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Children with Autism Spectrum Disorders: Social Stories and Self Management of Behaviour

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ABSTRACT

Introduction: This paper presents the findings of an experimental research that determined the effect of a social story intervention on development of self management of behavior in children with autism spectrum disorders (ASD). Social stories, developed by Carol Gray, are simple stories that describe social events and situations that are difficult for a person with ASD to understand. A social story facilitates social understanding between people who have ASD and those who interact with them.

Aim: The study was conducted to determine the efficacy of social story based intervention on development of self management skills in children with ASD

Methods and Procedures: A sample of 20 children with ASD (aged 10-14 years) was randomly selected from 5 schools and remedial centres in Mumbai. The children were assigned to treatment and control groups (N=10 each) after a pre intervention assessment on the Rating Scale for Self Management (RSSM) I and II. The RSSM, developed for the study, was an instrument for observation of self management behavior. RSSM I was used by the authors and the selected children's teachers to observe the children's self management of class room and play behavior while the children's parents used RSSM II to observe their general behavior. The children in the treatment group were given 15 individual sessions of social story intervention. Six social stories were written for each child. The treatment included reading the social story to the child, reading of the story by the child, answering questions based on what was read, role play wherever possible, and follow up at home (for social stories on general behavior) by making the child read the social story. The control group children participated in the regular intervention activities of their schools/centres, during the treatment phase. Post treatment, both groups were reassessed on RSSM I and II.

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Results and Conclusion: A comparison of pre and post scores on RSSM of treatment group children showed a significant improvement. Also, their mean performance on RSSM post treatment was significantly higher than that of the control group. This indicated that social stories intervention was effective in enhancing self management behavior in children with ASD.

Keywords: ASD; social story; self management of behaviour;

1. INTRODUCTION

Lost in their world, children with autism appear indifferent and remote and are unable to form emotional bonds with others. Although children with this brain disorder can display a wide range of strengths and abilities, many are incapable of understanding other people's thoughts, feelings, and needs. Often, language and intelligence fail to develop fully, making communication and social relationships difficult. Many children with autism engage in repetitive activities, like rocking or banging their heads, or rigidly following familiar patterns in their everyday routines. Autism is a complex developmental disability that typically appears during the first three years of life and is the result of a neurological disorder that affects the normal functioning of the brain, impacting development in the areas of social interaction and communication skills. Both children and adults typically show difficulties in verbal and nonverbal communication, social interactions, and leisure or play activities (Autism Society of America, 2006). Autism spectrum disorders (ASD), also known as *pervasive developmental disorders*, are characterised by severe and pervasive impairment in several areas of development: reciprocal social interaction skills, communication skills, or the presence of stereotyped behaviour, interests, and activities (American Psychiatric Association, 2000).

Difficulties in social relationships and interactions have been the defining features of ASD. Hence, the need to understand the nature of these difficulties and to find effective treatments for them has been central to autism research and educational practices. Unlike neuro-typical children who learn how to be social and interactive by watching how others talk, play and relate to each other, enjoy the give-and-take of social engagement and initiate, maintain and respond to interactions with others, children with autism often do not show the expected development of early social interaction skills. They are often socially avoidant, socially indifferent and awkward. Autistic children avoid social contact by having a tantrum or running away from people who attempt to interact with them. They seek social contact with people only when they want something. Children with asperger's syndrome, on the other hand, try very hard to make friends but are unable to. One reason for their failure to make enduring social relationships with others may be the lack of reciprocity in their interactions, since their conversations often revolve around themselves and are self-centered. Furthermore, they do not learn social skills and social taboos by observing others, and they often lack common sense when making social decisions (Edelson, 2011). In addition, many children show profound empathy deficits. They develop a limited appreciation or no appreciation at all, of other people's feelings and ideas. The characteristic of how individuals with autism understand empathy and the perspective of others is called 'theory of mind' (Simpson and Myles, 2008). Simply put, a theory of mind is the belief or 'theory' one holds that others have a 'mind' capable of understanding things the same way as one's own

mind does. Theory of mind is a term for describing a set of abilities. The abilities to understand that others think the same way as one does reflect one's theory of mind capacity. Theory of mind difficulties can provide a possible explanation for the communication and social challenges that define autism spectrum disorders. Autistic social interaction may be typically described as an attempt to understand and interact with people without knowing their thoughts, feelings, or beliefs. The theory of mind difficulty impacts the ability to interact in the social world. Children with autism are visual learners (Lal 2005, Lal and Bali, 2008). Hence, they may not understand the many unwritten and abstract social rules that exist in their socio-cultural environment, and that these rules often change with the context. Another implication of the inability to "mind-read" is that such children may talk endlessly about a topic and may not be able to detect the nonverbal signals that indicate the listener's possible lack of interest in the topic. Individuals across the autism spectrum may be brutally honest and in return, take all words as truth (Twachtman-Cullen, 2000). Individuals with autism may not understand that an event they experienced was not experienced by all, so they may not be able to provide the background necessary to be understood by others. This impacts the learning of social skills.

