

Modifying Inappropriate Behaviors in Autistic Children Using Social Stories: Three Case Studies

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Treatise

The topic of autism is very personal to me. Due to the fact that my brother has autism, I have always been intrigued by the progress he has made with behavioral intervention. I want to help others with ASDs communicate and express their feelings just like any regular person has the luxury of doing. By increasing positive behavior in children with autism, they would gain the ability to socialize with normal peers and enjoy the same experiences a normal functioning child goes through. Numerous types of interventions have been implemented to aid kids with autism. These interventions span various settings and conditions, which creates a sense of spontaneity that these kids would otherwise lack. Decreasing bad behavior in kids with autism during school hours allows teachers to maximize the children's potential. These behavioral interventions enable teachers to keep the kids moving academically and socially. With open minds and individualized interventions, there is no doubt that kids with autism can grow up to be successful adults. Some of the interventions that I believe yield positive results are modified social stories and applied behavioral analysis. Modified social stories are a great intervention because it is easy for both the teachers and the parents to incorporate into a routine. The story consists of a few pages expressing and persuading the child to complete a target behavior. If said behavior needs to be targeted again, the teacher or parent can easily take the story out and refresh the child's memory on how he should behave. Applied behavioral analysis is a lot more time consuming than

modified social stories, but is the most researched behavioral intervention. The intervention includes demanding a target behavior, and then rewarding the child with either praise or a valued object when the behavior is completed. Behavioral intervention is a long process and usually contains strong communication from parents and teachers in order to be successful.

Abstract

There is a great demand for successful interventions in the realm of behavioral intervention for children with autism. Much attention has been paid to behavioral interventions such as applied behavioral analysis (ABA) and the Lovaas method, but such a strict, rigorous method can be very hard on the parents. The treatment in this experiment is known as a social story technique, and it can be a lot less time-intensive and therefore a very useful tool for parents if it is effective. By implementing social stories into a child's everyday life, it was expected that there would be a decrease in inappropriate social behaviors along with a concurrent increase of socially acceptable behaviors. This modification of behavior was performed by the parent and was measured with regards to certain social aspects that are usually inhibited by autism. Also, it was expected that parents would become comfortable and master these social stories to the point that they will be able to use them without the aid of a professional. The results showed that with respect to certain social aspects, the social stories improved the children's behaviors. A child that once could not stand the idea of a fire drill began exhibiting normal sensitivity to noise and experienced a reduced level of anxiety and therefore was more able to be more socially active. Children were no longer suffering at the hands of their bad behaviors and were able to function in more social situations with their newly modified behaviors. Thus, the research about this technique is a very significant breakthrough because social stories are much more easily implemented than established methods.

Introduction

Autism is a mental disorder that impairs the mental and social development of children on their way to adulthood. Not everyone with autism has the same severity of symptoms and therefore researchers refer to the variance of the disorder as autism spectrum disorders (ASDs). In recent years, there has been an increase in children diagnosed with autism (Groom, 2009). Reasons for such a peak in diagnoses range from a vaccine link to simply just more accurate methods of testing (Downs, 2009). No matter the cause, children with ASDs need assistance in progressing as individuals throughout life. One of the most important parts of being successful in life is a mastery of social skills. In an effort to increase the social skills and positive behavior in children with ASDs, numerous behavioral interventions have been researched. These behavioral treatments are incidental teaching, developmental individual-difference relationship-based model/floor time (DIR), treatment and education of autistic and related communication handicapped children (TEACCH), relationship development intervention (RDI), modified social stories, and applied behavioral analysis (ABA). All of these intervention methods have shown some promise of success.

Incidental teaching is a form of intervention that requires a lot of participation and creativity on the part of the parent or teacher. This intervention revolves around the adult acknowledging the child's interest in a certain object. Once this recognition is made, the adult needs to prompt the child to ask questions about said object. If this task is completed, the child may be rewarded with more time playing with the object (Steege, 2007). Using incidental teaching is a great way to capitalize on an opportunity. For example, if a child is showing a great interest in a ball, the adult should prompt him to describe different features of the ball such as that it is blue, round, etc. Although incidental teaching seems fundamentally sound for a

treatment away from a table setting, it is very time-consuming and may not fit many families' lifestyles (Steege, 2007).

