


The Effect of a Social Stories Intervention on the Social Skills of Male Students With Autism Spectrum Disorder

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Fatemeh Golzari¹, Ghorban Hemati Alamdarloo¹,
and Shahram Moradi²

Abstract

The present study aimed to investigate the effect of a social stories intervention on the social skills of male students with autistic spectrum disorder (ASD). The sample included 30 male students with ASD who were selected through convenience sampling and randomly assigned to an experimental group ($n = 15$) or a control group ($n = 15$). The social skills of both groups were assessed pre- and post-test using Stone and colleagues' Social Skills Scale (which included subscales for understanding/perspective-taking, initiating interactions, responding to interactions, and maintaining interactions). The experimental group participated in 16 sessions of social stories training, while the control group did not. Overall, the results showed that the social stories intervention improved the social skills of the children with ASD in the experimental group compared with the control group. The effects of the social stories intervention were mostly evident in the subscales for understanding/perspective-taking, initiating interactions, and maintaining interactions with others. The social stories intervention had no effect on the subscale assessing ability to respond to others. The study findings emphasize the effectiveness of the social stories intervention in improving the social skills of children with ASD, which may be used by teachers, parents, or professionals who work with such children.

Keywords

social stories intervention, social skills, autism spectrum disorder

Introduction

Children with autism spectrum disorder (ASD), which is a neurobiological disorder, have features that are apparent in early childhood (Yapko, 2003). The most obvious feature of ASD is difficulty with social interactions (cf. Kuoch & Mirenda, 2003). It has been suggested that the deficit in social skills falls along a broad spectrum (cf. Baron-Cohen, 2008). On one side of the spectrum are children who wish to be alone and avoid other people; on the other side are those who wish to communicate with others but do not know how to initiate and maintain communication, and thus, their communication is usually inappropriate. More specifically, individuals with ASD have difficulty using and understanding eye contact, facial expressions, body language, and different tones of voice when communicating with others (Baron-Cohen, 2008; Kuoch & Mirenda, 2003). In addition, studies have reported that the children with ASD cannot interpret the thoughts and feelings of others, or predict social events; they have difficulties initiating interactions, responding to others, and maintaining conversation; they show deficits in listening and responding to others' requests, and in cooperating in

games and other activities; furthermore, some social signs, such as smiles, may be nonsensical to them (e.g., Carter, Ornstein-Davis, Klin, & Volkmar, 2005; Jahr, Eikeseth, Eldevik, & Aase, 2007; Lord & Magill-Evans, 1995; Sansosti & Powell-Smith, 2008).

Yapko (2003) indicated that socialization and the ability to interact with others are very important in human life, requiring social skills. Unfortunately, impaired social skills not only hinder child development but also lead to rejection and non-acceptance by friends, peers, and adults, and to loneliness and isolation (Delano & Snell, 2006). Other disadvantages of impaired social skills include weak academic

¹Faculty of Education and Psychology, Special Education Department, Shiraz University, Eram Square, Shiraz, Iran

²Linnaeus Centre HEAD, Department of Behavioral Sciences and Learning, Linköping University, Linköping, Sweden

Corresponding Author:

Ghorban Hemati Alamdarloo, Faculty of Education and Psychology, Department of Special Education, Shiraz University, Eram Square, Shiraz, Iran.

Email: ghemati@shirazu.ac.ir



progress, social failure, anxiety, depression, abuse, obstacles to social relationships, and social isolation (Bellini, Peters, Benner, & Hopf, 2007). In summary, socialization and the ability to interact with others are very important skills in life, and children with ASD have serious impairments in this regard. Therefore, it is necessary to plan and conduct appropriate interventions to improve the social skills of children with ASD.

