



AOTA Evidence Briefs

Autism Spectrum Disorder

**A product of the American Occupational Therapy Association's Evidence-Based Literature Review Project*

Social Stories™ for Children with Disabilities

Reynhout, G., Carter, M. (2006) Social stories™ for children with disabilities, *Journal of Autism and Developmental Disorders*, 36 (4), 445–469.

Level I

Systematic review

Why research this topic?

Social Stories™ are short stories that direct a child to perform in a socially correct manner by describing the situation and describing appropriate behavior. A Social Story has a specific structure that combines four basic sentence types: descriptive, directive, perspective, and affirmative. These sentences are written in positive and simple language, with or without pictures, to inform the child what behavior is expected in a specific situation.

Generally a child has a set of Social Stories written for specific activities that are used repeatedly. The stories target negative or disruptive behaviors or situations in which the child needs prompting to exhibit socially appropriate behaviors. A Social Story is read before the event or activity to prepare the child and to give him or her a direct visual and verbal cue to guide appropriate behavior. Although Social Stories are well used in classrooms, the research on effectiveness is limited and a systematic review of effects is needed. This review provides a summary of the empirical evidence for the effectiveness of Social Stories for children with autism.

What did the researchers do?

Reynhout and Carter (2006) conducted a Level I systematic review of research on the effects of Social Stories on children with **autism spectrum disorder** (see *Glossary*). Their search of relevant databases produced 16 studies of Social Stories; of these, 11 were peer-reviewed articles and 5 were dissertations. They analyzed how well the studies were implemented, including the **treatment fidelity** (see *Glossary*). When the Social Stories were presented in the study, the authors coded the types of sentences to evaluate whether or not they meet Social Story criteria. They calculated **effect sizes** (see *Glossary*) for group studies and percentage of non-overlapping data (between baseline and intervention measures) for the single subject design studies. The authors described in detail the participants, the Social Story structures, and the effects for these 16 studies.

What did they find?

Children with autism or autistic spectrum disorder who were 3 to 15 years old participated in the studies. Most of the studies used small samples and 12 of the 16 studies used **single subject designs** (see *Glossary*). Six studies measured disruptive or challenging behaviors as the outcome variables, nine measured social skills, four measured communicative behaviors, and four measured on-task behavior.

In nine studies the researchers reported a reduction in the targeted behaviors and in eight they reported an increase in appropriate behaviors. Two studies showed no change and the disruptive behaviors increased in two studies. In three studies the effect size could be calculated and the average effect was .99, which represents a large positive effect. For the 12 single subject design studies, the average percentage of non-overlapping data was 51%. Because only 51% of the data is non-overlapping and 49% is overlapping or the same, the effect is considered modest. Therefore, when combined the single subject design studies suggest that Social Stories are only mildly effective.

A number of the studies did not conform to the Social Story guidelines; however, the results did not seem to relate to how well the stories were constructed. In addition, the story delivery method (e.g., reading, using a computer) did not seem to influence the outcome. Maintenance of the behavioral change was inconsistent and not often reported.

What do the results mean?

Social Stories appear to have a positive effect on behavior; however, the effects are modest. A large number of the studies used single subject design. This design worked well because children with autism have unique behaviors and unique problems and the stories are individualized for each child. However, cohort studies based on the concept of Social Stories are feasible and should be completed in the future.

Occupational therapy practitioners often use Social Stories with children who have autism. Stories can be written for social and functional goals, such as promoting appropriate behavior during transitions between classrooms, eating in the cafeteria, and playing on the playground. They are particularly helpful during unstructured activities when the child benefits from hearing what behaviors are expected. The percentage of improved behavior with Social Stories was about 50%, which indicates a marginal effect. The percentage means that, the child behavior or performance did not improve 50% of the time following the Social Stories.

