

**THE EFFECTS OF A SOCIAL STORY™ INTERVENTION ON THE PRO-SOCIAL BEHAVIORS OF A YOUNG ADULT WITH AUTISM SPECTRUM DISORDER**

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*The use of social stories™ with a young adult with autism spectrum disorder was examined. The young woman in the study was completing her high school education in a clinical room on a university campus in the South. The primary goal of her program was to develop and expand her functional independence. The social stories™ were effective in improving the pro-social behaviors in two areas, greeting behavior and nose-wiping behavior.*

Numerous investigations have studied improving communication and social skills of children with autism spectrum disorders (ASD). In many investigations, social stories have generated positive results (Palmen, Didden & Lang, 2011; Reichow & Sabornie, 2009; Samuel & Stansfield, 2011). These studies have demonstrated that use of social stories is an effective technique that can improve social skills for children with ASD (Samuels & Stansfield, 2011). Very few studies address social stories for young adults or those in adulthood with autism spectrum disorder.

The incidence of autism has been growing at an alarming rate, especially in the United States, Canada, and the United Kingdom (Hughes, 2011). In other countries, autism spectrum disorders are just now being charted. In the recent past, prevalence estimates from Brazil, Oman, and Western Australia have been published (Hughes, 2011). In addition, studies are being conducted in South Korea, Mexico, India, and South Africa (Hughes, 2011). Growing interest in autism on a global basis helps underscore the importance of study of intervention methodologies.

As the rate of autism increases, the importance of interventions and accessible therapy used to help decrease the effects of general impairments of ASD like temper tantrums, disorders of the sleep patterns and eating, depression, attention problems, anxieties, and assaultiveness or self-injury (Karkhaneh et al., 2010) becomes increasingly imperative. Individuals with ASD who are high functioning or have no intellectual disability encounter problems in improving their social lives (Allen, Wallace, Greene, Bowen, & Burke, 2010) and finding and sustaining employment (Allen et al., 2010). Seventy-eight percent of individuals with ASD are unemployed and are isolated from other individuals (Allen et al., 2010). Communication impairments are one of the biggest challenges for individuals with ASD (Palmen, Didden, & Lang, 2011). According to studies, body and sign language is not enough to solve the communication impairments of people with ASD (Palmen et al., 2011). Individuals with ASD who have problems with eye contact and using some communicative body and sign language (Palmen et al., 2011) show insufficiency in expressing their feelings to others in society, joining social groups, or their friends (Palmen et al., 2011).

One of the most prevalent issues for individuals with ASD who have intellectual and language problems is deficiency in social skills (Wang & Spillane, 2009). Improving social skills is a challenge for people with ASD, and development of appropriate social skills enables improved skill in the individual's social and academic life as well as living independently (Wang & Spillane, 2009).

*Social Stories™ Purpose and Use*

Social stories™ are used in order to develop social skills of individuals who have ASD. These were defined by Carol Gray, a former special education teacher (Gray, 1994). A Social Story™ describes a

situation, skill, or concept in terms of relevant social cues, perspectives, and common responses in a specifically defined style and format (Gray, 1994). The Original Social Story Book in 1993 and The New Social Story Book in 2000 were enhanced by Carol Gray (Gray, 2000). These books include numerous social stories™, their directions, and social story checklists. The direction of the social stories™ provides information to individuals on how to write a social story™ or what the components of a social story™ are, so they may write their own social stories™.

The goal of a Social Story™ is to share accurate social information with a participant in a reassuring manner that is easily understood by its audience (Gray, 1994). The social story™ allows individuals with ASD to read, understand, and reciprocate in their social lives (Gray, 1994). A social story™, which is used by individuals who have ASD, is a sort of proactive behavior intervention. It enables occurring affirmative, target social behaviors from the point of view of the individual.

A social story™ is a short story which is comprehensibly written (Crozier & Sileo, 2005). They are usually written in the first person (Wilkinson, 2010). The text of a social story™ is tangible, and it is improved via visual materials, so the text is easy to understand by children. The text and visuals should be appropriate to the child's cognitive and reading abilities (Ozdemir, 2008). Social stories™ should not be up to the student's reading level (Hanley, 2008). As the visual materials such as maps, pictures, symbols, or photos prevent losing attention and misinformation, they are typed in black and white. The language and preferred responses of the social story™ is affirmative (Ozdemir, 2008).