Floor time is another type of behavioral treatment that can be done in several settings away from the table. Floor time, also referred to as DIR, focuses on helping the child's emotional development. This type of treatment is more demanding for the child than the adults. Floor time treatment has to do with the idea that all of the child's actions are purposeful; therefore, the adult should follow up with the prompts from the child's activity in an effort to increase speech and social interactivity. The adult allows the child to pick from a set of topics/activities in which to participate, and the adult plans a way to help the child's behavioral skills accordingly (Hilton, 2006). Adults participating in floor time are encouraged to work at the child's developmental level and work with the child's strengths to improve in other skill sets. This treatment is added into a child's day, making the treatment a natural learning process (Hincha-Ownby, 2008).

The program known as TEACCH is the standard special education program in many schools (Choutka, 2004). Many parents believe it is not sufficient enough for every child with an ASD because of the fact that every child is different. Many parents are skeptical of this behavioral intervention. (The fundamentals of the TEACCH program are very well in place, however.) The program focuses on learning about the child, developing an IEP (Individual Education Program) with the parents of the child, and lastly, progressing in areas such as behavior. Another main part of the treatment is the visual aspect. Visuals are used to show sequences of daily events and are used for the mastery and understanding of these tasks. Unlike the incidental teaching and floor time treatments, the TEACCH behavioral treatment is under set conditions in a very structured environment. Although the treatment is primarily done in a structured classroom setting, the type of education class does not matter. As a result, TEACCH can be done in self-contained classes, in special education classes, and even in specials such as

art, music, or physical education. TEACCH helps children as well as adults progress in language, social skills, and academic subjects.

Relationship development intervention, or RDI, can also aid children with ASDs in their mental and social growth. This intervention focuses on having the child try and build genuine relationships, create a desire and ability to live in a dynamic world, and generate a sense of empowerment. These goals demonstrate how RDI is a very bold type of behavioral intervention because children with autism have been said to not comprehend their relevance in the world (Baron-Cohen, 2001). This program is parent-based because the RDI website gives tools for parents to easily use and to effectively teach dynamic intelligence skills and motivation to their child. These dynamic intelligence skills include experience sharing, dynamic analysis, flexible and creative-problem solving, episodic memory, self-awareness, and resilience (Hinch-Ownby, 2008). It seems logical that a parent would be the main person involved in this program because no person would try harder to teach social significance to a child.

One of the more practiced and researched behavioral interventions is Applied Behavioral Analysis (ABA) (Rudy, 2009). The basics of ABA require discrete trial teaching in a classroom setting. This type of treatment means that either the parent or teacher sits with the child and prompts them to perform an action such as pointing to an object. If the action is completed, then the child is rewarded with some sort of reinforcer or praise. This form of operant conditioning has been shown to help a child's ability to both respond and continue a conversation. The four main goals of ABA are defining the behavioral problem, taking a baseline of the occurrence of the behavior, noting the antecedents of the behavioral problem, and noting the consequences of the behavioral problem (Brown, 2009). Despite the success of applied behavioral analysis, it does have a reputation of causing mostly robotic and emotionless responses in children with ASDs. Also, ABA is very time-consuming and needs to be done at both school and home. As a

result, parents with a tight budget for time might not be so willing to open up to a treatment such as ABA (Rudy, 2009).

Another behavioral treatment, which can be done in both school settings and home settings and is less expensive and time consuming, is social stories. The work is evenly distributed between the teachers and the parents. A modified social story is a story that uses a variety of simple sentences in order to convince a child with autism to either stop or start doing a certain behavior. The three simple sentence types are descriptive, directive, and perspective (Graetz, 2009). Descriptive sentences give details about the daily activities that occur in that particular setting. Directive sentences state the good behavior for which the parent/teacher is looking. Finally, the perspective sentences describe how other people feel about the completion of the desired behavior. This sentence would most likely be a description of how happy the teacher is for the completion of the behavior.

