COVER SHEET

Arendina, Vanderhoek and Ruth, Fielding-Barnsley (2004) Developing Unique Social Stories as a Behavioural Intervention for an Eight-Year Old Boy with Asperger Syndrome. In Brendan, Bartlett and Fiona, Bryer and Dick, Roebuck, Eds. *Proceedings International Conference on Cognition, Language and Special Education Research*, **pages pp. 194-210, Crown Plaza Surfers Paradise .**

Published in 2004 by School of Cognition, Language and Special Education at Griffith University

Developing Unique Social Stories as a Behavioural Intervention for an Eight-Year Old Boy with Asperger Syndrome

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This case study examined the effectiveness of social story interventions for an eight-year old Chinese boy diagnosed with mild Asperger's disorder in an international school in Hong Kong. A personalised approach based on Carol Grays (1994) Social Story Handbook was utilized. Social stories focus on teaching children with ASD the social cues and behaviours they need to know to interact with others in a socially appropriate manner. Specifically the following behaviours were targeted: calling out to the teacher, laughing inappropriately, repeating what the teacher said and frequent visits to the toilet. Pre-intervention observations were made over a one week period followed by a 2 week intervention which concluded with post-intervention observations over a one week period. After this brief intervention promising results were obtained particularly in calling out and inappropriate laughter. The learning support teacher who initiated this intervention has been successful in transferring these skills to the classroom teacher who continues to use the social stories on a daily basis.

Introduction
Lorna Wing first used the term Asperger syndrome in 1981. She described a group of children and adults with characteristics that resembled those of a group of boys originally described in a doctoral thesis by Hans Asperger published in 1944. Although these children had the classic autistic features when very young, they did develop fluent speech and a desire to socialise with others. Individuals with Asperger syndrome have some of the behavioural and social difficulties associated with other degrees of autism but they tend to have language and cognitive skills in the average or even above average range.

The most widely used diagnostic criteria are included in the DSM-IV. This diagnostic and statistical manual describes Asperger syndrome as a developmental pervasive disorder characterized by severe and pervasive impairment in reciprocal social interaction skills and communication skills with stereotyped behaviour, interests and activities. Clinical features include social interaction impairments, speech and communication characteristics, cognitive and academic characteristics, sensory characteristics and physical and motor-skill anomalies (Myles & Simpson, 1998).

Students with Asperger syndrome may exhibit the following characteristics:
- Unusual features in their oral language (pedantic, repetitive speech; e.g. repeatedly asking the same question of the same person)
- Naïve and inappropriate social approaches to others;
- Lack of empathy;
- Little or no ability to form friendships;
- Poor non-verbal communication (unable to understand non-verbal cues);
- Clumsy and ill-coordinated movements and odd postures.

Social skills
Social impairment is one of the main identifying characteristics of autism (Frith, 1993; Kanner, 1943; Wing & Attwood, 1987). Wing (1991) described the social impairments as located in the lack of social interaction, social communication (verbal and non-verbal) and social imagination.

It has been shown that even those with Asperger syndrome who have verbal ability with average to above average intelligence have considerable difficulty understanding or empathizing with the thoughts and feelings of others (Wing, 1992). When children with Asperger syndrome attempt to socialize with other children, their experiences are often unsuccessful. This can be attributed to their lack of understanding of the rules of social behaviour. Some of these rules include understanding of personal space, appropriate eye contact, and other forms of body language such as facial expressions (Myles & Simpson, 1998).

Intervention-social stories
Many individuals with Asperger syndrome are poor incidental learners; they learn social skills more as rules to be learned without fully understanding their meaning and appropriate contexts, Children with Asperger syndrome need assistance in understanding expectations and consequences; desired behaviours must be explicitly stated, modeled and illustrated, It is therefore sensible to utilize social stories that make the teaching of social skills explicit and appropriate for each context, without such interventions children with

Asperger syndrome may display socially incorrect and unacceptable behaviours, These children are prone to emotional stress as a result of misinterpreting social situations.