Social stories™ can be implemented by reading, either independently or by a caregiver, or through a multimedia system and equipment, in order to teach appropriate behavior to individuals (Karkhaneh et al., 2010). Four types of sentences which are descriptive, directive, perspective, and control may be used for social stories™ to explain abstract situations (Ozdemir, 2008). Descriptive sentences give knowledge to the child about the behavior of most people in a certain social event, and they are very useful to clarify the social events. These sentences do not provide knowledge to the child about desired behavior in the certain condition (Ozdemir, 2008). Directive sentences give information to the child on how he/she should respond and what he/she should do or try to say to a certain condition when he/she comes across the condition. Perspective sentences present points of view of other people in the given situation to the individual, so he/she can understand how others view the given situation by these sentences. Control sentences can be written by the individual. They are individually tactical, and they are used to enable the individual to implement the given information and remember it (Ozdemir, 2008). The basic social story™ is comprised of two to five descriptive, perspective, and affirmative sentences for each directive sentence. In a social story™, only one desired behavior is expected at a time, so this proportion stands (Ozdemir, 2008).

Social stories™ are used to lower an individual's anxiety, change his/her life styles, and teach academic skills and propriety. Social stories™, like other interventions, including self-management (Scattone, Tingstrom, & Wilczynski, 2006) and written scripts (Scattone et al., 2006), define the important issues concerning a given social situation in a written format. Also, social stories™ move the control of the stimulus from the teacher and peers directly to the individual with ASD, as in self-management and scripting. In addition, Social Stories™ may be considered a priming strategy (Scattone et al., 2006) because, before a social situation occurs, they prime the responses correctly (Scattone et al., 2006).

Every social story's™ purpose is to educate individuals in controlling their actions in the social situation by explaining where and when the event will occur, what will go on during the event, participants, and the reason why the individual should control his/her actions (Xin & Sutman, 2011). Self-modeling and interactive learning are very strong processes in social stories that help to improve the interaction of people with ASD (Xin & Sutman, 2011). There are several different skills in which social stories™ are used. Those are: disruptive or problematic behaviors, inappropriate social behaviors, social communication, appropriate social and play behaviors, general social skills, and on-task behavior (Reichow & Sabornie, 2009).

Social stories™ have multiple uses. Some of the different type areas of usage may be using the library, lining up, eating lunch, studying with others in groups, and playing in the playground. In addition, teachers may plan stories to be used for these behaviors positively in social conditions by the students (Crozier & Sileo, 2005). Social stories™ can be used easily, so there is no need for comprehensive instruction to implement them. Classroom teachers, many educators, paraprofessionals, and related service personal can apply social stories. If an individualized education program (IEP) team wants to use

social stories™ in the behavior plan, it is suggested that social stories are incorporated into the IEP or behavior plan with other strategies and interventions (Crozier & Sileo, 2005). They improve communication and social skills, increase greeting responses, reduce inappropriate behaviors like tantrums behaviors, decrease aggression, anxiety, and other feelings which affect children with ASD (Graetz et al., 2009).

Although social stories™ have some advantages, there are some limitations (Reichow & Sabornie, 2009). Social stories™ may be too complicated, so it can be difficult to explain significant knowledge to the student. Social stories™ are a strategy for only one expected behavior at a time. They are not used for all behavioral needs, so it may be difficult to generalize with them. They may, however, be a part of an extensive educational and behavioral plan (Crozier & Sileo, 2005).

#### *Research on Social Stories*

Hanley-Hochdorfer, Bray, Kehle, and Elinoff (2010) attempted to use social stories™ to increase pro-social behaviors of verbal initiation with children who have ASD in the natural settings. The participants of the study were three elementary school students and one middle school student who were six, eleven, nine, and twelve years old. A multiple baseline was applied across three participants for evaluating effectiveness of social stories in pro-social behaviors. Results indicated that the efficaciousness of this widely accepted social story™ intervention is questionable and in need of further research.