In prior studies in which social stories were used to modify behavior in children with autism, there have been many criticisms as well as suggestions for future improvements. In a meta-analysis that reviewed 55 published research studies that featured 147 students with ages ranging from preschool to secondary school, four main reasons for poor results in social story use were acknowledged (Bellini, 2007).

These four points were dosage, intervention setting, matching strategy with type of skill deficit, and intervention fidelity. Dosage refers to the amount of social skill intervention that occurred over a period of time. It was decided that 30 hours over a 10-12 week period was an extremely insufficient dosage of intervention (Gresham, 2001). Although a recommended amount of time for intervention was not given, the meta-analysis suggests that teachers should be encouraged to use the stories more often (Gresham, 2001). These stories can be helpful with academic, behavioral, and emotional difficulties and not just used as a time-filler during the day.

In terms of the intervention setting, it was noted that places that were constricted and isolated yielded less reliable results than the experiments that featured more naturalistic settings. It is important when composing a social story to identify whether the skill deficit is a performance deficit or skill acquisition deficit. A performance deficit means that the skill is present, but is not always used or executed appropriately by the child. A skill acquisition deficit means that the child does not have knowledge of the skill and it must be taught. By being able to identify which skill deficit exists, a person making a social story has a better understanding of how the story should be composed (Bellini, 2007). Lastly, intervention fidelity is how well the intervention was implemented. In the 55 cases examined in the meta-analysis, only 14 of the cases included intervention fidelity (Bellini, 2007). Due to the fact that intervention fidelity was absent in the majority of the studies, it is very challenging to conclude whether it was the social stories themselves that yielded the poor results (Bellini, 2007). Currently, there is no research that features the parents as the readers of the social stories; this study contains precisely this method.

In this study, there are specific elements that were adopted and others that were omitted. Relative consistency of the period the social stories are used should be present; furthermore, there should be consistency in the format in which the stories are written. Also, it should be noted that whether the behavior is a performance deficit or a skill acquisition deficit; and whether the behavior is a bad behavior that needs to be decreased or a good behavior that needs to be replicated more often.

The key element that was omitted is the consistency in intervention setting, due to the fact that the social stories were being given to parents for use with their children on their own time. Also, intervention fidelity was omitted because the experiment did not have rigid guidelines as to how implementation should be completed. Moreover, this research was unique because the experiment involves adolescents with autism.

Purpose/Hypothesis

The effectiveness of social stories on targeted behaviors and the comfort level of parents that have children with ASDs were tested. If parents with children with ASDs were given social stories that pertain to a child's specific behavioral issue, it was hypothesized that the parents would be able to comfortably implement the social stories and modify their child's inappropriate behavior. The purpose and hypothesis were devised after research on numerous behavioral interventions that have been used on children with ASDs. It was determined that a behavioral intervention that is seemingly very efficient and easy for parents to implement in their child's life is social stories. As a result, a study centering on the effectiveness of social stories in decreasing inappropriate behaviors in children with autism as well as the comfort level of parents in using this specific intervention was developed.

Methods

Three individuals with autism ranging from the ages of ten to eighteen were chosen to be the participants. This aspect is different than prior studies because most other studies have children under the age of ten. There was no gender selection or racial selection in deciding the participants. Children who attended the Holistic Learning Center in Eastchester, NY or have some connection with the Holistic Learning Center were the subjects of the experiment. The participants were chosen by asking the parents if they would allow their child to participate in an experiment involving intervention using social stories. The participants were deidentified in all published and viewed materials.

A questionnaire was filled out by the parents in order to acquire information such as the targeted behavior, rewards that could be accessible for proper behavior modification, and the severity of the problem in various social categories. The independent variable was the use of social stories on the children with autism. The severity of the problem across various social

subsets was rated with a score from one to four, with a one representing minimal/no effect on the category to a four. After a substantial time period had passed, a post-test questionnaire was completed. This times period incorporates both the time it took to make the social stories and an eight week intervention period, followed by a few months after the intervention phase in order to accompany the advice of the IRB (institutional review board). The post-test questionnaire measured the dependent variable; which was the success of the social story in several social categories (similar to that of the pre-test questionnaire) and the comfort level the parents had with the social story. A higher number in the post-test questionnaire indicated that the social story was ineffective at treating the behavior in certain social aspects. The controlling variable in this experiment was that all the social stories were made using the same format.