Many different intervention methods and programs have been created and used throughout the world. Such methods include the Floortime approach, relationship development interventions, the Son-Rise picture exchange communication system program, the Lovaas program, the Miller Method, verbal behavior interventions, pivotal response training, play and play therapy, music therapy, sensory integration therapy, and social stories (Westwood, 2009). Some of these methods, such as the picture exchange communication system, sensory integration therapy, play and play therapy, and the applied behavior analysis have been used in a special education center for children with ASD in Shiraz, Iran (e.g., Aliakbari Dehkordi, Alipour, Chimeh, & Mohtashami, 2012; Derakhshan Rad, Zenhari, & Rahmani-Pour, 2014; Taziki, Hassanzadeh, Afroz, Ghobari Bonab, & Ghasemzadeh, 2014). However, most of these methods focus on cognitive training and communication with the environment, and none focus directly on social skills. For this reason, an alternative method to improve the social skills of children with ASD is needed.

One alternative method used to teach social skills to children with ASD is the social stories method, which was created by Gray (1995, 1998) to address the social difficulties of children with autism. The theoretical framework of the social stories intervention is based on theory of mind hypothesis (cf. Baron-Cohen, 1989; Happé, 1994), which suggests that social difficulties of children with ASD are mainly due to inability of children with ASD to understand the social behavior of others. Social stories help children with ASD to understand social situations by providing detailed information about social events that children with ASD are unaware. In fact, social stories intervention helps children with ASD by illustration and steering a confusing social situation that leads to a maladaptive behavior (Gray, 2010). Specifically, they help children with ASD to manage their behaviors by providing exact descriptions of what is going on in a story, and of when, how, and why the events described occurred. Independent studies have shown that social story intervention was efficient in improving social behaviors (e.g., Crozier & Tincani, 2006; Kuoch & Mirenda, 2003; Wright & McCathern, 2012), responding to others (e.g., Delano & Snell, 2006), emotion recognition (e.g., Bader, 2006), appropriate game-playing with others (e.g., Andrews, 2004), and modifying maladaptive behaviors (e.g., Brownell, 2002; Rust & Smith, 2006).

The social stories used under Gray's (1998, 2000, 2004) approach contain the following types of sentences:

- A. *Descriptive sentences*: These sentences appear at the beginning of the social stories. They describe situations and the people involved in them, what is going to happen, and the causes of events. They also address the following questions: Where? Who? What is going to happen?
- B. *Perspective sentences*: These sentences describe internal feelings—the sensations, wishes, emotions, attitudes, thoughts, and beliefs of people in the situations depicted. These sentences are very important because they contain information that is not available to children with ASD.
- C. *Directive sentences*: These sentences present social cues within situations and indicate the expected responses of individuals. Such responses may begin with “I will try” or “I will attempt.”
- D. *Control sentences*: These sentences are added to the story by the storyteller and describe more general observations and thoughts to reinforce the information presented in the story.
- E. *Affirmative sentences*: These sentences emphasize the importance of directive sentences; they begin with “It is good that . . .”
- F. *Cooperative sentences*: These sentences describe others' actions, and show who these actions can help and how.

The ratio of the sentences is one directive sentence for every two to five descriptive, perspective, affirmative, and cooperative sentences. Based on Gray's rules, when care providers utilize control and cooperative sentences in a story, a control sentence must be used with a directive sentence, and cooperative sentences must be used with descriptive and affirmative sentences (Gray, 2004).

Several studies have shown the efficiency of the social stories intervention on the social skills of children with ASD in various countries (for reviews, see McGill, Baker, & Busse, 2015; Quirnbach, Lincoln, Feinberg-Gizzo, Ingersoll, & Andrews, 2008). However, no social stories intervention has been conducted in Iran for children with ASD. Thus, the present researchers examined the effects of a social stories intervention on the social skills of male students with ASD in Iran to evaluate the efficiency of the social stories intervention. To achieve the stated goal, the researchers conducted quasi-experimental research, with a pre-test and post-test design, and a control group to test the following hypotheses:

Hypothesis 1: The social stories intervention effectively improves the social skills of male students with ASD.

Hypothesis 2: The social stories intervention improves the understanding/perspective-taking ability of male students with ASD.

Hypothesis 3: The social stories intervention improves the ability of male students with ASD to initiate interactions with others.