As most children identified with Asperger syndrome have strong cognitive and language skills they benefit from the self structured approach afforded by social stories. These techniques also allow for an abstract situation to be represented by concrete lasting representations that allow for reflection (Rogers & Myles, 2001).

Social stories were designed to teach children with autism how to play games while increasing their ability to interact socially with others (Gray, 1995). Since their inception, social stories have been applied to several situations to teach children with mild to moderate autism and Asperger syndrome the social cues and behaviours they need to know to interact with others in a socially appropriate manner (Kuttler, Myles, & Carlson, 1998). The process involves creating a short story that describes a problematic situation and includes appropriate actions and expressions. The first stage is to try and understand the situation from the perspective of the child. They may be confused as to the reasons for certain procedures. Tony Attwood (1998) gives an example that is highly appropriate for the current study - a child is confused about the reasons for lining up for lunch, why they have to form a line, where to join the line and how to behave whilst waiting. Some sentences from the social story include "We have to line up to be fair to those who have waited there longest (Perspective), As each person arrives they join the end of the line (Directive). When I arrive I will try to join the end of the line (Directive), My teacher will be pleased that I have waited quietly (Perspective)". Starting with the description of the problem situation (descriptive sentences), including place and people involved, the social story provides the child with information about what happens and why. It is followed by a description of the reactions and responses of others (perspective sentences) in the target situation, and sometimes the reasons and feelings of others, As a conclusion it describes the desired response (directive sentences) to social sentences and what the child should try and say or do in the particular target situation (adapted from Greenway, 2000).

It has been recommended that there needs to be a balance between these three types of sentences, Carol Gray (1995) recommends a ratio of 0-1 directive for every 2-5 descriptive or perspective sentences, Other considerations include appropriate levels of vocabulary and reading comprehension, It must be remembered that even though the child with Asperger syndrome will learn the rules of social conduct it is usually by a process of intellectual analysis rather than intuition; the child will require thinking time to act appropriately.

Case study-Alex

This case study examined the effectiveness of social story interventions for an eight-year old boy diagnosed with mild Asperger's disorder in an international school.

The student will be identified as Alex throughout the case study.

A formal yet relaxed interview was organised with Alex's parents and his classroom teacher to gather background information on Alex and his current problems in class. Observation dates were scheduled, where one of the authors would come and observe Alex in his classroom. The teacher was requested to keep a tally on certain occurrences of behaviour.

Developmental history

Alex is an eight-year old boy of Chinese background. Currently he is in Year Two of an International school in Hong Kong. Alex was born in Taiwan where he lived until his family moved back to Hong Kong when he was 3½ years old. Alex is the older of two siblings; his brother is three years younger. The mother reported that one of her younger brothers has Down's syndrome. Alex's birth was non-eventful, he was born full term by caesarean delivery. His mother cannot recall his developmental milestones. Apparently Alex slept a lot during his first-year and refused to walk until he was 19 months old. His father mentioned that Alex's language development was delayed maybe because of the trilingual environment with Cantonese, English and Mandarin while living in Taiwan. Alex uttered his first words at one year and eight months old. He then caught up rapidly and was able to speak in sentences before the age of three. However, his parents remark that he still expresses himself in short phrases even though he is capable of speaking in long sentences. Alex's mother recounted that he did not enjoy baby games until after his first birthday. He often refuses to greet or wave bye-bye even to familiar people, His eye contact has never been good, except when he talks to his mother. He is more interested in adults than same age peers and does not initiate to join them in play unless asked by his teacher or when the play is structured. When he does join his peers, he likes to lead the game rather than participate or follow group decisions. There are some reports that Alex hurts smaller children to seek out social interaction. According to his mother Alex does not have any friends.

Alex was assessed by a registered psychologist when he was four years and nine months old as having mild Asperger's disorder.