Wright and McCathren (2012) have researched utilizing social stories™ to increase pro-social behavior and reduce problem behavior in four young children with autism. The participants ranged from four to five years old. A multiple-baseline across participants design was used in this study. Outcomes of this research indicated that use of social stories™ was successful for increasing the pro-social behavior and decreasing the problem behaviors of the participants.

Ozdemir (2008) worked with three children who were seven, eight, and nine years old on decreasing disruptive behaviors by using multiple-baseline across participant design. The disruptive behaviors of the children were using a loud voice in class, chair tipping, and cutting in lunch line. The study findings recommended that social stories™ without additional behavioral management interventions would be more effective.

According to Graetz et al. (2009), using modified social stories™ for decreasing inappropriate behaviors of adolescents with ASD were very effective. For this study, a multiple-baseline across participants design was implemented with three participants.

Very few studies address social stories™ for young adults with autism disorders. The present study attempts to expand the knowledge of use of social stories™ with an adult by with ASD by examining the effect of social stories™ on the pro-social behaviors of a young woman with autism.

#### **Method**

##### *Participant Characteristics*

The participant for this study was a 22 year-old Caucasian woman who was the first child in her family. The young woman was diagnosed as having a mild degree of ASD at three years of age by the Childhood Autism Rating Scale (CARS) and Psychoeducational Profile-Revised (PEP-R).

During the study, the participant's parent had legal guardianship of her. She was involved in a pilot program in which she was completing the high school curriculum online and participating in activities on a college campus in the South. She was receiving support from a special education teacher who worked with her on a weekly basis to assist with functional independence. The special education teacher was also a Board Certified Behavior Analyst. At the time of the study, the participant traveled three times per week to receive her educational services on the college campus with her special education teacher. The participant's mother traveled with her when she attended the program. She was chosen after approaching her mother and inquiring about the possibility of identifying areas not currently addressed in her current academically based program. After several discussions with the mother as well as her teacher, the two identified target behaviors were chosen. The mother of the young woman indicated that her daughter did not greet others when approached, and that this was a behavior that the mother wished to address. In addition, the mother suggested that her daughter did not wipe her nose when she needed to do so. Greeting and nose wiping were both identified as target behaviors. It was believed by the researchers and mother that these behaviors would both enhance the young woman's social skills.

Within the last year, the participant was evaluated using the Vineland – II, Woodcock Reading Mastery Test (WRMT), and the Receptive One-Word Picture Vocabulary Test (ROWPVT). According to the Vineland –II Adaptive Behavior Report, she had low adaptive level in communication, daily living skill, and socialization domains. In the ROWPVT, she had a severe speech production disorder and a severe receptive language delay. The participant identified 39/46 words presented by either typed or pointed to the easel and each of the 17 letters presented by pointing in the WRMT.

#### *Settings*

All baseline and intervention sessions took place in a clinical room in an academic building at the campus. The room consisted of a computer, desk, timer, and three chairs. For the second target behavior, the investigator placed a box of tissue on the desk. While the teacher sat near the participant during all sessions, the investigator sat behind the participant for observing and recording the data.

#### *Independent Variables*

The independent variable was the use of the intervention, social stories. The construct validity of social stories™ was evaluated with Social Story Guidelines by an Associate Professor in Special Education who had extensive experience in using social stories for individuals with ASD. The Social Story™ Guidelines provide information concerning how to write a social story™ for individuals who have autism disorders. It also consisted of information about what a social story™ is and which kind of sentences should be used for a social story. Copies of the social story™ were given to the participant's mother and teacher who approved the social story. The social story™ was then read by a teacher in the clinical room during the participant's regular education programming time.

#### *Dependent Variables*

The pro-social behaviors of the participant were the dependent variables in the study. Two specific behaviors, greeting behavior and nose-wiping behavior, were examined by using the social story™ intervention.

#### *Design*

An AB design was implemented without the social story™ intervention in condition A, and with the social story™ intervention in condition B for each identified pro-social behavior. A multiple baseline design was used because it is considered an effective method of evaluation for interventions. Multiple baseline designs which have baseline (condition A) and treatment data (condition B) usually assist in the evaluation of functional relationships between behavior and intervention (Hall, 2013).

