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# Reducing Inappropriate Behaviors and Enhancing Social Skills in Children with ASD Through Social Stories

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## Abstract

### Keywords:

autism spectrum disorder; social behavior; maladaptive behavior; social communication; Social Story

Teaching social skills is a challenging process due to the fact that each skill is difficult to motivate and reward and to the sheer number of skills that can be considered social skills and the infinite ways in which changes in the environment affect the perception of each skill. The most important step in the development of the social skills repertoire in children diagnosed with ASD consists in the occurrence of social desire. Therefore, the social environment must be implemented in a way that is attractive to the child. Many social skills are learned automatically in typical ABA/VB programs. Children with autism spectrum disorder (ASD) seem to lack a desire to search for deeper causal links in their understanding of the world. Instead, they remember predictable routines (for example, brushing their teeth) and processing information at the surface level. This leads to a fragmented and superficial understanding of the environment, although they can remember much about it. Children with ASD face difficulties in achieving social contexts in the sense of other people's behavior, because it relies on understanding their intentions. The aim of this study was to evaluate the effects of a **Social Story** as an intervention used to reduce maladaptive behavior and to enhance social skills in 3 children diagnosed with ASD.

## Zusammenfassung

### Schlüsselworte:

Autismus-Spektrum-Störung; Sozialverhalten; Fehlanpassung; soziale Kommunikation; soziale Erzählung

Soziale Fertigkeiten sind schwer verständlich und schwer unterrichtbar. Ein Grund liegt daran, dass jede einzelne Fertigkeit eine Begründung und eine Belohnung erfordert. Außerdem kann eine Vielfalt von Fertigkeiten als soziale Fertigkeiten betrachtet werden, und jede einzelne Fertigkeit kann umgebungsbedingt unterschiedlich wahrgenommen werden. Der wichtigste Schritt in der Entwicklung der sozialen Gesamtfertigkeiten eines Kindes mit allgemeiner Autismus-Spektrum-Störung ist die Auslösung des sozialen Wunsches. Deshalb ist es äusserst wichtig, den Kindern das soziale Umfeld möglichst reizvoll darzubieten. Im Rahmen üblicher ABA-/VB-Programmen erwerben Kinder unbewusst viele soziale Fertigkeiten. Anscheinend fehlt autistischen Kinder das Begehren, nach erklärenden Kausalzusammenhängen zu suchen. Sie merken sich jedoch absehbare alltägliche Tätigkeiten (z. B. Zähneputzen) und bearbeiten bloß oberflächlich die Information. Dies führt zur lückenhaften Wahrnehmung des Umfeldes, obwohl sie diese Kinder auf vielen zahlreichen Informationen ansprechbar sind. Bei der Aneignung von sozialen, vom Verhalten anderer ausgehenden Zusammenhängen stoßen Kinder im Autismus-Spektrum auf Schwierigkeiten, da dies auf cu das Verstehen deren Absichten basiert. Ziel dieser Studie ist die Auswertung der Wirkungen der sozialen Erzählung als Eingriffsmaßnahme zur Ermäßigung der Fehlanpassung sowie zur Verbesserung der sozialen Fertigkeiten bei Kindern im Autismus-Spektrum.

## 1. Introduction

Autism spectrum disorder (ASD) is viewed according to DSM-V (American Psychiatric Association, 2013) as a neurodevelopmental disorder characterized by persistent deficits in social interaction, in social communication and by multiple patterns of restrictive and repetitive behaviors along with unusual and obsessive interests. Literature and clinical experience show that children with ASD are able to enhance their understanding of the environment through the development of social skills. As mentioned by Staley (2001) children can acquire a

better adjustment to other people if they are able to understand their own emotions, the one of other and to succeed in recognizing these specific emotions in a social context.

Baron-Cohen (2008) suggested that within the spectrum there is a great diversity, meaning that there are children who avoid other people on purpose being anxious and feeling disturbed by social interactions and children who want to communicate but they lack the knowledge of initiation and maintaining social communication. Therefore, communication can be

totally inappropriate, meaning poor eye contact, difficulties in understanding facial expressions and non-verbal aspects of language, which impedes involving correctly in social contexts (Sansosti, Powell-Smith, 2008). Impaired social and communication skills lead to inappropriate behaviors in children with ASD, creating life-long barriers as mentioned by Rhodes (2014).