One issue noted by Reynhout and Carter was that many of the stories published in the studies did not conform to the recommended construction guidelines. However, the importance of following the recommended structure is not known because the stories' effects did not seem to relate to how well they conformed. Social Stories seemed most effective when they used more consequence-related sentences than recommended and when they were combined with positive reinforcement for correct behavior. Positive reinforcement has been shown to be a powerful method for improving behavior in children with autism. The most effective intervention may be to use Social Stories to describe the desired behavior, to define the consequence of the behavior, and then to reinforce it with a positive consequence. The authors recommended that they should be used frequently and consistently across settings to promote the child's generalization of positive behaviors.

What are the study's strengths and limitations?

As a systematic review this report represents Level I research and therefore provides strong support for the use of Social Stories. It offers solid support for the effectiveness of Social Stories that define appropriate behaviors, describe the consequences of appropriate behavior, and are combined with positive reinforcement for correct behavior. Although the review provides evidence of positive effects, most of the studies reviewed and analyzed were single subject designs, which limited statistical analysis of the findings. The interpretation of the data analysis requires caution. Social Stories were not always implemented based on the guidelines and often the studies were short term. Studies with larger samples are needed. These studies did not follow the children to analyze whether or not the intervention generalized to other situations or was maintained over time. Research of the long term effects of Social Story interventions is needed.

Glossary

Autism—Autism Spectrum Disorder—Pervasive Developmental Disorders (PDD) is the diagnosis used in the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.), text revision (DSM-IV-TR; American Psychiatric Association [APA], 2000), and in the International Classification of Diseases (ICD-10; World Health Organization, 1993) to describe children with a cluster of symptoms that vary widely in type and severity. The symptoms are grouped into three broad categories: (a) qualitative impairment in social interaction; (b) communication disorders; and (c) stereotyped, repetitive patterns of behaviors or a restricted range of interests. Depending on the level and distribution of impairment across these categories, a child can be diagnosed with Autistic Disorder, Asperger syndrome, or Pervasive Developmental Disorder—Not Otherwise Specified (PDD—NOS). All three of these diagnoses are usually included under the umbrella term *autism spectrum disorders* (ASDs).

The Individuals with Disabilities Education Improvement Act of 2004 (IDEA, Pub. L. 108–446) also includes autism as a disability category under which children might be eligible for special education and related services. The IDEA regulations define *autism* as “a developmental disability significantly affecting verbal and nonverbal communication and social interaction generally evident before age 3 that adversely affects a child’s educational performance. Other characteristics often associated with autism are engagement in repetitive activities and stereotyped movements, resistance to environmental change or change in daily routines, and unusual responses to sensory experiences” (34 C.F.R., §300.7[c][1][i]).

Effect size (Cohen’s *r*)—An effect size (Cohen, 1977) is a measure of clinical significance. It provides information about the magnitude of effect of the treatment. Although related to significance, it is not as influenced by the size of the sample. Therefore, it is possible to have an outcome on which the treatment had a large effect (e.g., the treatment group improved a lot more than the control group) and still have a nonsignificant result. If the results have a large effect but no significance, then this effect may be sample specific and not generalizable outside the study. There are many types of effect sizes. What is reported here is Cohen’s *r*, which can be interpreted in a manner similar to a Pearson’s correlation coefficient:

Effect size <i>r</i>	Size of the effect
<0.99	Negligible
0.10–0.29	Small
0.30–0.49	Medium
>0.50	Large

Single-subject design - Single subject/case research involves one client, or a number of clients, followed over time or evaluated on outcomes of interest. The basic feature of any single-subject design is the evaluation of clients for the outcome(s) of interest both before (baseline) and after the intervention. This design allows an individual to serve as his or her own “control.” However, it is difficult to conclude that the intervention alone resulted in any differences as other factors may change over time (e.g., the disease severity may change).

Treatment fidelity - Treatment fidelity refers to the methodological strategies used to monitor and enhance the reliability and validity of behavioral interventions.

References

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For more information about the Evidence-Based Literature Review Project, contact the Practice Department at the American Occupational Therapy Association, 301-652-6611, x 2040.



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