USE OF SOCIAL STORIES IN CLASSROOM TO CHILDREN WITH AUTISM [1]

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ABSTRACT. Individuals with Autism Spectrum Disorder (ASD) may present deficits in social behaviors such as language and interpersonal interactions. Interventions that use social stories have shown promising results in teaching socially appropriate behaviors and in reducing socially inappropriate behaviors in the classroom, among other environments. Social stories are personalized from behavioral repertoire of each child and present the contingencies of reinforcement involved in the desired behavior, in the very environment in which the behavior occurs. The aim of this study was to verify the effects of social stories in the learning of appropriate behaviors and in the reduction of inappropriate behaviors of children with ASD in the classroom. The participants were two boys, 6 and 9 years old, diagnosed with ASD, who presented inadequate behaviors in response to social demands in school environment. Target behaviors for each participant were inserted into social stories that showed contingencies of inappropriate behavior and the appropriate alternative response. Before the beginning of the period in which the behaviors occurred more frequently, the stories were read to the children and the frequencies of target behaviors were recorded during class. Appropriate behaviors were encouraged and inappropriate ones were followed by correction procedures. Results indicated an increase in appropriate behaviors and a decrease in inappropriate behaviors for both participants, as well as a decrease in frequency of other inappropriate behaviors not directly addressed in the social stories as an effect of engagement in adequate repertoires of participation in classroom tasks. Therefore, social stories seem to represent a promising strategy in reducing inappropriate behaviors and increasing appropriate ones in the classroom, with short application time and low cost of construction of the materials used.

Keywords: Social skills; behavior modification; autism.

USO DE HISTÓRIAS SOCIAIS EM SALA DE AULA PARA CRIANÇAS COM AUTISMO

RESUMO. Indivíduos com o Transtorno do Espectro do Autismo (TEA) podem apresentar déficits em comportamentos sociais, como linguagem e interações

interpessoais. Intervenções utilizando histórias sociais têm mostrado resultados promissores no ensino de comportamentos socialmente adequados e na redução de comportamentos socialmente inadequados em sala de aula, entre outros ambientes. Histórias sociais são personalizadas a partir do repertório comportamental de cada criança e apresentam as contingências de reforçamento envolvidas no comportamento desejado, no próprio ambiente em que o comportamento ocorre. O objetivo deste estudo foi verificar os efeitos da apresentação de histórias sociais na aprendizagem de comportamentos adequados e na redução de comportamentos inadequados de crianças com TEA em sala de aula. Os participantes foram dois meninos de seis e nove anos de idade, com diagnóstico de TEA, que apresentavam comportamentos inadequados diante de demanda social em ambiente escolar. Comportamentos-alvo para cada participante foram inseridos nas histórias sociais que mostravam as contingências do comportamento inadequado e da resposta alternativa adequada. Antes do início do período em que os comportamentos ocorriam com maior frequência, as histórias foram lidas para as crianças e as frequências dos comportamentos-alvo foram registradas durante a aula. Comportamentos adequados eram reforçados e os inadequados eram seguidos de procedimentos de correção. Os resultados indicaram aumento nos comportamentos adequados e diminuição nos inadequados para os dois participantes, ea diminuição da frequência de outros comportamentos inadequados não tratados diretamente na história social como efeito do engajamento em repertórios adequados de participação nas tarefas em sala de aula. Portanto, as histórias sociais parecem representar uma estratégia promissora na redução de comportamentos inadequados e aumento de adequados em sala de aula, com tempo curto de aplicação e baixo custo de construção dos materiais utilizados.

Palavras-chave: Habilidades sociais; modificação do comportamento; autismo.

USO DE HISTORIAS SOCIALES EN CLASE PARA NIÑOS CON AUTISMO

RESUMEN. Los individuos con autismo pueden presentar déficit en comportamientos sociales, como lenguaje e interacciones interpersonales. Las intervenciones que utilizan historias sociales han apuntado resultados prometedores en la enseñanza de comportamientos socialmente adecuados y en la reducción de comportamientos socialmente inadecuados en clase, entre otros ambientes. Las historias sociales son personalizadas a partir del repertorio conductual de cada niño y presentan las contingencias de refuerzo involucradas en el comportamiento deseado, en el propio ambiente en que el comportamiento ocurre. El objetivo de este estudio fue verificar los efectos de la presentación de historias sociales en el aprendizaje de comportamientos adecuados y en la reducción de comportamientos inadecuados de niños con autismo en clase. Los participantes fueron dos niños de 6 y 9 años de edad, con diagnóstico de autismo, que presentaban comportamientos inadecuados ante demanda social en ambiente escolar. Los comportamientos objetivo para cada participante fueron insertados en las historias sociales que mostraban las contingencias del comportamiento inadecuado y de la respuesta alternativa adecuada. Antes del inicio del período en que los comportamientos ocurrían con más frecuencia, las historias fueron leídas para los niños y las frecuencias de los comportamientos objetivo se registraron durante la clase. Los comportamientos adecuados se reforzaban y los inadecuados se seguían de