## 2. Theoretical foundation

A recent study conducted by Hanrahan (2020) shows that children with autism spectrum disorders often display maladaptive behaviors as a consequence of distress and frustration they feel due to their lack of effective communication, to their difficulties of understanding and interpretation of social cues. These behaviors (self-injurious, aggressive/destructive and stereotyped/repetitive behavior) are associated with a higher level of stress in the caregivers of children with ASD and therefore there is a strong need for evidence-based interventions to enhance understanding of social situations and to reduce the wide range of inadequate behaviors (Nicholls et al., 2019).

One of these interventions concerns the use of social stories to address social skills development and to reduce the incidence of inappropriate behaviors in children with ASD. This approach was introduced by Carol Gray in 1990 as an intervention technique for children, teenagers and adults with ASD. Social stories are learning tools that mediate a significant exchange of information between parents, specialists and persons with ASD of all ages (Bălaș-Baconschi, 2021). Social stories are simple, short and individualized narratives composed by different types of sentences meant to describe some specific behavior or social situation or to coach an individual in that specific behavior or situation (Gray, 2010). In order to emphasize the effectiveness of social stories, Gray specifies that they are written from the child's perspective, according to his intellectual functioning, to his understanding capacity, to his interests and to his way of approaching other people.

Whilst typically developing children may intuitively know which would be an appropriate behavior in different social situations, children with autism often find social situations extremely confusing. Social stories attempt to help children with autism manage their own behaviour by answering questions like what happens in a given situation, when it should happen, how it should happen, and perhaps most importantly, why it should happen as it does

(Rust and Smith, 2006). In the same time, Scattone et al. (2007) strongly recommend the use of social stories due to their individualized construction, adapted for each single case and each child's level of understanding.

As an intervention technique, Social stories were developed during several decades and Gray's initial recommendations were slightly modified. Gray and Garrand proposed in 1993 the use of social stories with higher-functioning children with autism who possess basic language skills and that the entire story should be presented on a single sheet of paper without any images. The authors stated that each story has to be composed by four types of sentences, descriptive, perspective, directive and affirmative and established that each directive sentence has to be accompanied by two to five descriptive, perspective and/or affirmative sentences. During the next years there some other types of sentences have been added but considered optional in a social story: control and cooperative sentences (Gray, 2000). Even if nowadays the use of social stories has been extended to other types of children with disabilities, most of the scientific literature refers to their involvement in children with ASD.

The story should be within the child's comprehension level and limited to the vocabulary and print size that are appropriate to the child's age and ability. In addition, the author reported that pictures in the social story are possible when they do not distract the child and do not restrict his/her ability to generalize the principle beyond the depicted situation (Gray, 2000).

Scientific research has proven that social stories can support people with ASD and/or other developmental, behavioral problems in their understanding of social norms, social contexts (Tsai et al., 2007). Recent studies focus also on the fact that social stories can assist children with ASD in gaining a better sense of safety within social situations, in approaching others with much more confidence and with lower levels of anxiety and in the same time, can improve their involvement in learning activities (Riga et al., 2020). In their study, Riga and her colleagues (2020) mentioned one other positive aspect concerning the use of social stories, that is in facing unexpected changes perceived as very stressful for children with ASD (a natural phenomena, the absence of the significant person, the order of the activities within the schedule etc.).

Khantreejitranon (2018) approaches the positive impact of social stories in decreasing inappropriate behaviors in preschool and school children with ASD with severe symptoms, but with high level of communication skills. The results of the study showed significant improvement in behaviors such as making loud noises during the activities, not sharing toys with others, not waiting for one's turn, not knowing to say "Hello", destroying things during temper tantrums due to low frustration tolerance and approaching other people in odd ways.

Research were conducted also to determine if the use of social stories could enhance sequence skills, that is finding a sequential order among activities and within one activity, by activating executive function, namely planing and organizing different tasks.

Social stories offer concrete information concerning things that could occur in some given situations in different settings and also typical behavioral patterns and guidelines that can confer a better sense of security for the children and therefore reduce their fears and increase their emotion regulation (Thomson and Johnson, 2013).

