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# **The Effectiveness of Social Stories Implemented Through Technology: Is There a Difference in Outcomes between Males and Females?**

**ABSTRACT.** The effectiveness of technologically-based social stories for males and females with autism is explored. An increase in positive behavior responses and improved communication are two outcomes compared to paper-based social stories. Additional research should continue to validate the use of technology supports for males and females with disabilities in the classroom.

**KEYWORDS:** social stories, technology, males, females

## **1. Background and Purpose**

Autism spectrum disorder presents deficits that target an individual's ability to effectively communicate, and develop socially appropriate behaviors (Sansoti & Powell-Smith, 2008). Among other things, it hinders an individual to fit in society to their fullest potential. Males are more likely to be diagnosed with autism spectrum disorder. Yet, many of the males and females who are diagnosed with autism cannot distinguish between the social cues that allow for a more natural form of communication and behavior observable to most individuals without autism spectrum disorder (ASD) (Attwood, 2007). In the last ten years, there has been a rise in children diagnosed with ASD by 173% which puts this disorder as the quickest growing developmental disability within the United States (Sansoti & Powell-Smith, 2008) with a notable increase in males being diagnosed. Because autism varies from person to person, it has been cumbersome trying to find effective ways to combat the deficits

presented by this disorder. Many of the individuals diagnosed with autism suffer ridicule by peers, struggle making and keeping meaningful friendships and often times become ostracized (Richter & Test, 2011).

One method that has been applied as a form of intervention in regards to social and behavioral deficits is the social story, which is a short, concise, and individualized narrative that depicts a corrective and more appropriate response to a social situation (Gray, 2000). The social story was developed for the purpose of responding to the ever growing frustrations with male and female individuals with autism spectrum disorder (ASD). The difficulties they face in regards to understanding social situations by setting forth certain guidelines that provide educators and therapists the opportunity to help all young males and females to understand the social norms of behavior can be overwhelming (Howley & Arnold, 2005). Traditionally, social stories have been delivered through reading a paper version of a story targeting a behavior that an individual needs to acquire, however different approaches have been implemented in the efforts of having a more successful outcome of acquiring the new skill (Sansoti & Powell-Smith, 2008).

Technology has been highly regarded as an engaging form of delivering instruction in the classroom. More and more educators turn to technology to facilitate learning situations for their students especially males. Education specialists are also investigating this option in teaching individuals with autism the social norms needed to function appropriately in society (Richter & Test, 2011). One of these methods includes video modeling. Video modeling is when a recording of the skill being taught is demonstrated to the student having difficulty learning that particular skill (Charlop-Christy, Le & Freeman, 2000). According to Stokes and Baer (1997), video modeling has become increasingly popular due to its increased ability to generalize the skill being taught. Not only has this strategy demonstrated high success rates for teaching males with ASD, it has also demonstrated high success rates in implementation from school to home environments (Schreibman, Whalen & Stahmer, 2000). Other technology-based social stories consist of computer-assisted instruction. This form of delivery has proven quite successful due to the use of computer technology. According to Sansoti & Powell-Smith (2008), children with ASD find electronics, including computers intrinsically motivating (especially males) and, therefore, become more engaged in the skill being acquired. In fact, males with autism learn significantly more when taught by a computer than when taught by an educator

(Heimann, Nelson, Tjus & Gillberg, 1995). Individuals with autism are visual learners; thus, transmitting information through a technologically based social story may enhance the meaning of the skill being taught. This would support the student by engraving the skill into memory and putting it into practice (Grandin, 2006). Due to the verbal and nonverbal deficits these individuals face, more negative behaviors may arise as an outcome which further ostracizes them from their peers and community (Tantam, 2003).

Because individuals with autism have difficulty when trying to effectively communicate during social situations, more engaging and promising interventions need to be developed in order to successfully combat social difficulties that arise for people with ASD.

## **2. Review of the Literature**

Social stories have been a widely used tool in trying to teach individuals, primarily those with autism spectrum disorder, certain skills that allow them to more appropriately function within the social norms. Recently social stories have been implemented not only on children with ASD, but on children displaying undesired behaviors such as off task behavior, or to promote task completion (Leach & Duffy, 2009). In fact, many studies have gone ahead and have turned away from the traditional form of social story where a story is created for the individual and is then simply read, to a more relevant form that focuses on transmitting the social story through technological medias such as ipads, smart boards, video modeling, DVDs, and Powerpoint (Xin & Sutman, 2011). This has been an especially attractive option for males. Social Stories that are presented through digital media promote a more motivating, engaging, experience and also allow for a more positive and receptive intervention not only for children with ASD, but for any child who needs intensive support with a certain skill (Yildirim et al., 2001).

## **3. Types of Technology-Based Social Stories**

Some of the technology based social stories include digital social stories. These stories are transmitted through computer technology and can be embedded within current relevant curriculum. Technology has been proven to be a motivational component for learning and an effec-

tive way to keep individuals engaged for longer periods of time while learning a specific skill (Chen & McGrath, 2003). Digital photography can also be used to capture images of inappropriate and appropriate behaviors to visually demonstrate what certain behaviors should look like. This method is used for generalizing a skill throughout the individual's environment by involving classmates, teachers, family, and community members in the story. It is also a creative way for the individual to explore appropriate skills through a media such as a camera. Other variations of technology-based social stories include multimedia stories through Powerpoint. Through this method, educators are able to transfer a story script targeting a particular student and the skill they are reinforcing. Images are then added to the slides that coincide with the story and a creative alluring background is then added to make it aesthetically engaging and appealing.