Hypothesis 4: The social stories intervention improves the ability of male students with ASD to maintain interactions with others.

Hypothesis 5: The social stories intervention improves the ability of male students with ASD to respond to others.

Method

Population, Sample, and Sampling Method

The population included all 6- to 12-year-old boys with ASD ($n = 89$) in Shiraz city studying under the auspices of the Special Education Organization in 2012-2013. The researchers selected 30 boys with ASD through convenience sampling, and randomly divided them into two groups: an experimental group ($n = 15$) and a control group ($n = 15$). A social skills test was administered to both groups prior to the social stories intervention. Following the social stories intervention (administered to the experimental group only), both groups completed the social skills test again.

The ethical review board of the regional Special Education Organization approved the study.

Social Skills Assessment Questionnaire

The Social Skills Rating Form is a subscale of the Triad Social Skills Assessment (TSSA; second edition) developed by Stone, Coonrod, and Ousley (2000) to assess the social skills of 6- to 12-year-old children with ASD. This instrument was originally developed to address the need for a relatively brief, easy-to-administer tool for evaluating the complex social profiles of children with ASD, identifying strengths and challenges in the social domain, and providing recommendations for intervention planning through individualized goals and specific strategies.

The Social Skills Rating Form contains descriptors of social behaviors in areas that include affective understanding/perspective-taking, initiating interactions, responding to interactions, and maintaining interactions. The respondent (parent or teacher) rates the child's ability to perform each behavior on a 4-point scale, ranging from "not very well" (score of 1) to "very well" (score of 4). Stone et al. (2000) assessed the reliability of the scale and reported Cronbach's alpha values of .92 for the parent ratings and .94 for the teacher ratings. Stone et al. also confirmed its content validity.

In the present study, the researchers used the parent's form. The researchers evaluated the validity and reliability of the social skills form; the results showed that the construct validity was 0.80 to 0.93, based on the correlations between the whole test and its subscales. The reliability of the form was also assessed, using a Cronbach's alpha coefficient of .95.

Procedure for Social Stories Intervention

The social stories intervention was prepared on the basis of Gray's (2000) instructions, as follows:

- A. The child's behavior, level of language comprehension, reading level, and problems reported by parents and the teacher were all observed, and used as the basis for the social stories constructed.
- B. Each story contained five to 10 descriptive, perspective, and directive sentences.
- C. The sentences were written in the third person and not in the form of direct sentences.
- D. Simple pictures were used to make the stories understandable to the children.
- E. Four stories were prepared for each child. After a story was read 3 times, the child was asked questions. If he could answer most of the questions, another story was read.
- F. The social stories were delivered via PowerPoint software and using printed materials with colored pictures.
- G. The social stories intervention included 16 sessions lasting 15 to 20 min each. The sessions took place 2 times per week over 2 months.

When conducting the intervention, the purpose, method, and length of the intervention were explained to the participants' teachers and parents, and they consented to cooperate. The stages of the intervention were as follows:

The first stage. The social skills questionnaire by Stone and colleagues (2000) was completed by the parents of the children with ASD as a pre-test assessment. Then, the child's behavior, understanding of language, and reading level were individually assessed in the classroom and the playroom by teachers and researchers. In addition, other problems such as screaming, crying, yelling, as reported by the parents and teacher, were assessed. Based on the results, necessary information was gathered about the frequency of a given behavior, the place where the behavior occurred, and how it occurred. Finally, the social stories were written.

The second stage. After identifying the target behavior, the stories were designed based on Gray's guidelines and read to the students in three sessions. At the beginning of each story, information about the child, the class, and other people involved in the situation was presented to the child through descriptive sentences. For example, "My name is A; I am in level 2, and I sit in the second row beside P. Sometimes I speak loudly and leave the class without my teacher's permission." Next, perspective sentences are presented, so that the child understands others' perspectives. For example, "When I speak loudly, my teacher becomes angry." Next, directive sentences are used. For example, "I will try not to speak loudly anymore or leave without permission." These sentences were followed by pictures to enhance the child's understanding of them.