### 3. Research methodology

#### 3.1. Participants

As part of this research, we followed and selected, under the guidance of therapists from the recovery center, a number of 3 children diagnosed with ASD, integrated in a special education school. The participants with ASD symptoms have been diagnosed in the Pediatric Psychiatry Clinic from Cluj-Napoca, Romania by the psychiatrists from the local hospital in Bistrița.

Three participants between the ages of 7 and 9 were selected for this study. All study participants have an average level of intellectual ability and have associated disorders, behavioral delay, expressive language delay, receptive language delay, or specific speech articulation disorder. Each participant has a low tolerance for frustration. Each subject receives behavioral intervention within the therapy center. We have selected participants with similar backgrounds and abilities, cognitive functioning and academic performances. All the included participants have a diagnosis of ASD and have poor social communication and maladaptive behaviors.

In order to participate in this study, the parent of each participant signed a participation agreement. By signing the informed consent, the parents agreed to the processing of the participants' data and were informed about the activities carried out during the meeting sessions.

According to the protocol for the ASD and ADHD diagnosis, the Diagnostic and Statistical Manual of Mental Disorders (5th edition) criteria (DSM-5; American Psychiatric Association, 2013) was used in order to decide if the children meet the diagnosis criteria. All the children are currently attending a special education school, being included in behavioral interventions programs in the Magic Bibiland Center in Beclean, Romania, which is an association that provides services for children with neurodevelopmental disorders. The demographic information regarding the children can be found in Table 1.

Table 1. The demographic characteristics of children with ASD symptoms

Participant	Gender	Age	Diagnosis	Social behavior
A.B.	Male	9	Pervasive developmental disorder in the autism spectrum; Expressive language disorder; Receptive language disorder.	Frustrations arise when things are not put in the order the subject wants. It is manifested by crying, raising the voice and screaming; violence towards those around.
P.R.	Male	7	Pervasive developmental disorder in the autism spectrum; Delay in the acquisition of expressive language;	Protodeclarative gestures or certain associations with images or sounds. He walks in circles and plays with a rubber band as self-stimulation.
L.R.	Male	9	Hyper-kinetic disorder. Pervasive developmental disorder in the autism spectrum;	Stereotypes and repetitions, patience for a topic of interest

Participant	Gender	Age	Diagnosis	Social behavior
			Expressive language disorder; ADHD Hyper-kinetic disorder.	

### Participant A.B.

A.B. is a 9 years old boy with the main diagnosis as pervasive developmental disorder in the Autism Spectrum, expressive language disorder and receptive language disorder. From a somatic point of view, he is a child with a typical appearance. From a psychomotor point of view, he shows right laterality, he knows the body diagram to a large extent, he does not yet know the notion of left and right. Identifies some objects from the school environment, the family environment and the surrounding environment. A.B. is integrated in the inclusive education school in the city, in the first grade, he is making progress and the development of skills is visible. The subject has a slower pace of work, requires additional time to process information and to provide answers. He is easily distracted by certain details in the environment and has an attention deficit. Shows more developed skills for certain areas. It has a very well-developed visual memory remembering the positioning of all objects in the environment. The subject understands simple sentences. Uses hand waving a lot and joins in conversations, meaningless vowels. Frustrations arise when things are not in the order the subject wants. He is crying, raising the intonation to the point of screaming; he is violent towards those around, therefore he is immobilized until he calms down.

### Participant P.R.

P.R. is a 7 years old boy with the main diagnosis pervasive developmental disorder in the autism spectrum; delay in the acquisition of expressive language; hyper-kinetic disorder. From a psychomotor point of view, he has right laterality, he knows the body diagram to a large extent, he has hesitations regarding the notions of left and right, thus he has orientation deficits. Identifies objects from the school environment, the family environment and the surrounding environment. P.R. is integrated in the inclusive education school in the city, in preparation grade, he is making progress and the development of skills is visible. The subject has a slower than typical pace of work. It takes extra time to process the information and provide answers. When he doesn't understand something or doesn't know how to answer,

he emits random words from what he knows better. He likes simple calculations in mathematics, he has communication difficulties and often gets frustrated, sometimes violent. The subject understands simple sentences. He shows difficulties at the level of mental representations. He sometimes has difficulties in understanding the meaning of certain words, as they are hard to decode and encode. He always finds ways to express his needs, uses protodeclarative gestures or certain associations with images or sounds. He walks in circles and plays with a rubber band as self-stimulation. The language is full of repetitions and stereotypes, he cannot pronounce some words and certain sounds: c, t, g, c.