Smart Boards have recently become popular in the classroom setting. Social stories transmitted through this type of media become ever more engaging because the individuals are able to interact with the Smart Board through diverse methods. This technology allows more manipulation of whatever is being presented and if social stories are being transmitted through the media, the possibilities and interactions are endless. Male students with autism tend to find more creative uses for Smart Boards and are motivated to improve behaviors with the use of a Smart Board.

### **3.1. PowerPoint**

Social stories have been used primarily on individuals with ASD. However, social stories that are transmitted through reading without a need of interaction have not always been proven to be successful (Partington, 2007). In a study by Xin & Sutman (2011), two special education teachers attempted to make it possible for male and females with ASD to be able to easily imitate, observe, review and put into practice each of the appropriate behaviors targeted. The target was to encourage the students to vocalize their wants and needs in an appropriate manner (Xin & Sutman, 2011). A PowerPoint presentation was utilized in this study and transmitted to a smart board where the males with ASD were able to actively be involved in their appropriate skill learning by practicing the skill presented. The Smart Board was created by SMART Technologies in 1991, but it was not until recently that it has been fully uti-

lized to support children with ASD (Xin & Sutman, 2011). The researchers were able to touch the screen and mark with their fingers which appropriate behavior they witnessed. In this particular study, a 9 year old boy who had been diagnosed as autistic participated in the Smart Board story experience. The boy had very limited verbal communication abilities and became very easily upset and frustrated. He then began to make sounds or used humming as a form of communication. A 9 year old girl was also a participant of the Smart Board social story study. She too was diagnosed with autism, but unlike her counterpart, her language skills were age appropriate; however, she did not socialize with her peers appropriately. She had a difficult time asking if she could be included in social time or play time. The team of researchers identified the target behaviors and developed appropriate social stories following Gray's (2000) guidelines. The researchers then compiled a program that included a PowerPoint depicting images of appropriate behaviors and videos of students utilizing appropriate communication. The Smart Board was then utilized to allow students to interact with the images, circle correct modeling, and imitate the appropriate behavior. The children participated with this intervention for 13 days and, according to the data, the children's inappropriate behaviors decreased by day 7 and were almost extinct by day 13 (Xin & Sutman, 2011). Although the Smart Board social story was successful for the verbal behaviors, it was not as successful for helping the 9 year old boy learn how to raise his hand without someone prompting him.

### **3.2. Video Modeling based Social Stories**

Video Modeling is another form of technology-based social story which can be utilized to teach individuals with ASD appropriate skills/behaviors. A study conducted by Cihak and Kildare (2012) demonstrated that for three children, two males whom were classified as severely autistic and one male who was moderately autistic, indicated that the off-task behaviors of the three was significantly reduced due to the video modeling intervention. The children in this study were able to access the video of on-task behavior whenever they needed to refer to it time and time again. A second study by the same researchers utilized the same video self-modeling method on a group of two males and two females with ASD. These children displayed aggressive behaviors while

transitioning. They were asked to watch a short video of themselves appropriately walking in the hallway. The results indicated that these children too were able to improve their transitioning skills and maintained proper transitioning for the next 9 weeks (Chiak & Kildare, 2012).

Similarly, a study conducted by Coyle and Cole (2004) looked at video self-modeling and self-monitoring to improve transitioning behaviors of four male elementary students diagnosed with ASD. These four students demonstrated inappropriate behaviors such as aggression, elopement (sitting on the floor and not being able to get them up whenever it was time to transition from one location to the next).

In an additional study conducted by Dorothy Scattone, video modeling was the primary form of intervention used to encourage a 9 year old boy with Asperger's syndrome to effectively socialize with others. Over a period of 15 weeks, different social stories were introduced and taught to the boy. The social stories were acted out and a camera was utilized to video tape the appropriate behaviors. For this case, behaviors such as eye contact, smiling and initiation of a social situation were some of the primary skills taught with success.

### **3.3. Social Stories through iPhones**

Technology-based social stories have also been used for adults with autism such as in a case study conducted by Samuels and Stansfield (2011). The study targeted interactive skills for four males with autism to try and improve social interactive skills in specific situations. iPhones were utilized to transmit social stories utilizing Gray's (2004) guidelines through text messaging. The story included images, video links, suggested videos, and website guidelines to help the individual learn the skill. Text messages would be sent and then practiced. The findings resulted in significant improvements for the four males in gaining skills to make them more socially appropriate in public situations.

### **3.4. Computer Aided/Multimedia Social Stories**

Computers have allowed social stories to become more relevant and engaging for males and females with autism. The use of a computer allows for the individual to take more control of the learning experience

which can then positively affect motivation as well as increase a positive attitude (Yildirim, 2001). Social stories through this media allows for participants to receive feedback directly from the program which can be then used to better support the individual with autism by correctly learning a skill.

#### 4. Conclusion

Overall, the literature depicts that social stories do contribute to the development of skills necessary to function in social situations. Social stories that are transmitted through technology are proven more successful due to the high engagement rates especially of male students. Students respond better to relevant forms of intervention and in social situations with males and females with autism, technology has been proven to be one key to support student success.

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