Academic history

When Alex returned to live in Hong Kong he first went to a local kindergarten where Cantonese was used as the major language of instruction. Due to his clumsiness with handwriting and a higher demand of written work in the school, Alex's parents opted for the English School Foundation kindergarten and he spent his last year of preschool there. The teachers at the ESF School were concerned about Alex's apparent social isolation. The following year Alex enrolled at the International School and he is currently in Year Two. His teacher mentions that he is socially immature, has problems with independent work, comprehension and initiation. His last years report mentions similar problems, Alex also exhibits a number of challenging behaviours at school. His behaviour problems include calling out to the teacher and repeating whatever she says, making lots of silly and loud noises, stepping on people when working on the floor, pushing in line, making frequent toilet stops and asking questions that have no relevance.

The parents first consulted a psychologist in 2000 when Alex was four years old, who could not come up with a diagnosis, Alex was assessed by a second psychologist in 2001 who diagnosed him with mild Asperger syndrome. Alex's parents had a reassessment done by different disciplines from the Department of Health last year. They concluded problems with motor skills, verbal skills, perceptual organization skills, attention control skills and social skills. They also suggested the possibility of autistic disorder. At the moment, he is receiving an hour a week of physical therapy working on his gross motor skills and 45 minutes of occupational therapy to work on his fine motor and handwriting skills, He also receives private speech therapy.

Targeted behaviour

Alex's mother and father are still concerned about his self-help skills especially his organisational skills and the skills he needs to be independent.

Alex's classroom teacher requested to have a number of challenging behaviours targeted. She mentions that Alex interrupts her lessons frequently. The main problems that upset the classroom routine are:
- loud entry into the classroom in the morning;
- loud, demanding interruptions when he calls out to her;
- repeating whatever the teacher says;
- asking questions that are not relevant;
- laughing really loudly at silly people or jokes;
- pushing in line;
- putting his work in the teacher's face when she's correcting other people's work;
- stepping on other students that are working on the classroom floor and frequent toilet visits.

Behaviour observations

Based on an agreement with both parents and the classroom teacher, observations were made of Alex several times over a period of several days to collect data on the problem behaviours his classroom teacher mentioned. Out of all the behaviours the teacher wanted to target, Figures 1-4 show the most frequently occurring ones. Social stories were written to target all the behavioural problems listed by Alex's teacher. The teacher was requested to keep a tally" on Alex's toilet visits for a few days.

Appropriateness of social stories

Attwood (1998) believes that although the child with Asperger syndrome often seems to have **a** lack of what he calls "social commonsense" he or she is able to learn "what to do" if someone provides an explanation, The characteristics of autism may explain a child's preference for reading non-fiction rather than fiction, and a social story provides the reader with a factual account.

Social Stories should suit Alex's case as he is a capable reader, his cognitive abilities are relatively good and he is able to follow instructions. Thus the intervention will be relatively simple for his teacher to implement with minimum impact on the rest of the class.

Alex's social stories

Materials

All stories were printed in A4 format and covered individually with different coloured cover paper. Photographs of Alex displaying appropriate behaviour were incorporated into the story. The title was printed on the cover and the stories were numbered. The teacher holds a list with titles and matching colour codes on her desk.

Modelling and monitoring

A start was made by introducing these stories while modelling the desired behaviour to Alex over a couple of days. Included in the social stories were pictures of Alex and his classmates. Alex really seemed to enjoy his social stories and especially liked the pictures. While modelling the right behaviour, he did get a little confused until going through the modelling a couple of times. The social stories were kept in Alex's view (i.e., on the teacher's desk) so that he could request to read them at any time. Alex's classroom teacher and the author agreed that Alex would read some of the stories first thing in the morning as he comes into the classroom and at all times when the teacher things it is appropriate (i.e., reading the line-up story before going to the library). Observations were scheduled with Alex's classroom teacher for a week later. The teacher agreed to keep a tally on Alex's toilet visits.