The third stage. In this stage, the child's understanding of the story was assessed by asking the child questions about the

Table 1. Effect of Social Stories Intervention on Social Skills Ratings in Children With ASD.

Social skills	Groups	Descriptive statistics	
		Pre-test	Post-test
		M (SD)	M (SD)
Overall social skills	Experimental	73.46 (17.03)	82.13 (17.05)
	Control	65.13 (19.13)	64 (19.73)
Understanding/perspective-taking ability	Experimental	18.66 (3.59)	21.66 (3.57)
	Control	17.73 (5.37)	17.33 (5.12)
Ability to initiate interactions	Experimental	21.73 (6.20)	23.33 (7.07)
	Control	20.80 (7.03)	20.26 (6.76)
Ability to maintain interactions	Experimental	21.80 (6.72)	24.86 (6.66)
	Control	18.26 (5.39)	17.73 (6.86)
Ability to respond to others	Experimental	11.26 (3.10)	12.26 (2.57)
	Control	8.33 (3.69)	8.66 (3.47)

Note. ASD = autistic spectrum disorder.

Table 2. Analysis of Covariance Results for Social Skills in Experimental Group and Control Group.

Changes	Sum of squares	Degrees of freedom	M of sum of squares	F	Significance level	Etta coefficient
Pre-test	8,295.53	1	8,295.53	182.66	0.01	0.87
Group	740.72	1	740.72	16.31	0.01	0.37
Error	1,226.20	27	45.41			
Total	1,72,150	30				

Table 3. Analysis of Covariance Results for Understanding/Perspective-Taking Ability in Experimental Group and Control Group.

Changes	Sum of squares	Degrees of freedom	M of sum of squares	F	Significance level	Etta coefficient
Pre-test	420.76	1	420.76	138.70	0.01	0.83
Group	93.09	1	93.09	30.68	0.01	0.53
Error	81.90	27	3.03			
Total	12,051	30				

story's content (e.g., "Why your teacher is angry?"). The researchers asked questions to determine whether the child understood all of the story sentences and whether the story was effective.

The fourth stage. The social skills questionnaire by Stone and colleagues (2000) was again completed by the parents after 8 weeks, as a post-test assessment. All data were analyzed to examine the effects of the social stories intervention on the children's social skills.

Results

Table 1 shows the mean social skills ratings for the experimental and control groups.

To determine whether the changes in social skills ratings were statistically significant, an ANCOVA was conducted

for which the pre-test scores were considered covariates. Thus, this enabled testing of the first research hypothesis: The social stories intervention effectively improves the social skills of males with autism.

The ANCOVA results (Table 2) showed that the social stories intervention significantly improved the overall social skills in the experimental group relative to the control group.

A covariance analysis was used to test the second hypothesis: The social stories intervention improves the understanding/perspective-taking ability of male students with autism. The results are shown in Table 3.

The results in Table 3 show that when the pre-test data were considered covariates, the social stories intervention led to significant differences in understanding/perspective-taking ability between the two groups ($p < .01$). This finding implies that the understanding/perspective-taking ability of the experimental group significantly increased relative to the control group.

Table 4. Analysis of Covariance Results for Ability to Initiate Interactions With Others in Experimental Group and Control Group.

Changes	Sum of squares	Degrees of freedom	M of sum of squares	F	Significance level	Etta coefficient
Pre-test	1,209	1	1,209	245	0.01	0.90
Group	34.22	1	34.22	6.93	0.014	0.20
Error	133.23	27	4.93			
Total	15,670	30				

Table 5. Analysis of Covariance Results for Ability to Maintain Interactions With Others in Experimental Group and Control Group.

Changes	Sum of squares	Degrees of freedom	M of sum of squares	F	Significance level	Etta coefficient
Pre-test	973	1	973	84.32	0.01	0.75
Group	94.92	1	94.92	8.22	0.008	0.23
Error	311.57	27	11.54			
Total	15,277	30				

Table 6. Analysis of Covariance Results for Ability to Respond to Others in Experimental Group and Control Group.