The investigator met with the participant's mother and teacher to decide the target behaviors of the participant. The target behaviors were defined and approved by both the participant's mother and teacher. According to Gray's guidelines (1993), two different social stories™ for two different pro-social behaviors were written with illustrations to help understanding the texts for each target behaviors. The texts were introduced on white paper, one page in length, and the font size of the paper was 19 points using Times New Roman.

Baseline conditions ranged from four to eight sessions. The social story™ conditions ranged from four to five sessions.

#### *Procedure*

##### *Baseline*

All sessions occurred in the clinical room where the student received her special education program. During baseline, the investigator observed the participant during 15 min sessions before the participant's regular educational programming time for the first target behavior. The participant was observed 15 minutes before and during the regular education programming time for the second target behavior. The observation time was started at 10:00am for all sessions. Frequencies of target behaviors were observed, and data was collected by using performance checklists during each session. These observations were performed at least three times a week until stable rates of the target behaviors were observed. Other interventions were not used during these periods. The set of the regular education programming of the participant was not changed during the baseline session.

##### *Social Story™ Intervention*

All sessions occurred in a clinical room. When baseline data were stable, the intervention began for the first target behavior. The teacher helped the participant to read the social story™ aloud three times

during the participant's regular education programming times. When a steady state was reached for the first behavior, the second social story™ was applied to the next behavior. The teacher read the social story™ aloud three times during the sessions. Then, the teacher asked the participant how to perform the target behavior step by step according to the social story™ because the participant did not need to perform the second target behavior during the sessions.

#### *Inter-rater Reliability*

The investigator and the participant's teacher were observers for establishing inter-observer reliability. They read the definitions of target behaviors and became familiar with the data collection forms and procedures for recording observations (Wright & McCathren, 2012). The observers then practiced observing and recording data in the clinical room for each of the target behaviors of the participant. Inter-observer agreement checks were performed for at least 30% of the observation sessions to guarantee all data collection across each target behavior of the participant in each condition of the study (Wright & McCathren, 2012). At least 80% inter-rater agreement of the observations for each target behaviors of the participant in the all sessions was considered as reliable for this study. For the first target behavior, agreement in each condition ranged from 90% - 100% (M= 92%) and for the second target behavior, it ranged from 85% - 100% (M= 90%).

#### *Treatment Fidelity*

The teacher noted whether the social stories were read to the participant in an appropriate way and the defined times and asked questions on how to perform the target behavior. When the teacher completed the intervention sessions for each target behavior, the investigator noted on a checklist the treatment integrity for at least 50% of the intervention sessions (Wright & McCathren, 2012).

### **Results**

The first set of data from the multiple baseline design shows the percentage of the appropriate greeting behavior with others by the individual with ASD during the baseline and social story™ condition. The baseline was conducted in four sessions and the social story intervention was conducted in nine sessions. The participation by the young woman took approximately five to ten minutes per day, at least three days per week, over a period of one month during the baseline and social story™ intervention.

As shown in Figure 1, the social story™ intervention helped to increase the appropriate greeting behavior of the participant. The appropriate greeting behavior of the participant was increased from an average 43% during baseline to an average 80% during intervention session by applying the social story™ intervention. In addition, in the last four sessions during the intervention, the appropriate greeting behavior became stable through use of the social story.™ When approached by others, the young woman greeted them consistently after the intervention.