Observations

TARGETBehaviour_____ Calling out to the teacher _____

Observation period_____ Thurs/Friday 29/04-Mon/Tuesday 04/05/04 _____

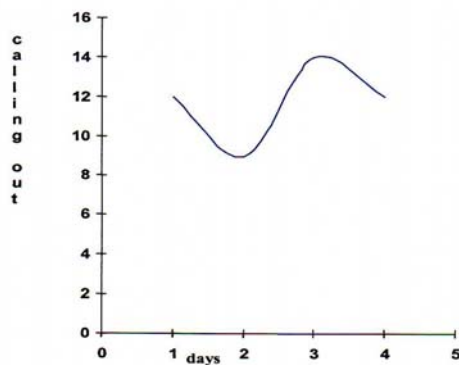| DATE	ACTIVITY	TIME	OCCURRENCES	TOTAL FOR PERIOD
29/04/04	Handwriting/Spelling/Written language/Guided reading	08:15-10:10	IIIII IIIII II	12
30/04/04	Oral Language/Spelling/Library	08:15-10:10	IIIII IIII	9
03/05/04	Oral Language/Spelling/Written Language	08:15-10:10	IIIII IIIII IIII	14
04/05/04	Handwriting/Spelling	09:00-10:10	IIIII IIIII II	12

——— Occurrences

Figure 1.
Observation scale frequency 'Calling out".

TARGET Behaviour_____Laughing loudly at silly people and stories_____
Observation period_____Thurs/Friday 29/04Mon/Tuesday 04/05/04_____

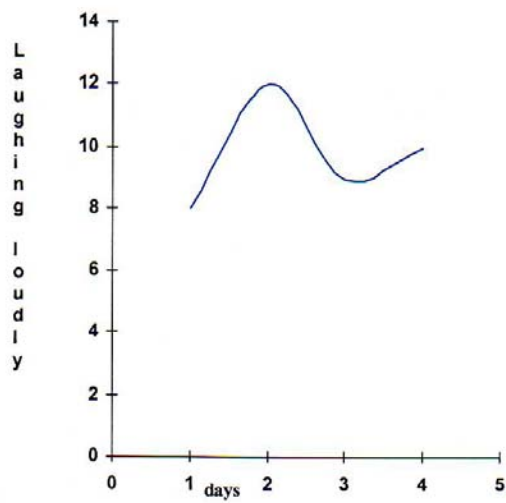| DATE	ACTIVITY	TIME	OCCURRENCES	TOTAL FOR PERIOD
29/04/04	Handwriting/Spelling/Written Language	08:15-10:10	IIIII III	8
30/04/04	Oral Language/Spelling/Library	08:15-10:10	IIIII IIIII II	12
03/05/04	Oral Language/Spelling/Written language	08:15-10:10	IIIII IIII	9
04/05/04	Handwriting/Spelling	09:00-10:10	IIIII IIIII	10

—— Occurrences

Figure 2.

Observation scale frequency "Laughing loudly",

TARGET Behaviour_____Repeating what the teacher just said_____

Observation period_____Thurs/Friday 29/04-Mon/Tuesday 04/05/04_____

DATE	ACTIVITY	TIME	OCCURRENCES	TOTAL FOR PERIOD
29/04/04	Handwriting/Spelling/Written Language	08:15-10:10	·lllll lll	8
30/0404	Oral Language/Spelling/Library	08:15-10:10	Hlll ·lllll	10
03/05/04	Oral Language/Spelling/Written Language	08:15-10:10	·lllll lll	8
04/05/04	Handwriting /Spelling	09:00-10:10	Hlll·lllll ll	12

——— Occurrences

Figure 3.

Observation scale frequency "Repeating teacher".