The software used to produce the social stories was Boardmaker™. The social stories involved a combination of words and pictures, which first addressed the inappropriate behavior, then offered alternate behaviors, and finally displayed reinforcers for the appropriate behavior. The language used in the social stories was first approved by the parents in order to account for the varied reading levels of the children in the experiment. No other materials or tools were use in this experiment.

There were some minor inconveniences for the parents involved in this experiment. These include bringing the storybook and rewarding the correctly modified behavior. This is different than prior research because usually if parents are in charge of implementing the stories, they are given strict guidelines. The expected benefit of the experiment is that the participants will have fewer inappropriate behaviors due to the use of the social stories. Protection of privacy was primarily addressed in the parent questionnaire, in which it is stated that the names of the participants were kept confidential. The data was only accessible to the workers at the Holistic Learning Center.

Due to the fact that the parents of the participants had been attending the Holistic Learning Center in order to help the participant make progress in their social abilities, the parents have an understanding that the experiment is being conducted to improve social behaviors. Similar to the other treatment done at the learning center, the parents understand that their involvement with social stories can conclude the moment they feel it is unsatisfactory.

Results

The data represents three case studies: two cases where the mothers implemented the social stories, and one case (Child D) where the director of the Holistic Learning Center (HLC) implemented the social stories. There were no statistical tests run in this experiment.

Child A's target behavior was a sudden fear of unpredictable noise such as a thunder, popping balloons, and fire drills. The parent of Child A informed us that these sessions of anxiety and fear would last 10-30 minutes and were a very big problem when he was in a school environment, at a birthday party, and even at home when there was a chance of thunderstorm.

Child B's target behavior was that he would sing out loud in a structured environment when it would be inappropriate. The questionnaire revealed that this behavior happened most frequently at school and mostly affected his social relationships and his emotional reactions. The behavior lasted 10-30 minutes.

Child C was not treated by his own parent but with director of the Holistic Learning Center because the target behavior only occurred at the center. This target behavior was that the child would shout out inappropriately in order to avoid doing work with the director. The director did not fill out a pre-test questionnaire but did complete the post-test questionnaire.

Table 1: Pre-test Questionnaire Social Aspects

The impact that the targeted behavior has on each social aspect is ranked from 1, being no impact, to 4, which is a profound impact.

	Child A	Child B
Social Relationships	3	3
Emotional Reactions	3	3
Stereotypic Behavior	3	4
Toy Play	2	1
Visual Hypo/Hyper sensitivity	1	1
Auditory Hypo/hyper sensitivity	2	4
Anxiety Responses	3	4
Average Social Impact Pre-Intervention	2.43	2.86

Table 1 shows the answers to the pretest questionnaire (no pretest was done for child D).

It should be noted that with the exception of visual sensitivity, virtually all other social aspects were rated as a 3 or 4 meaning that the behavior had a profound impact on the social aspects.

Table 2: Post-test Questionnaire Social Aspects

The effectiveness of the social stories at modifying the behavior is measured with respect to the social aspects they were used in the pre-test questionnaire.

	Child A	Child B	Child C
Social Relationships	2	2	1
Emotional Reactions	1	2	1
Stereotypic Behavior	2	1	1
Toy Play	1	1	1
Visual Hypo/Hyper sensitivity	1	1	1
Auditory Hypo/hyper sensitivity	1	1	1
Anxiety Responses	1	1	1
Average Social Impact Post-Intervention	1.29	1.29	1

Table 2 shows that the social aspects that could be measured all benefitted from the social stories because they all received a 1 or a 2. The social aspects went from being negatively impacted by the targeted behavior (3 or 4) to not being hindered by the newly modified behavior.