### Participant L.R.

L.R. is a 9 years old boy and the main diagnosis is given by autism spectrum disorder, delay in the acquisition of expressive language, ADHD, hyper-kinetic disorder. He knows the parts of the body and does not present difficulties in terms of laterality. He is passionate about taekwondo, but he can't practice this sport all the time because of the frustrations that arise when he doesn't succeed in a move and because of misunderstanding his colleagues. The trainer occasionally does one-to-one training with the subject. L.R. has an alert work rhythm. He gets bored quickly, he makes constantly logical connections. He likes mathematics and everything that means natural phenomena. He is fascinated by the technology with which he often expresses himself. Knows/writes the letters of print and manages to use them on the computer or other devices. The messages of literary texts bore him and he does not pay attention to them most of the time opening new conversations related to other topics (taekwondo, internet, movies). Has low tolerance to frustration, episodes of low-intensity violence occur. He presents stereotypes and repetitions, but if he has enough patience for an interesting topic, he can speak in simple or more complex sentences. When his name is mentioned he is excited and responds to demands. He has quite a varied vocabulary. When he has something interesting to express, he strives and uses all possible methods.

### 3.2. Measures

3.2.1. Autism Treatment Evaluation Checklist (ATEC)

ATEC was developed by Bernard Rimland and Stephen M. Edelson from Autism Research Institute around 1990 and consists in a form filled out by parents, teachers, or caregivers. It is composed of 4 subscales:

1. Language / Communication (14 items);
2. Socialization (20 items);
3. Cognition / Sensory (18 items);
4. Health / Physical / Behavior (25 items).

Unlike most scales, this one does not support copyright and can be used for free by any researcher. Copies of the ATEC are available upon request from the Autism Research Institute or on the ARI website. The Autism Treatment Evaluation Checklist (ATEC) is a simple but effective tool for measuring the effectiveness of various treatments. Unlike other research tools that simply diagnose ASD, the ATEC allows for the measurement of a patient's progression or involution after starting treatment. The ATEC assesses 77 items, such as whether the child knows his name, makes eye contact with others, or has difficulties such as bed-wetting, diarrhea, constipation, and so on.

3.2.2. Social Interaction Questionnaire (SCQ)

The questionnaire was created by Louis H. Janda (Ph.D.) and published in the volume Career Tests. The book was published in the USA in 2004 and sold more than 6 million copies. This test measures the degree of comfort or discomfort due to the subjects' social interactions.

Table 3. Social Interaction Questionnaire

Score	Level
30-70	low
71-110	medium
111-150	high

The questionnaire includes 30 items to which the subjects are asked to answer, the rating being done on a 5-point scale as follows: 5-never (I don't feel this way); 4-very rare; 3-sometimes; 2-often; 1-very often. The lower the obtained score, the more unpleasant the person shows in social relations. (16 items refer to

difficulties in the relationship). The obtained scores will be reported as follows (Table 3).

3.2.3. Buss Perry Aggression Questionnaire (BPAQ)

Buss Perry Aggression Questionnaire was created by A.H. Buss and M.P. Perry in 1992 including 29 questions that are rated on a 5-point Likert scale ("know a lot" = 5, "to a great extent" = 4, "don't know" = 3, "to a small extent" = 2, "not at all" = 1). The scale consists of four factors, namely: physical aggression, verbal aggression, anger, hostility. The physical aggression factor includes 9 items, one of which (item 25) is reverse rated, the items are as follows: 2, 6, 10, 14, 18, 22, 25, 27, 29; The verbal aggressiveness factor includes 5 items, none of which is reverse rated, the items are: 3, 7, 11, 15, 19; The anger factor includes 7 items, one being reverse rated (item 1), having the following items: 1, 4, 8, 12, 16, 20, 23; The hostility factor includes 8 items, none of which has a reverse rating, the items being the following: 5, 9, 13, 17, 21, 24, 26, 28. The scale provides a total score for aggression obtained by summing the scores for each item from the four factors and a total score for each factor of aggression. The total score is divided into three levels.