TARGET Behaviour_____Going to the toilet_____
Observation period_____Thurs/Friday 29/04Mon/Tuesday 04/05/04_____

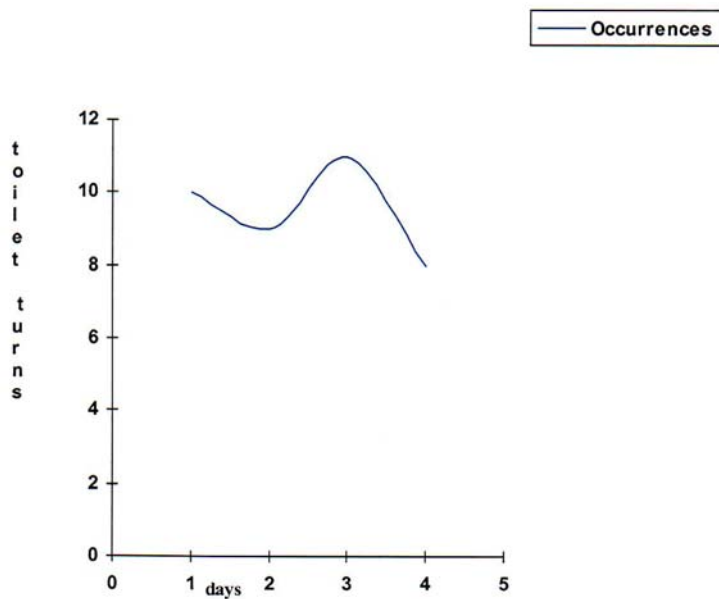| DATE	OCCURRENCES	TOTAL FOR DAY
29/04/04	‖‖‖·‖‖‖	10
30/04/04	‖‖‖ ‖‖	9
03/05/04	‖‖‖ ‖‖‖ ‖	11
04/05/04	·‖‖‖ ‖‖	8

—— Occurrences

Figure 4.

Observation scale frequency 'Toilet turns"

Two examples of Alex's social stories
Not pushing in line

Sometimes I have to stand in a line; it may be a line outside the classroom or at the lunch line at the school cafeteria.
When I get in line, I stand behind the last person.
Other people may get in line behind me, so there may be people in front of me and behind me.
Sometimes I may be the first person in line. Sometimes I may be the last person in line. Sometimes I may be in the middle of a line.
It is not fair to cut in front of someone in line and I shouldn't try and push in line.
I have to wait patiently in line so everyone will be happy.
Good things happen to people who know how to wait patiently in line.

Figure 5.
Model appropriate behaviour "Standing in line".

Not calling out
There are many students in the classroom who would like to talk to the teacher or ask a question.
Sometimes I want to get the attention of the teacher.
It is very annoying for a teacher when someone is calling out.
When people call out, they disrupt everything and everyone gets distracted.
If I call out, people might think I am rude.
When ever I want to talk to the teacher, I raise my hand and wait for the teacher to call on me.
Sometimes the teacher will call on me to talk. I may have to wait for my turn to talk.
If I want to talk to the teacher during class, I will try to raise my hand.

Figure 6
Model appropriate behaviour in class.

Figure 7
Model appropriate behaviour "raising my hand".

Result findings

TARGET Behaviour_____ Calling out to the teacher_____
Observation period_____Thurssday 13/05/04-Tuesday 18/05/04_____

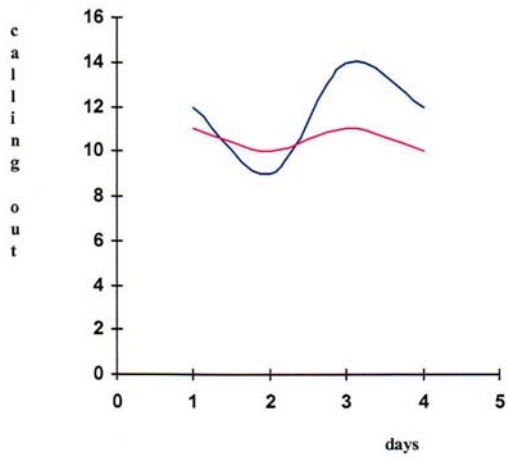| DATE	*ACTIVITY*	*TIME*	OCCURRENCES POST INTERVENTION SOCIAL STORIES	TOTAL FOR PERIOD
13/05/04	Handwriting/Spelling/Written Language	08:15-10:10	IIIII IIIII I	11
14/05/04	Oral Language/Spelling Library	08:15-10:10	IIIII IIIII	10
17/05/04	Oral language/Spelling/Written language/Guided reading	08:15-10:10	IIIII IIIII I	11
18/05/04	Handwriting/Spelling	09:00-10:10	IIIII IIIII	10

Figure 8.

