curriculum (Dingfelder & Mandell, 2011), a lack of resources, limited training, or issues of perceived feasibility (Bellini & McConnell, 2010). Through manualization of intervention procedures and the inclusion of all necessary materials in the intervention package (i.e., video models, self-monitoring materials, and social narratives), the intervention may overcome several barriers to implementation by decreasing demands placed on program facilitators.

Given the importance of early intervention for young children with ASD, programs incorporating evidence-based social skills training practices should be considered as part of early education programs for young children with ASD.

Declaration of Conflicting Interests

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Note

1. The case-study vignettes in this article depict authentic situations with only the names changed to pseudonyms.

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