Table 3. Scores BPAQ

Physical aggression		Verbal aggression	
SCORE	NIVEL	SCORE	NIVEL
9-21	Low	5-11	Low
22-33	Medium	12-18	Medium
34-45	High	19-25	High
Anger		Hostility	
SCORE	NIVEL	SCORE	NIVEL
7-16	Low	8-18	Low
17-25	Medium	19-29	Medium
26-35	High	30-40	High

3.2.4. The instrument for measuring the dependent variable

The tool we used to measure the reduction of children's maladaptive behaviors is a set of 9 questions based on the social story read to the participants.

Children's responses were rated on a scale from 0 to 2, where 0 means wrong answer or no answer, 1 means partially answered correctly, and 2 means answered the question correctly. The skills selected for this study are behavior in the classroom, behavior during breaks, listening to friends, and reducing aggressive behaviors.

Table 4. The instrument for measuring the dependent variable

<b>How to behave in class?</b>	<ol style="list-style-type: none"> <li>1. How do you feel when you listen to the teacher?</li> <li>2. What can I think about when they ask me something?</li> <li>3. What can I do when they ask me something?</li> </ol>
<b>How to behave during the break?</b>	<ol style="list-style-type: none"> <li>1. What can you do during the break?</li> <li>2. How do you feel when your colleagues invite you to hang out with them?</li> <li>3. What can I do when they laugh/tell/play?</li> </ol>
<b>How to be friends with others?</b>	<ol style="list-style-type: none"> <li>1. What does it mean to have "good hands"?</li> <li>2. What should I do when I feel like hitting?</li> <li>3. What can I do when your friends laugh?</li> </ol>

### 3.3. Procedure

According to the chosen design – the experiment with a single subject – we integrated two phases: that of the basic level (A) and that of the intervention level (B). The number of measurements required in the baseline phase depends on obtaining a stable evolution of the data (Neuman, McCormick, 1995). This base level signifies the absence of a tendency (upward or downward) and low infra-individual variability of the measurements. Thus, for the basic level (A), we decided to use the social story without illustrations – a total of 7 sessions (twice a week) and for the intervention level (B) the use of the social story with illustrations. The time assigned for the social story with illustrations was 20 minutes, twice a week (7 sessions in total). Sessions were 1 to 1. After reading the story, the participants had 45 seconds to respond.

A social story is based on a formula that shows the relationship between descriptive and instructional sentences. This ensures that the description of situations, interactions and concepts is done correctly. The ratio between the number of descriptive sentences and the number of instructive sentences must be greater than or equal to two (Gray, 2010). As mentioned above, a social story must contain at least twice as many descriptive sentences as instructive sentences.

Table 5. Social story without illustrations (basic level).

### "Mihai, the boy with good hands!"

1. Mihai goes to school every day. He likes cars, cats, writing, drawing and playing with his classmates.
2. In class I like to listen to the teacher. If she asks me something, I feel angry, I want to cry and hit.
3. If I do that, she might get mad at me. When I'm angry, I put my hands on the desk like I learned.
4. I go out during the break with my colleagues. They play, I watch them. If they call me to play too, I feel angry and want to hit. I can leave if I want.
5. When my colleagues tell stories, laugh and joke louder I feel like I have to scream and cover my ears. What do I do when they talk? I also talk to them about cars, cats, drawings. They pay attention to me. I look at them, they look at me. That's what friends do!
6. The best way for me to feel good is to calm down when the anger comes. To ask for a break, to be alone. That's the safest way! If I do this, I will have many friends.