Observation scale frequency .Calling out" post intervention.

TARGET Behaviour _____ Laughing loudly at silly people and stories _____
Observation period _____ Thursday 13/05/04-Tuesday 18/05/04 _____

DATE	ACTIVITY	TIME	OCCURRENCES POST INTERVENTION SOCIAL STORIES	TOTAL FOR PERIOD
13/05/04	Handwriting/Spelling/Written language/Guided reading	08:15-10:10	IIIII IIII	9
14/05/04	Oral language/Spelling/Library	08:15-10:10	IIIII II	7
17/05/04	Oral language/Spelling/Written Language/Guided reading	08:15-10:10	IIIII III	8
18/05/04	Handwriting/Spelling	09:00-10:10	IIIII III	8

— Occurrences Baseline
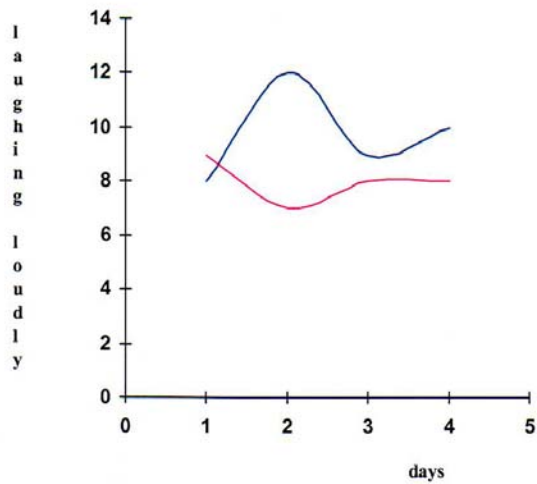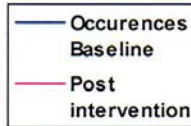— Post intervention

Figure 9
Observation scale frequency "Laughing loudly" post intervention

TARGET Behaviour_____Repeating what the teacher just said_____
Observation period_____Thursday 13/05/04-Tuesday 18/05/04_____

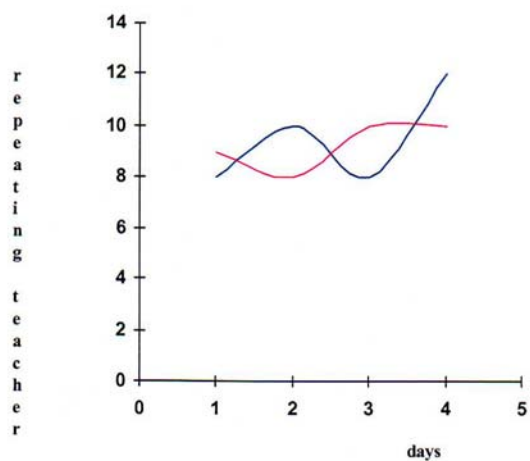| DATE	*ACTIVITY*	*TIME*	OCCURRENCES POST INTERVENTION SOCIAL STORIES	TOTAL FOR PERIOD
13/05/04	Handwriting/Spelling/Written Language	08:15-10:10	HIII IIII	9
14/05/04	Oral Language/Spelling/Library	08:15-10:10	IIIII III	8
17/05/04	Oral Language/Spelling/ Written Language	08:15-10:10	·IIIII ʇIIIII	10
18/05/04	Handwriting/Spelling	09:00-10:10	ʼIIIII ʇIIIII	10

Occurences Baseline
Post intervention

Figure 10.
Observation scale frequency -Repeating teacher" post intervention

TARGET Behaviour_____ Going to the toilet_____
Observation period_____Tuesday 18/05/04-Friday 21/05/04_____