Children with autism often learn social skills without fully understanding when and how they should be used. In an attempt to understand the social world they typically apply universal social rules to all situations, based on their perspective.

Understanding common cues and using that understanding as a means for interacting, directing and managing one's behavior to suit the situational demands is necessary for living in a socially conscious world. Self-management is an outcome in which people learn to discriminate their target behavior and record the occurrence or absence of that target behavior. Self-management is useful to assist individuals with disabilities, including autism spectrum disorders, to achieve greater levels of independence in vocational, social, academic and recreational activities (Koegel, et al, 1992). By learning self-management individuals can become more self-directed and less dependent on continuous supervision. Instead of teaching situation specific behaviors, self-management teaches a general skill that can be used in an unlimited number of environments. Self-management has also been useful in reducing or eliminating such behaviors as stereotypic responding. It may include self-evaluation of performance, self-monitoring, and self-delivery of reinforcement (Maag, 2004). Self-management provides children with responsibility and it can be highly motivating for them. However, in order to monitor and evaluate their behavior, the children need instruction in what Myles and Simpson (2001) called the "hidden curriculum," otherwise known to us as the "do's and don'ts" of social skills. The hidden curriculum includes the skills that one is not taught directly yet is assumed to know. A variety of social skills programs have been created to facilitate this very necessary type of instruction. Most include instruction, modeling, guided practice, self-evaluation and an evaluation done by others (Quill, 2000). Many researchers offered recommendations for teachers and others. Gray and Garand (1993), Myles and Simpson (2001), and Attwood (2008) suggested that effective use of a social skills program should include an instructional sequence that facilitates learning and generalization of social skills. Social story (Gray, 1995) is an instructional method to develop socially appropriate behavior in children with ASD.

A social story facilitates social understanding between people who have ASD and those who interact with them. Gray describes a social story as being a process that results in a product. She emphasizes that as a process, a social story requires consideration and respect to be given to the perspective of the person with ASD. The product is a short narrative (20-150 words) defined by specific characteristics that describes a situation, concept or social skill in

terms that are meaningful to such people. The result is often renewed sensitivity of others to the experience of the person with ASD, and an improvement in the response of the person with ASD. A social story is an individualized short story that describes social relevant cues in any given situation. It breaks down a challenging social situation into understandable steps by omitting irrelevant information and by being highly descriptive to help an individual with ASD understand the entirety of a situation. It includes answers to questions such as who, what, when, where, and why in social situations through the use of visuals and written text (Scattone et al., 2002). A social story reveals accurate social information in a clear and reassuring manner that is easily understood by the individual with an ASD. The improved understanding of the events and expectations may lead to a change in behavior (Ali and Frederickson, 2006). Experience indicates social stories are often effective with mid to higher functioning students with ASD, and may be applicable to students with other learning impairments as well. They serve as visual supports that are reported to be useful in educational program for children with autism who have difficulty in processing and comprehending spoken language and social communications (Lal, 2010). A social story is a 'mini book' that describes, in written and /or pictorial form, a social situation along with appropriate social responses. Individualized for each student the social stories serve a variety of functions such as teaching social understanding over rote compliance, providing visual and concrete model for behavioural responses, and preparing children to accept changes in their routine or unexpected events.

Social stories are constructed using descriptive, perspective, directive, affirmative, control, cooperative and partial sentences. Descriptive sentences are accurate, free statements of facts, which describe what happens, where the situation occurs and why; perspective sentences are used to describe the thoughts, feelings, belief, opinion, and motivation of people other than the person with ASD; directive sentences identify a possible response and suggest to the child with ASD in positive terms what he or she should try to do or say; affirmative sentences enhance the general aim of the story and may express a common shared value; control and partial sentences help or require a child to recall or guess a response by applying learned information, and cooperative sentences are statements that suggest what others will do to assist the child as he or she learns new behaviors. Specific guidelines are provided for writing, presenting and implementing a social story (Gray 2000). For lower functioning children with ASD, the social story may incorporate pictures and graphic symbols.