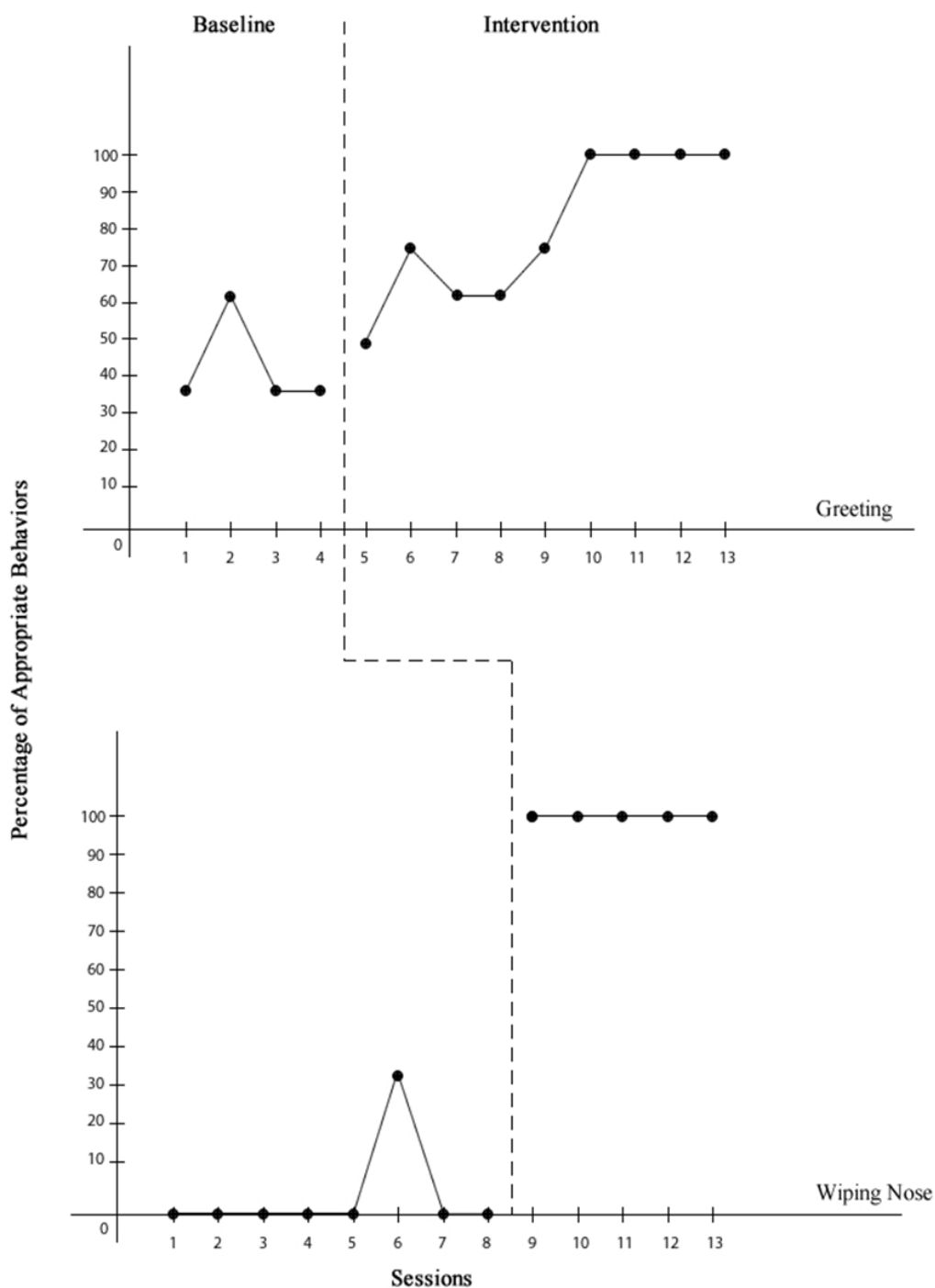
The second data set of the multiple baseline design shows the percentage of the appropriate nose wiping behavior of the individual with ASD during the baseline and social story™ condition. The baseline was conducted in eight sessions and the social story™ intervention was conducted in five sessions. The participation by the young woman took approximately five to ten minutes per day, at least three days per week, over a period of one month during the baseline and social story™ intervention.

As shown in Figure 1, data indicate that the social story™ intervention helped to increase appropriate nose-wiping behavior of the participant. During the baseline, the participant did not show any appropriate nose-wiping behavior except one day because she did not need to wipe her nose. During the intervention session, the participant demonstrated the appropriate nose-wiping behavior and answered every question correctly about how to wipe her nose. The appropriate nose-wiping behavior of the participant was increased from an average 6.25% during baseline to an average 100% during the intervention session by applying the social story™. In addition, in all five sessions during the intervention, the appropriate wiping nose behavior became stable through use of the social story™.