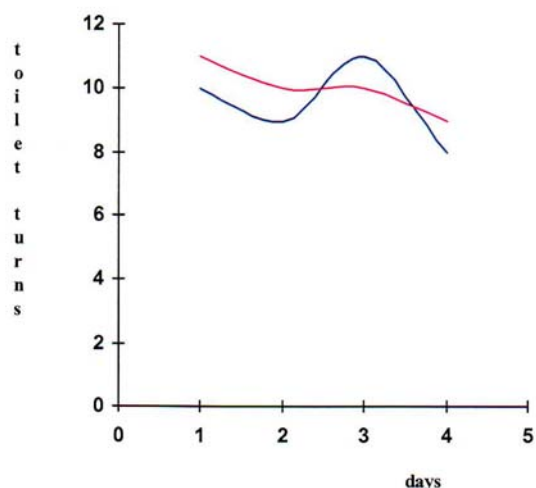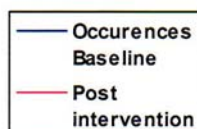| DATE	OCCURRENCES POST INTERVENTION SOCIAL STORIES	TOTAL FOR DAY
18/05/04	IIIII IIIII I	11
19/05/04	IIIII IIIII	10
20/05/04	IIIII IIIII	10
21/05/04	IIIII IIII	9

Figure 11.
Observation scale frequency 'Toilet turns" post intervention.

The preceding graphs (Figures 5-8) illustrate the occurrences of the targeted behaviour post intervention and thus the effectiveness of the intervention so far. Slight changes are noted towards the downward trend after having used social stories as a behavioural intervention for Alex for some of the targeted behaviours. The intervention has reduced the fluctuations in both calling out to the teacher and inappropriate laughter.

Discussion

The results of this study add weight to the limited current empirical efficacy of social stories such as those published by Rogers and Myles (2001). Norris and Dattio (1999), and Kuttler, Myles and Carlson (1998), This is the first study that the authors are aware of, that has utilized photos of the actual child in the social story, Photographs of the child exhibiting the correct behaviour were used to increase interest and to personalize the stories within Alex's environment. However a note of caution is that this technique may reduce the generalization of the learned social skill to other environments. Another positive aspect of utilizing photographs in social stories is that many studies have confirmed the strong visual learning style of people with Asperger syndrome. In fact these people are often unsuccessful when this type of input is absent from instruction (Scheuermann & Webber, 2002).

Alex's classroom teacher was shown the results of the intervention during an informal meeting and she was quite surprised. She mentioned that only occasionally, when she asks Alex to read a social story right before a certain event like lining up for recess, she notices that Alex's behaviour improves. Overall, she did not think that his interruptive behaviour had changed much at all. It is felt that there may be a need to give the social stories a bit more time with Alex since we have not allowed the intervention enough time yet. To

achieve some more structure for Alex his classroom teacher has been asked to line up the social stories that he needs to read everyday on his desk first thing in the morning. We are planning on making a visual day schedule for Alex in which the social stories will be incorporated.

Conclusion and limitations

A follow-up meeting with Alex's parents took place 3 months after the second observations to reflect upon progress of Alex's behaviour and the apparent benefits of the social story intervention. Alex's mother mentioned that during the holidays Alex had been difficult to handle. They went to some amusement parks and the excitement was too much for Alex. He had difficulty settling into anywhere they went or anything they did. The first week back at school was hard for the classroom teacher as Alex was "all over the place". Once he settled back into the routine of the class, with the help of the social stories, Alex has been fine. Alex's social story of going to the toilet has not been used since the first week of the holiday as this problem behaviour of the frequent visits to the toilet have ceased. The classroom teacher mentioned that she now understands and appreciates the benefits of the social stories and requested two more stories to be written about finishing tasks and finishing tasks on time.

It is important to be cautious in interpreting the results due to lack of rigor associated with this design. Effects could be due to maturation or other possible interventions occurring in the home. Further observations are necessary to systematically evaluate the effectiveness of social stories as an intervention with Alex.

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