Development of independent behavior and self management skill are important elements in educational programs for children with ASD. In India, social story has been frequently used by teachers and practitioners; however, there has been no documentation of its efficacy. Hence, this research sought to determine the effect of social story intervention on self management of behaviour by children with ASD, and to compare their post intervention performance on self management with that of children who did not receive the intervention.

2. METHODOLOGY

This experimental study used a pre-test post-test control group design and was conducted on children with ASD.

2.1 Subjects

Children with autism and asperger's syndrome were randomly selected for the study. The selected children (N=20) in the age group of 10-14 years were enrolled in 3 schools and 2 remedial centres situated in Mumbai. The children were randomly assigned to treatment and control groups so that each group had 10 children. All children had the ability to read the written text. Being on the autism spectrum, they shared a common characteristic of deficit in self management skill. Additionally, all children belong to middle to upper middle class families and had parents who were educated.

2.2 Material

Rating Scale for Self Management and Social Story Intervention were used as instruments in the study.

2.2.1 Rating scale for self management (RSSM)

The authors developed the Rating Scale for Self Management (RSSM) for this study. The instrument was an observational tool and had two parts. Part I was used by authors and children's teachers for observation of self management of class room and play behaviour. Part II was used by parents of the selected children for observation of the children's self management skills in environments outside the educational setting. The selection of items for RSSM was done on the basis of (i) observations of children with ASD in school settings (ii) extensive review of social behaviour goals in the educational programs for children with ASD followed in schools in Mumbai (iii) discussions on social behaviour in ASD with several parents of such children. The pool of items thus generated was divided into sets of behaviours relevant for school and out of school environments. Experienced teachers and domain experts were consulted for validation of content. The draft was pilot tested on 8 children with ASD who shared the characteristics of the sample children. The required changes resulting from this process were incorporated. The Scale consisted of a total of 46 items based on positive and negative behaviours. Each behaviour item was rated on a 4 point scale of 'mostly', 'sometimes', 'rarely' and 'never'. Hence, a positive behaviour that was observed to occur 'mostly' was scored 4 and those occurring 'sometimes', 'rarely' and 'never' scored 3, 2 and 1, respectively. On the other hand, 'mostly' occurring negative behaviour scored 1, and a negative behaviour not in evidence was scored 4. The tool had a test-retest, and inter-scorer reliability coefficients of 0.83 and 0.78 respectively. A brief description of RSSM is given below.

The items in RSSM I were divided into 2 categories – class room behaviour and play behaviour. The section on class room behaviour consisted of 21 items pertaining to on task attention, acceptance of changes in schedule, working in group, controlling stereotype behaviours etc. The 9 items on play behaviour centred on sharing, turn taking, following game rules, and insistence on playing as per own rules etc. The RSSM II had 16 items on general behaviour such as the ability to tolerate changes in the arrangement of playthings/furniture, appropriate behaviour with visitors, trying new clothes/food, fearing strangers etc. The maximum attainable scores on RSSM I and II were 120 and 64 respectively. Table 1 presents some of the items in RSSM I and II.

Table1. Rating Scale for Self Management (RSSM) I and II: A Sample of Items

RSSM I				
Class room behaviour	Mostly	Sometimes	Rarely	Never
1. Accepts changes in schedule				
2. Accepts change of seat in class				
3. Tolerates wrong answers given by others				
4. Asks for quiet time				
5. Keeps own books and material organised				
6. Makes and uses reminder notes for self				
7. Engages in self stimulatory/odd behaviours				
8. Makes rude comments				
Play behaviour				
1. Shares play material				
2. Waits for turn				
3. Plays games cooperatively				
4. Insists on playing the same game				
RSSM II				
General behaviour				
1. Accepts change in arrangement of personal/household items				
2. Adjusts to new places/environments				
3. Tolerates new clothes/food				
4. Refers to daily activity chart for household work				
5. Maintains personal cleanliness and hygiene				
6. Seeks help to deal with sensory overload				
7. Dictates rules to others at home				
8. Shows unusual fear of objects/people				

2.2.2 Social story intervention

Social stories used in the intervention were prepared as per the guidelines recommended by Gray (2000). The structured observation of each child's behaviour, language comprehension and reading level, and specific problems by teachers, parents and the authors provided the base for writing the social stories. Each story contained consisted of 5-10 of descriptive, perspective, affirmative and directive type sentences. Each story had a title that reflected the theme or main idea of the story. The stories were written from the view point of the child with ASD. Negative behaviours were described from a third person's perspective, e.g. 'Sometimes people say things that make others unhappy. This is a mistake'. The stories frequently used words such as 'usually', 'sometimes', 'at times' to address the issue of dynamism in social rules and unpredictable changes in the environment. The authors developed 30 social stories based on different behavioural issued faced by the treatment group children. Wherever required simple pictures were used to improve comprehension of

the situation dealt in a social story. Prior to commencement of intervention the social stories were discussed with the children's teachers and parents. The input from them was incorporated. During the treatment each child worked on at least 6 social stories.