Changes	Sum of squares	Degrees of freedom	M of sum of squares	F	Significance level	Etta coefficient
Pre-test	157.37	1	157.37	40.51	0.01	0.60
Group	15.29	1	15.29	3.93	0.058	0.12
Error	104.88	27	3.88			
Total	3,646	30				

A covariance analysis was used to test the third hypothesis: The social stories intervention improves the ability of male students with autism to initiate interactions with others. The results are shown in Table 4.

The results in Table 4 show that when the pre-test data were considered covariates, the social stories intervention led to significant differences in ability to initiate interactions with others between the experimental group and the control group ($p < .01$). This finding implies that the ability of the experimental group to initiate interactions with others significantly increased relative to the control group.

A covariance analysis was used to test the fourth hypothesis: The social stories intervention improves the abilities of male students with autism to maintain interactions with others. The results are shown in Table 5.

The results in Table 5 show that when the pre-test data were considered covariates, the social stories intervention led to significant differences in ability to maintain interactions with others between the experimental group and the control group ($p < .01$). This finding implies that the ability of the experimental group to maintain interactions with others significantly increased relative to the control group.

A covariance analysis was used to test the fifth hypothesis: The social stories intervention affects the ability of male students with autism to respond to others. The results are shown in Table 6.

Table 6 indicates a difference between the mean of the experimental group (12.26) and the mean of the control group (8.66) on the post-test; however, the difference was not significant ($p > .05$).

Discussion

The present study sought to examine the effect of social stories instruction on the social skills of male students with ASD. The findings of the present study showed that the social stories intervention efficiently improved the social skills of male students with ASD in Iran. These findings corroborate those of prior studies investigating the efficiency of social skills interventions in other countries (e.g., Agosta, Graetz, Mastropieri, & Scruggs, 2004; Barry & Burlew, 2004; Crozier & Tincani, 2006; Okada, 2008).

It is suggested that social stories lead to social skills improvements by explaining confusing circumstances, which may be difficult for children with ASD to comprehend, and by instructing children how to behave in different situations (Ozdemir, 2010). Barry and Burlew (2004) argued that social stories present appropriate behavioral models for children with ASD and describe the feedback for each behavior for a given child. Under this strategy, children with ASD learn appropriate behavior in social circumstances and repeat the same behavior. According to Gray (1995), social

stories convey real information about social situations, including others' probable reactions and appropriate social responses, which help children understand the social situations involved. In particular, using clear and exact methods, social stories provide correct social information that children with ASD can easily understand, which may lead to improved social behaviors and skills.

Prior studies have shown that children with ASD learn more effectively when presented with visual information (e.g., Delano & Snell, 2006; Lal & Bali, 2008). These children may not understand abstract and unwritten social laws (spoken verbally) in their culture-specific social environment (Twachtman-Cullen, 2000). Social stories remove these obstacles by presenting visual information. Social stories teach children with ASD about appropriate communication through pictures and visual methods, enabling children with ASD to learn appropriate social behaviors that can be used in interactions with others (Delano & Snell, 2006). Graetz, Mastropieri, and Scruggs (2009) reported that social stories increase the attention levels of children with ASD, and make it easier for them to understand stories by using images and relating stories to the child's own problems. Through social stories, children with ASD can gain an understanding of others' reactions via their facial expressions, and as a consequence, they learn how to behave based on others' feedback and gestures in a given situation (Hanley-Hochdorfer, Bray, Kehle, & Elinoff, 2010).