procedimientos de corrección. Los resultados indicaron aumento en los comportamientos adecuados y disminución en los inadecuados para los dos participantes, y también la disminución de la frecuencia de otros comportamientos inadecuados no tratados directamente en la historia social como efecto del compromiso en repertorios adecuados de participación en las tareas en el aula. Por lo tanto, las historias sociales parecen representar una estrategia prometedora en la reducción de comportamientos inadecuados y aumento de adecuados en el aula, con tiempo corto de aplicación y bajo costo de construcción de los materiales utilizados.

Palabras clave: Habilidades sociales; modificación del comportamiento; autismo.

Introduction

According to the DSM-5 (American Psychiatric Association [APA], 2014), individuals with Autism Spectrum Disorder (ASD) have constant and persistent difficulties in communication and social interaction, which may cause limitations in social reciprocity, verbal and nonverbal communication, to start, maintain and understand relationships, among others. Thus, children with ASD may not properly express their emotions, not share social experiences, and may not develop perceptions of others' reactions (Mousinho et al., 2010).

Freitas and Del Prette (2013) investigated differences and similarities in the repertoire of social skills of children with different diagnoses (autism, hearing impairment, mild or moderate intellectual disability, visual impairment, phonological disorder, learning disabilities, giftedness and talent, externalizing or internalizing behavior problems or both, attention deficit hyperactivity disorder). According to the authors, participants "[…] with autism were the second group presenting the most significant differences in relation to the others on the global scale and social skills subscales, always presenting the lowest scores" (Freitas & Del Prette, 2013, p. 351). The authors also state that the greatest deficits of these participants are in positive assertion, self-control and self-defense skills.

Del Prette and Del Prette (2005) highlight the importance of academic social skills in following oral rules or instructions and participating in discussions for the likely relationship between social competence and academic performance, as social skills deficits can lead to behavior problems (Cia, Pamplin & Del Prette, 2006) that hinder children's access to new contingencies of reinforcement that promote new learning (Bolsoni-Silva & Del Prette, 2003). In view of this, it is important to focus on academic social skills, which, among other things, are fundamental for improving interpersonal relationships with peers and teachers, enabling conditions to motivate students, but also as a way of creating instrumental resources so that children can do what is expected from them to perform in fulfilling school activities and in the demands of the teaching-learning process (Del Prette & Del Prette, 2005).

In this sense, some authors (e.g. Chan & O'Reilly, 2008; Kuoch & Mirenda, 2003; Lorimer, Simpson, Myles, & Ganz, 2002; Thiemann & Goldstein, 2001) have used social stories (SS) to support adjustment to change, to provide insight into what others feel or think, or to teach specific social skills, alternative to behavioral problems, for children with ASD (Gray, 2000).

The purpose of using SS is to describe situations in which an individual may have difficulty identifying relevant social signals or expected behaviors and understanding the consequences of behaving in a certain way (Gray, 2000). SS should provide information on what people in a given situation are doing, thinking or feeling, the sequence of events,

identifying significant social cues and their meaning, and the roadmap of what to do or say. SS need a mediator, whether parents, teachers or specialized professionals, responsible for decoding the social situation in which the individual is engaged, facilitating the interpretation and action of children with ASD, in a simple and illustrative way, from a written history and/or with images, among others (Mousinho et al., 2010). SS are used for their ease of production, because they are not time consuming and easy to understand for training teachers and other professionals to use this strategy (Kuoch & Mirenda, 2003). According to Gray (2000), SS are short, individualized stories that can be used to help people with ASD in interpreting and understanding difficult or complex social situations.

Thiemann and Goldstein (2001) investigated the effects of using written texts and visual cues with video feedback on the social communication of five students with autism and social deficits in elementary classrooms. Two colleagues without disabilities participated as social partners of each participant. The treatment was implemented twice a week and consisted of 10 minutes of systematic instruction using visual stimuli, 10 minutes of social interaction and 10 minutes of self-assessment using video feedback. The authors used a multiple baseline design across five behaviors that included ensuring attention, initiating comments and requests, and providing contingent responses. Results indicated an increase in social communication skills and maintenance of most social skills learned by the five participants with autism. These results support the use of written instructions and visual cues to assist social language development in children with autism for interacting with peers without disabilities. Although the results of Thiemann and Goldstein (2001) are promising, as social stories were used in combination with other independent variables, it is not possible to determine which of these variables was responsible for the repertoire improvement.