## 4. Results

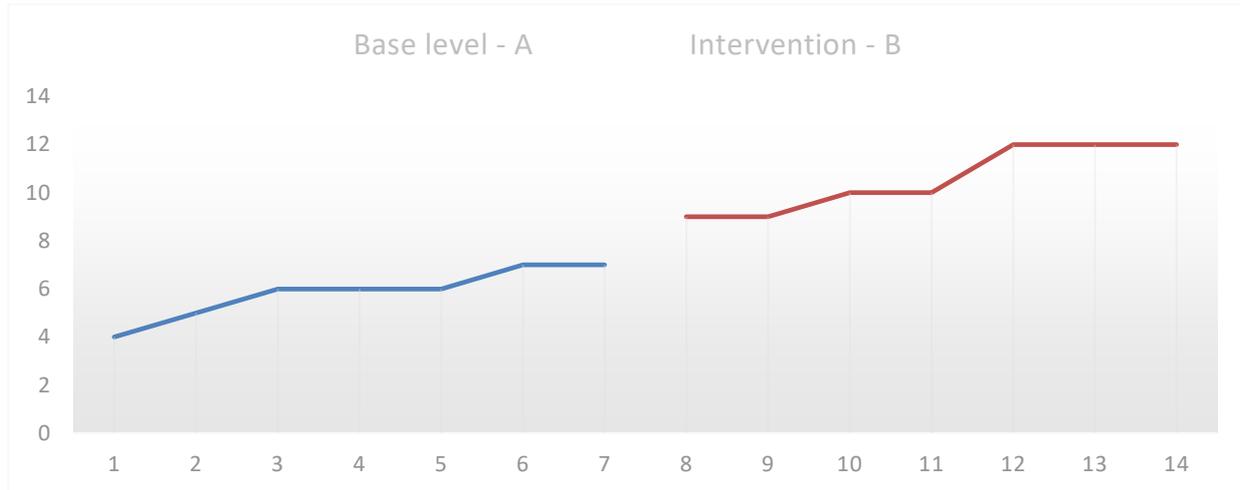
In order to identify exactly the stages that generated significant differences, in terms of performance, in the statistical analysis of the data we used the non-parametric Wilcoxon test. Thus, we compared the performance of the three children in the two phases of the experiment. As for making the visual analysis of the graphs, it was done after considering the tendencies of the data (up or down), the magnitude of the data (the numerical difference between the two levels), the latency (the number of sessions needed until the change occurred). The results obtained by all three participants show a visible increase in the

number of correct answers, in the intervention phase (B) compared to the baseline level (A).

Following the statistical analysis and interpretation of the data, a significant difference can be observed between the basic level A and the intervention level B. After the analysis of the measurements with the non-parametric Wilcoxon test, we obtained  $Z = 2.34$ ,  $p$  (threshold of significance) = 0.37. After visual analysis of the graph at A, stability

and an upward tendency of the data can be observed. Also, at level B, an upward trend of the data is observed, which shows us a greater number of correct answers in this phase (figure 1). The magnitude shows us a big difference between the two phases from 41 at the A level to 74 at the intervention level. The difference for A.B. is significant by 33. In both A and B, the effects of change appear from the first session, which means a small latency of change.

Figure 1.