For the results concerning the parents' comfort level with the social stories, the post-test questionnaires revealed the responses to be quite positive. All parents that filled out the questionnaire had high satisfaction with the social story given, high comfort level with the social story, and high confidence that the social story was used correctly. The word "high" means the parents answered either three or four on a scale of 1-4. In addition, all the parents said that they would use another social story in the future for a different behavior. Also, the parents believed that an instruction sheet on how to implement the social story would not have impacted the overall effectiveness of the social story. Lastly, the parents believed that the skills they obtained from the social story could be applied to other situations.

At the end of the post-questionnaire, a space for additional comments was left. Child A's parents wrote that Child A grew to love the social story and used it to familiarize himself with the sounds on a safe level. The parent wrote that Child A took his social story everywhere and also used it when rain was in the forecast or when he was told that there would be a fire bell at school. For Child C, the director of the Holistic Learning Center wrote that the Child C's outbursts of crying "go home" and "go see Mommy" were reduced from up to 70 times in a 45-minute session to fewer than twice in the same 45-minute session.

Table 3: Post-Questionnaire Parent Component

These seven questions were in the post-questionnaire to get a better idea of how the parents truly felt about the social stories. These questions aimed to answer part of the hypothesis that stated that parents would be able to comfortably implement the social stories.

	Parent A	Parent B	Parent C	Parent D
How often was the story used weekly?	5-10 times		5-10 times	Once
Overall Satisfaction with the Story	4		3	4
Overall Comfort Level with the Story	4		3	4
Overall Confidence in Social Story's Effectiveness	3		4	4
Would you use a social story similar for a different behavior?	Yes		Yes	Yes
An instruction sheet on how to use the social story would have helped the effectiveness.	Disagree		Disagree	Disagree
The skills learned from the social story could be applied to other situations.	Agree		Agree	Agree

Table 3 displays very similar results among the four adults. Furthermore, the table demonstrates that the parents were very comfortable with the social stories and were willing to use more of this behavioral intervention in the future.

Discussion/Conclusion

The data above supports my hypothesis that social stories would help children with autism in improving their behavior with regards to certain social aspects. Furthermore, all of the social aspects that were inhibited by the child's targeted behavior throughout the experiment received either a 1 or 2 in the post-test questionnaire. These results mean that the social stories

helped modify the children's targeted behavior with respect to certain social aspects. This research supports most of the work done on social stories in recent years in terms of modifying behaviors in children with autism.

The hypothesis of this experiment also featured the aspect of parents being comfortable with the behavioral treatment given to them. The feedback from the parents in the questionnaires showed that they were both comfortable and willing to participate in more social stories in the future. Also, it was interesting to find that the parents felt that an instruction sheet along with the social story would not have improved the use of the behavioral treatment. This result suggests that parents find the behavioral treatment of social stories easy and practical to work with and would be able to make their own social stories for other behaviors in the future. Based on how the parents answered the post-test questionnaire, the parents clearly enjoyed using this behavioral intervention on their children. I would conjecture that these results are related to the fact that these parents are already giving their children behavioral interventions at the Holistic Learning Center, which would make them more open to trying new treatments. Also, being very knowledgeable about different treatments and knowing their child's disorder very well, the parents would most likely be very able to properly implement the social stories in a personalized way that fits their child.

One of the main limitations to this study was the very small sample size. Due to the fact that the experiment involves human subjects with autism and their parents, it was very challenging to find participants that would agree to be in a study about themselves and their children.

The social significance of this project is huge for not only children with autism but also their parents. By establishing a basic behavioral treatment that is not time-intensive or expensive, the project is giving parents of children with autism an option to help their child's behavior

without all the added stress. This study is aimed at helping the parents help themselves by introducing a behavioral intervention that any person can easily master and use for a myriad of problems.

This research has changed the way that behavioral intervention can be viewed. With these results, many new questions can be asked, leading to further research. For example, different social aspects could be used and tested with social stories. Also, the parents could be asked to make their own social stories and their results recorded by a professional. Many questions exist beyond this project and hopefully they can be answered in the future.