2.3 Procedure

Out of a total of 34 children with ASD identified from 5 schools and remedial centres, 20 children were randomly selected. Before the commencement of data collection, teachers and parents of the selected children were explained the purpose, design and duration of the study. Their approval and willingness to participate in the study was sought at the outset. Subsequently, they were oriented to the procedure of observation using the RSSM. Since all children needed to learn self management skills, teachers and parents of both experimental and control groups actively participated in the orientation. Additionally, the teachers (including those of control group children) were assured that they would be provided input on how to write a social story, after completion of the research. All children were observed on RSSM I by authors and their teachers and on RSSM II by their parents. The authors observed each child individually in class room and at play/free time. The observations were done at different times of the day in order to get a good sample of self management skills in each child. Subsequent to this assessment, the children were randomly assigned to treatment and control groups. The pre intervention RSSM mean scores of children of both groups were analysed for statistical parity. The resultant t-value (0.55; df=18) was not significant indicating that the children functioned at a similar level with respect to self management of behaviour.

The intervention consisted of 15 structured one to one teaching sessions of 30 minutes duration. The sessions were given in their natural educational environment. Hence, for those who were attending school, the sessions took place when they came to the resource room, and for the others, a part of their remedial teaching time was devoted to the intervention. The sessions were given 3 times a week for a period of 5 weeks. Selection of social stories for each child was made on the basis of the data gathered during observation. The intervention consisted of 4 steps: (i) introducing the social story by reading it aloud to the child (ii) asking the child to read the story (iii) assessing comprehension through questions on the content of the story, and (iv) asking the child to role play a response wherever needed. While the social story intervention was given to the treatment group, the control group children continued with their school/remedial centre activities. Many of these activities were conducted in one to one settings, as a practice in their educational setting. In addition, parents of children in the treatment group were asked to follow up on social stories on general behaviour. Post treatment all children were reassessed on RSSM by authors, teachers and parents.

3. RESULTS AND DISCUSSION

The study aimed to determine the effectiveness of social story intervention on development of self management in children with ASD. Hence, first, the treatment group's pre and post intervention mean scores on RSSM were compared, then their post intervention mean score was compared with that of control group. The t-test was used for data analysis. RSSM scores were analysed in 3 ways:

- (i) comparison of pre and post intervention scores given by authors
- (ii) comparison of pre and post intervention scores given by teachers and
- (iii) comparison of pre and post intervention scores given by parents.

3.1 Treatment Group: Self Management of Behaviour

The first objective of the study was to determine the effect of social stories intervention on development of self management skill in children with ASD in the treatment group. The treatment group's mean scores (authors' observation), comprising of class room and play behaviour, pre and post intervention were 94.7 and 104.2 respectively. This gain of nearly 10 points was statistically significant ($t=5.99$; $df=9$; $p<0.001$). The pre intervention mean score (teachers' observation) was 95.2. This score was found to be significantly different ($t=3.71$; $df=9$; $p<0.01$) from the post intervention mean score (104.5). Similarly, pre and post intervention mean scores (50.4 and 53.8 respectively) on general behaviour generated from observations by parents showed a significant positive difference ($t=9.16$; $df=9$; $p<0.001$). Figure 1 presents the changes in the mean score of children in the treatment group.