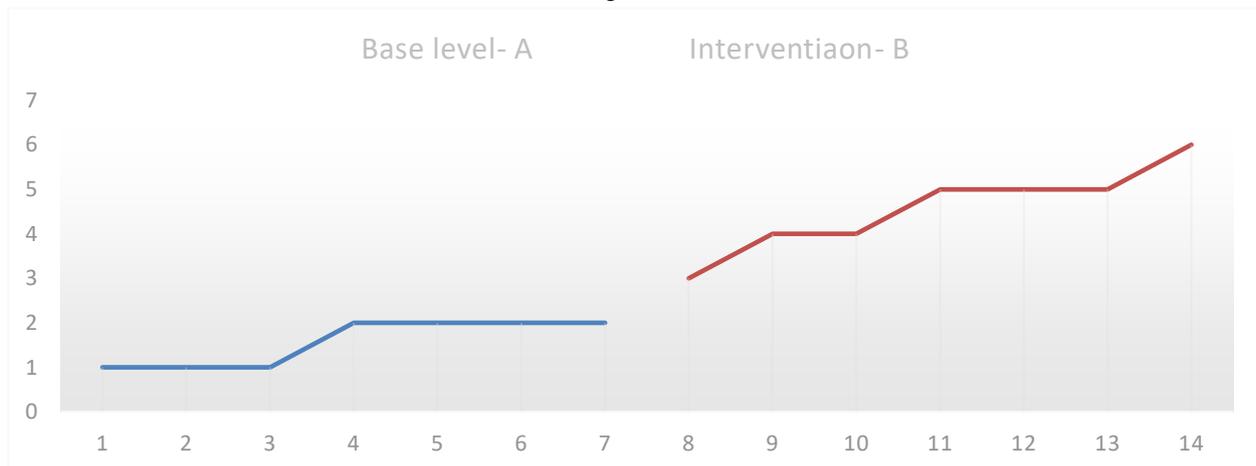


Following the final assessment (May 2022) on the social interaction questionnaire, A.B. obtained a score of 81 (10 more than in December 2021) which corresponds to the middle values of the scale. Regarding the aggression test, the score obtained was 60, with 18 (low level) in physical aggression, 11 (low level) in verbal aggression, 20 in the anger factor (medium level), 11 (low level) in the hostility.

Following the statistical analysis and interpretation of the data, a significant difference can be observed between the basic level A and the intervention level B. After analyzing the

measurements with the non-parametric Wilcoxon test, we obtained  $Z = 2.36$ ,  $p$  (threshold of significance) = 0.12. After a visual analysis of the graph at A, stability and an upward tendency of the data can be observed. Also, at level B, an upward tendency of the data is observed, which shows us a greater number of correct answers in this phase. The magnitude shows us a big difference between the two phases from 11 at the A level to 32 at the intervention level. The difference for P.R. is significant by 21. In both A and B, the effects of change appear from the first session, which means a small latency of change.

Figure 2.



Following the final evaluation (in May 2022), on the social interaction questionnaire, P.R. obtained a score of 72 (3 more than the assessment carried out in December 2021) which corresponds to the middle values of the scale. Regarding the aggression test, the score obtained was 75, with 22 (medium level) for physical aggression, 17 (medium level) for verbal aggression, 27 for the anger factor (high level), 9 (low level) for the factor hostility.

Following the statistical analysis and interpretation of the data, a significant difference can be observed between the basic level A and the

intervention level B. After the analysis of the measurements with the non-parametric Wilcoxon test, we obtained  $Z = 2.29$ ,  $p$  (threshold of significance) = 0.96. After visual analysis of the graph at A, stability and an upward tendency of the data can be observed. Also, at level B, an upward trend of the data is observed, which shows us a greater number of correct answers in this phase. The magnitude shows us a big difference between the two phases from 42 at the A level to 84 at the intervention level. The difference for L.R. is significant by 42. In both A and B, the effects of change appear from the first session, which means a small latency of change.

Figure 3.



Following the final assessment (May 2022) to the social interaction questionnaire, L.R. obtained a score of 92 (15 more than the assessment made in December 2021) and corresponds to the average values of the scale. Regarding the aggression test, the score obtained was 65, with 20 (low level) for physical aggression, 12 (medium level) for verbal aggression, 23 for the anger factor (medium level), 10 (low level) for the factor hostility.

The specific objective for this study was to validate an intervention program aimed at reducing maladaptive behaviors as well as developing social and emotional skills in students with ASD. The independent variable is the intervention program implemented with the help of the social story and the dependent variable refers to the reduction of maladaptive behaviors as a result of the application of the therapeutic intervention. The results obtained by the three participants show us the effectiveness of social stories, especially social stories with illustrations. All three participants made progress, which was more notable for the two 9-year-olds boys.

Regarding the continuity of the obtained results, we could estimate that after the withdrawal of the intervention, the desirable behaviors of the participants will reduce their frequency, but not so much as to reach the values recorded in the first basic level, but to stabilize somewhere on these values.

One of the factors that could determine the limitation of the research is the time assigned on one side and the small number of participants on the other. Although we have completed all the proposed sessions, we believe that the research can be long-lasting due to the unique way of children with ASD to progress. Social stories and some other intervention strategies like play therapy, music therapy, drama therapy are the result of years of observation, interaction and involvement.