### **Discussion**

The social stories™ resulted in improvement of appropriate social behaviors of the young woman with ASD. The rate of appropriate social behavior was higher after the social story™ intervention than it was during the baseline condition. It is believed that the social story™ intervention was responsible for the increase in behaviors because appropriate social behavior for the participant increased after implementation of the social story™ intervention. For this reason, social story™ intervention is effective

at increasing appropriate social behaviors. In the other investigations, similar results have occurred when the social story™ interventions were used without other supports (Wright & McCathren, 2012).



**Figure 1. Percent occurrence of wiping nose and greeting behaviors per session during baseline and treatment.**

Greeting is one of the most significant behaviors that initiate social communication behaviors for individuals. The appropriate greeting behavior, which was the first target behavior in this study, is one of the core challenges in individuals with ASD. In addition, eye contact behavior during the greeting with individuals is one of the most challenging behaviors for individuals with ASD. This current study demonstrated that the social story™ intervention was very effective in increasing social skill behaviors

like greeting and eye contact of the young woman with ASD. Although most investigations have studied children with ASD for these social skill problems, this current study indicated that the social story™ intervention was effective for a young woman with ASD.

The appropriate nose-wiping behavior was not frequently seen. The participant did not need to wipe her nose during baseline conditions and the social story™ intervention, so questions were asked of the participant how to wipe her nose in an appropriate way, and her behaviors were observed step by step by her teacher and the investigator. She was very successful and demonstrated each and every step appropriately. Though the appropriate nose-wiping behavior is an important pro-social behavior, very few studies have examined this behavior for young children with ASD.

Social stories™ are a very useful intervention because they are easy to construct and implement by teachers or other specialists. There is no need of expertise to use them. In the current study, just one participant was used in a clinical room with a special education teacher, so there were no distracting objects seen by the participant during the observation and implementation of the social stories. Therefore, the social story™ intervention in the current study was believed to be effective to increase the appropriate pro-social behaviors of the participant. Social stories™ are also beneficial for single subject designs to change most challenge behaviors of individuals with ASD. The participant sometimes demonstrated some stressful and anxiety behaviors before implementation of the social story™ because she did not want to read. However, the social story™ resulted in relaxed behavior when the teacher read to her. It is believed that this relaxed state was due to the social story™ being easy to understand by the participant. In addition, the participant's mother reported positive feedback about the social stories™. Prior to the study, the young woman never asked for a tissue when she needed one. However, after implementation of the social story™, she started to ask for tissues to wipe her nose in her home. The feedback from the mother demonstrates continuing of the appropriate pro-social behaviors after intervention.

#### *Limitations*

This current study has several limitations. The results of the current study may not be generalized across individuals or settings because only one participant was used. Maintenance or a follow-up session was not used in this current study, so the investigator did not have a chance to see whether or not the appropriate behaviors continued after the social story interventions. However, informal contact with the young woman's mother and teacher resulted in positive reports that the behaviors have remained stable. For the second target behavior, wiping her nose, the investigator had to wait for a long time to observe this behavior. However, the behavior was not seen during the baseline, so the investigator had to ask questions about the target behavior. This modifying may have some effect on the results of the interventions.

#### *Recommendations for Future Research*

This current study must be replicated with more participants while addressing the limitations and taking in consideration the recommendations. Future research should evaluate maintenance and follow-up sessions after social story™ intervention. Future research should evaluate other settings such as home setting, school setting, or community settings for observation of the target behavior of the participants. Future research should use modified social stories™ paired with different interventions like video modeling. It is important that future research should use more young adults as participants with ASD with varying skills and diagnoses to generalize the results. Future research should also consider factors related to nose-wiping behavior. One such factor is the participant's need to wipe his/her nose. In the present study, collection of data was prolonged due to this factor.

This study evaluated the effects of the social story™ on the pro-social behaviors of a young adult woman. The results of this study add to the growing literature base of social stories™ in support of the use of social stories™ for some young adults.

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