With regard to the impact of social stories on understanding/perspective-taking ability, it is important to note that successful social interactions require each individual to understand and predict others' thoughts and feelings, and to behave appropriately in a given situation. Such understanding, however, is absent in children with ASD (Hanley-Hochdorfer et al., 2010). Children with ASD have a major deficit in understanding others' viewpoints and thought processes; therefore, they are unable to understand others' intentions, beliefs, needs, and requests (cf. Greenway, 2000). Perspective sentences are used in social stories to teach children with ASD about how other individuals think and feel; the children learn that people's perspectives differ and that different behaviors cause different feelings (Ali & Frederickson, 2006). Social stories offer children with ASD the opportunity to understand different viewpoints, which helps develop their capacity for empathy and their perspective-taking ability (Berk, 2003). Graetz and colleagues (2009) showed that social stories motivate children with ASD to understand others' feelings and predict feelings such as happiness, unhappiness, and anger, enabling children with ASD to learn how to behave in different situations. Social stories offer additional information about social situations, enabling children to better understand and interpret what is expected in their environment (Ivey, Heflin, & Alberto, 2004). In addition, the social stories make challenging social situations understandable by omitting irrelevant information and describing essential information that helps children with ASD

to better understand these situations (Scattone, Tingstrom, & Wilczynski, 2006). Furthermore, social stories reinforce autistic children's understanding of gestures and the role of gestures in communicating emotions and perspectives (Yapko, 2003).

With regard to the effect of social stories on the abilities of children with ASD to initiate interactions with others, these stories provide appropriate greeting behaviors for children with ASD. This enables children with ASD to initiate social communication, enhancing self-confidence, and teaches them how to make appropriate requests (Graetz et al., 2009; Krantz & McClannahan, 1993; Swaggart et al., 1995; Thiemann & Goldstein, 2001). Scattone (2008) reported that instructions in Dear Namara, social stories interventions, and modeling in videos have meaningful positive effects on the initiation of interactions and enhance respect for others among children with Asperger's syndrome.

With regard to the effect of social stories instruction on autistic children's abilities to maintain interactions with others, the social stories intervention teaches children about eye contact and improves their understanding/perspective-taking abilities. As a result, social stories decrease children's weaknesses in these areas and improve their abilities to maintain interactions with others (Kuo & Mirenda, 2003; O'Handley, Radley, & Whipple, 2015; Scattone, 2008). Sansosti and Powell-Smith (2006) reported that social stories instruction has a significant positive effect on the ability to maintain a conversation among children with ASD. Generally, if children are better able to understand others' perspectives, and predict how, where, and when behavior will occur, they are more motivated to interact with others and maintain communication.

Our results indicate that social stories had a positive effect on ability to respond to others for male children with ASD; however, this effect was not significant. One explanation might be that the participants in the experimental group needed more training sessions to benefit significantly from the social stories intervention in terms of their ability to efficiently respond to others. The authors of the present study suggest that future studies or practitioners who work with children with ASD conduct a great number of sessions of the social stories intervention to considerably improve the skill of "responding to others" in children with ASD.

In conclusion, the findings of the present study support the efficiency of the social stories intervention in improving the social skills of students with ASD in Iran. The authors recommend that the social stories intervention be incorporated into the special education and rehabilitation of children with ASD in Iran. In particular, teachers, parents, and other care providers can use this method to improve the social skills of children with ASD. For future studies, the authors of the present study recommend investigating the effects of social stories on the social skills of different groups of children with special needs, particularly children with other intellectual and developmental disabilities. In addition,

future researchers should study the effects of social stories on the social skills of adults with ASD.

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Author Biographies

Fatemeh Golzari earned a MA in special education from Shiraz University. She is now a manager of a clinic in special education in Kerman, Iran. She has scholarly publications on challenges of autism spectrum disorder.

Ghorban Hemati Alamdarloo earned a PhD in special education from Tehran University. He is assistant professor in department of special education at Shiraz University, Shiraz, Iran. He teaches courses in special education, intellectual and developmental disabilities, and learning disabilities. He has scholarly publications on issues around autism spectrum disorder, intellectual and learning disabilities, and learning disabilities.

Shahram Moradi holds a PhD in disability research from Linköping University and working as a researcher in the field of cognitive hearing science in the department of behavioral science and learning at Linköping University, Sweden.