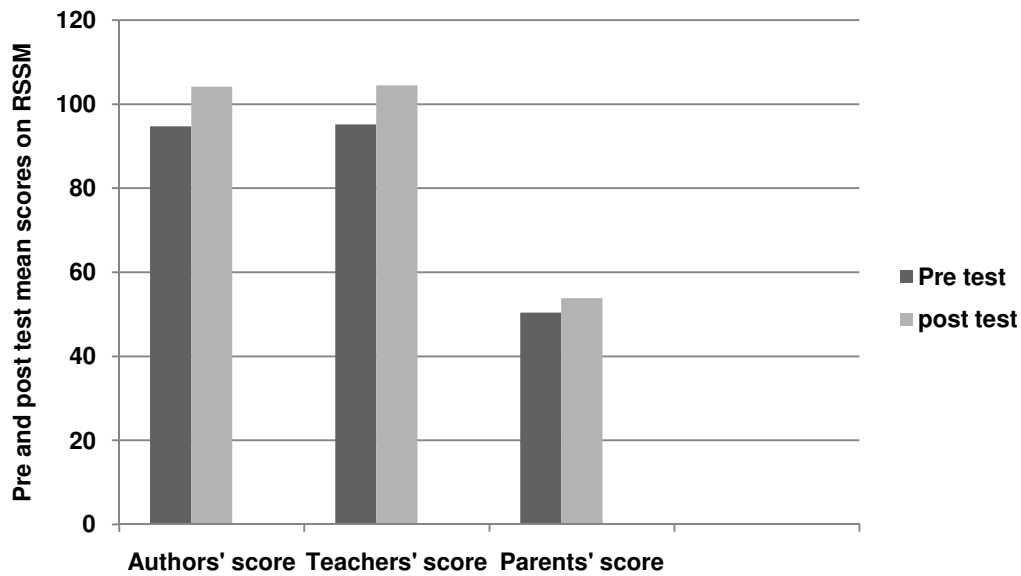


Fig. 1. Comparison of treatment group's pre and post intervention performance on RSSM

Social Stories are individualized short stories that may increase appropriate social interactions of children with ASD by teaching them the relevant components of a given social situation (Gray, 1998). They focus on describing and explaining the cues in that situation as well as teaching appropriate responses. According to Gray (2000), social stories have been used to decrease fear, aggression, and obsessions; introduce a change in routine; teach academic skills; and teach appropriate social behavior. A social story adhering to Gray's guidelines presented in a natural environment targeting inappropriate behaviors is successful in decreasing the behaviors (Scattone et al., 2006). One of the salient features often displayed by children with ASD is an absence of or a poorly developed set of self-management skills, such as difficulty in directing, controlling, inhibiting, or maintaining and generalizing behaviors required for adjustment both in and outside of the classroom without external support and structure from others (Adreon and Stella, 2001; Myles and Simpson, 2002; Ozonoff et al., 2002; Tantam, 2003). Self-management interventions can help minimize the potential for the power struggles and confrontations often encountered with the

implementation of externally directed techniques (Myles and Simpson, 2003; Simpson and Myles, 1998). Social Stories is similar to self-management (Pierce and Schreibman, 1994) and written scripts (Krantz and McClannahan, 1993, 1998) because they identify necessary components of a given social situation in a written format. According to Kouch and Miranda (2003), use of social stories is an effective treatment for reducing problematic behaviors in children with autism. The result of the study aligned with findings of the above researches. Significant gains in self management skills in school, home and other environments by treatment group children with ASD indicate the benefit of social story intervention.

3.2 Comparison of Treatment and Control Groups: Self Management of Behaviour

For the purpose of the second objective, the performance of the treatment group was compared with that of the control group by statistically analysing the post intervention mean scores of both groups. As before, the data collected from authors' observation, teachers' observation and parents' observation were analysed separately. When treatment group's post intervention mean score of 104.2 (authors' observation) was compared with that of control group (94.9) it was found to be significantly higher ($t=3.3$; $df=18$; $p<0.01$). The teachers' observation resulted in the treatment group mean score of 104.5. This score was statistically different ($t=2.39$; $df=18$; $p<0.05$) from the mean score (95.2) control group. Similarly, the parents' observation showed a significant gain in general behaviour ($t=2.2$; $df=18$; $p<0.05$) by treatment group (mean score=53.8) in comparison to the control group (mean score=50.1). Figure 2 presents the comparative performance of children in the treatment group with that of children in the control group.