## 5. Discussions

Within literature reviews, studies based on the investigation of the effectiveness of social stories in children and adolescents diagnosed with ASD have shown progress in different behaviors. Sunderland

(2001) stated that the central argument is that "everyday language is not the natural language of children. Their natural language is the one of image and metaphor as in stories". The provision of personalized resources is necessary for all individuals to achieve common goals. Thus, we believe that social stories can be used as a behavioral strategy (e.g. what to do when you are angry, how to deal with obsessions). In other studies, Burke and his colleagues (2004) evaluated the use of social stories with typically developing children experiencing sleep disturbances. The results indicated that there was an immediate and significant decrease in sleep-related problem behavior for the four participants within the study. Soenksen and Alper (2006) used social stories to increase prosocial behavior in a 5-year-old child with hyperlexia, while Toplis and Hadwin (2006) reported increased prosocial behaviors in 3 of 5 boys in their study of five children with behavioral difficulties. In other studies conducted by Sansosti Powell-Smith and by Scattone, Tingstrom and Wilczynski, both from 2006, only two of the three participants had increases in the targeted prosocial behaviors.

Benish and Bramlett (2011) emphasized the use of social stories in preschool typically developed children aiming the same aspects as our study that is reducing inappropriate behaviors and stimulating social relationships. Their results were similar to the ones we obtained for the three participants, by using alternatively illustrated social stories and a neutral book, which means that the technique is applicable to children of all kinds when it comes to decrease the intensity of maladaptive behaviors and to improve social skills. Wright and McCathren (2012) wanted also to determine if the use a social story as the only intervention was effective in increasing prosocial interaction and decreasing problem social behavior in 4 preschoolers with autism and obtained modest increases in prosocial behaviors and small decreases of negative social interaction. These findings confirm the fact that the results were not spectacular in none of the studies focused on these two objectives, which is not very uncommon given the numerous deficits in social communication within ASD profile.

Another aspect that would be interesting to determine within future research is the extend to which teachers accept the social validity of social stories, as shown in the study conducted by Wright and McCathren (2012), the authors stating that teachers agreed or strongly agreed (within the Likert-type

rating) that the intervention would be recommended to their colleagues.

On the other hand, stereotypical behaviors are also characteristic for children with ASD, representing frequently a barrier the development of social relationships. All the three participants in our study were often engaged in such behaviors and therefore, an interesting topic for further research would be to determine if the use of social stories could reduce these type of behaviors along with the implementation of an integrative approach as mentioned by Sălăgean and Costea-Bărluțiu (2019).

Research to date suggests that social stories have been used to improve many types of behaviors, including prosocial behavior, social communication, conversational skills, on-task behavior, interactions, appropriate greeting initiatives, and other general social skills. However, it is difficult to determine the role of social stories alone in this progress, or if the progress is also due to other strategies implemented.

The present study is addressed to educational and support staff, their family members in their capacity as co-therapists of the child diagnosed with autism, but also to all people who interact with students diagnosed with ASD.

## 6. Conclusions

In order to achieve good results in the evolution of children with autism, therapies should be introduced at a very young age. After extensive studies and practice, it has been shown that early intervention can accelerate the overall development of children with ASD, reducing problem behaviors and determining positive long-term outcomes.

The social story presented to the participants, in a friendly and entertaining manner demonstrated the way they could interact with other children, with the teacher and showed different clues about how they can react to some common events in everyday life.

The story we proposed in this study respected the instructions designed by the authors (Gray & Garand, 1993) and contains relevant aspects for the participants translated into images, answering essential questions that give children a better orientation in the environment they live in (where? , how? , when?, who?, what?, why?). We used affirmative, descriptive, perspective, directive and control sentences.

To develop this social story, the first step was to identify the participants' problematic target behaviors,

common points, points to be eliminated and replaced with prosocial behaviors.

This study demonstrated the impact of the intervention through social stories and highlighted the way to obtain a decrease of inappropriate behaviors and an improvement of social skills in children diagnosed with ASD. Studies included in a guide published in 2014 by *Autism Focused Interventions Resources and Modules* are designed to stress out the efficiency of social stories in the social area, in developing communication, in supporting joint attention, in reducing maladaptive behaviors and in the improvement of play and school-related skills.

Uses of social stories can be widespread in therapy and within school curriculum. They are an easy way to learn and the rewards are rich for both children and teachers. Therefore, we consider social stories as an efficient intervention technique, they are not time consuming and children enjoy them as they are individualized for each case according to the level of understanding and of integrating information and, in the same time, for each emotional, social and cognitive development.

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