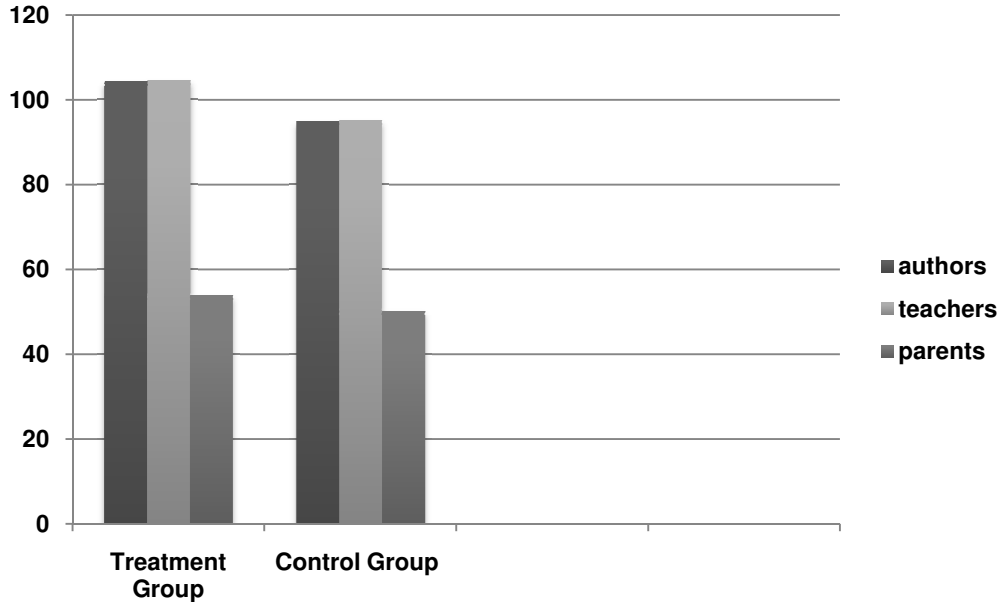


Fig. 2. Comparison of Post Intervention Performance of Treatment and Control Groups on RSSM

A lack of theory of mind has been proposed to account for the social impairments experienced by children with autism (Baren-Cohen, 2003). Without social skills in their repertoire, children with autism have significantly greater difficulty being socially integrated in their schools and neighbourhood communities. Social stories intervention (Gray 1995, 2000; Gray and Garand, 1993) was designed to provide individuals with autism with the information they are missing (i.e., information about social situations and peoples' expectation of them) and thus help them foster both interpersonal understanding and appropriate behaviour. Studies assessing effectiveness of social stories find that they are a promising method for improving social behaviour of individuals with ASD. The independence that social stories intervention promotes for children with autism, and the stimulus generalization it promotes, makes the intervention particularly promising. The fact that social stories intervention permits much less direct contact with the treatment provider (fading assistance) makes this ideal for classroom environment, as well as for the community and home. Teaching self-management techniques allows the child to manage his/her own behaviour in the absence of treatment provider for potentially longer periods (Koegel and Koegel, 1990). Social stories provide children with ASD this opportunity to self-manage their behaviour without much assistance of the treatment provider, by reading the story and understanding it for themselves. Social stories make explicit through words, drawings or both

the kind of information about social behavior, routines, goals and academic skills that learners with high functioning autism have difficulty comprehending. Children, teachers and parents feel that through the social stories, individuals with high functioning autism or aspergers syndrome have been able to master many of the situations that previously were totally confusing for them (Attwood, 1998; Gray, 1998). The findings from the current study support the findings of Swaggart et al. (1995), Gray and Garand (1993) and Myles and Simpson (2001), that students with autism can benefit from the use of visual learning strategies (social stories) in comprehension and social skills. As suggested by Gray (2000) the stories were individualized to address the specific needs of each child. Parents were asked to make the children read the social stories when the appropriate social situations arose (Gray, 2000; Theimann and Goldstein, 2001 and Lorrimer et al., 2002). The significant difference between treatment and control groups' performance indicated that social story intervention helped children to learn appropriate ways to manage their behaviour in social situations.

4. CONCLUSION

Social story is an intervention strategy that teaches children with ASD, self-awareness as well as self-calming, and self-management skills. Self-management is considered a pivotal skill that can generalize adaptive behavior, promote autonomy, and produce broad behavioral improvements across various contexts for many children with autism spectrum disorders (Lee et al., 2007). Social Stories transfer stimulus control from the teacher and peers directly to the child with autism. Use of Social stories is more beneficial because the child is using the story as a medium for learning, as well as a tool for understanding and internalizing appropriate behaviors necessary for successful social interactions (Sansosti et al., 2004).

The findings of the study subscribed to this. Social story intervention enhanced the self management skills in children with ASD. Children who received social story intervention were seen to manage self better in social situations than those who were in the control group. The conclusions drawn from this study are not merely based on the observations made by the authors. Evidence provided by teachers and parents augmented the findings,

and indicated the positive effect of social stories on self management skills in children with ASD. The evidence based results of this research may influence teachers and practitioners working with children with ASD to integrate social stories as part of the educational intervention program for children with ASD. In addition to children with ASD, the findings of this study may be applicable and generalized for intervention of children with other developmental disabilities.

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