Chan and O'Reilly (2008) used a social story intervention package with two students with autism that consisted of reading the stories, answering comprehension questions, and engaging in story-based staging. Each session began with the child reading the story. The researcher then asked three comprehension questions (for example, "What should I do when my teacher asks questions?"). If the participant did not answer a question, he/she was directed to read the part of the text that contained the answer. Finally, in the staging, the researcher verbally presented the description of the situation and expected behavior. Verbal cues were used when the participant did not give the expected answer. It was used a multiple probe design across behaviors. Appropriate social behaviors (raising hand before asking a question and appropriate social initiation) increased and inappropriate social behavior (inappropriate social initiation and vocalization) decreased for both participants and the effects were continued for ten months. According to the authors, this intervention seems to be useful in inclusive classrooms and does not require intensive supervision of the child's behavior. On the other hand, the procedure depended on the reading ability of the participants. In addition, the procedure does not allow to state which of the independent variables (social story, questions or staging) was responsible for the behavior change.

Kuoch and Mirenda (2003) used social stories created according to the demand of each participant, taking him/her as the central character and generating a model of behavior appropriate and alternative to the one identified as problematic. Three-year-old Andrew, five-year-old Henry and six-year-old Neil, all with autism, participated in the study. Inappropriate behaviors included aggression, screaming and crying when asked to share his toys for Andrew; put his hand on his pants in his genital area, screaming and throwing up when his colleagues gathered for lunch break for Henry; cheating, touching and making negative comments with his teammates when playing games for Neil. The intervention was conducted in the places where the behavior occurred (toy room, cafeteria and playroom). During the

intervention, just before the time of occurrence of the behavior, the mediator read the story created for the participant. Two participants followed the intervention in the ABA design (baseline – story reading by the mediator - baseline) and the third in the ACABA design (baseline – book delivery to the participant without reading by the mediator – baseline – reading by the mediator – baseline). After the intervention was introduced, problem behaviors decreased significantly and did not increase again for up to two weeks after the intervention was withdrawn. Unlike what was found by Chan and O'Reilly (2008), delivering the book for the participant to read had no influence on the emission of problem behaviors. Additionally, the authors used a reversal design (ABA) without return to the intervention phase (phase B), which would allow to infer more accurately that it was the intervention (and not some uncontrolled variable) that produced the behavioral changes found.

Considering the above, the goal of this study was to verify the effects of presentation of social stories and the use of differential reinforcement on learning appropriate behaviors and reducing inappropriate behaviors in two boys with ASD in the classroom using the ABAB design, based on the study by Kuoch and Mirenda (2003).

Method

Participants

The two male participants were C1, nine years old and enrolled in the second grade of elementary school, and C2, six years old and enrolled in the first grade of elementary school of a regular public school. Both are talkative, do not take medications and are diagnosed with ASD. Prior to the start of data collection, the project was approved by the Human Research Ethics Committee (approval number 1,884,609).

Selection and definition of inappropriate behaviors

Initially, the teachers responsible for the students indicated the behaviors considered inappropriate in the classroom. Then the inappropriate behaviors were operationalized. At the same time, behaviors were recorded on a specific sheet by direct observation of participants in the classroom. In this sheet, a record was made whenever appropriate or inappropriate behavior occurred from a pre-established list (described below).

Based on the information on the inappropriate behaviors of both participants indicated by the teachers and the observations in the first six baseline sessions conducted in the classroom, the behaviors of interest for each participant were defined. For C1, the inappropriate behaviors were improper handling of materials, calling the teacher, inappropriate interactions with peers, stereotypy and leaving the room. For C2, the inappropriate behaviors were calling the teacher, making comments out loud, mishandling of materials, inappropriate interactions with peers, and stereotypy. For both participants the appropriate behaviors of performing activities were also recorded.

The following are the operational definitions of appropriate behavior to be strengthened (performing activity) and inappropriate behaviors to be reduced (mishandling of materials, calling the teacher, inappropriate interactions with colleagues, making comments out loud, stereotypy, and leaving the room), which were similar for both participants, except for stereotypy:

- performing activity:following the teacher's instructions, such as taking materials that are consistent with the ongoing task and use them, answering questions regarding the ongoing activity, interacting appropriately (talking about the activity, asking questions, making suggestions) with colleagues according to the individual or group activity in progress;
- mishandling of materials: any behaviors presented towards the material that were emitted during the performance of an activity, being concurrent with the activity and not necessary to complete the task, such as manipulation and focus directed to the object, repeated organization, withdrawal and return to backpack and sharpen pencil longer than necessary;
- calling the teacher: calling the teacher repeatedly, without discretion, during an activity (or not), impairing its completion, either to make comments out of context or to show the progress of the activity without the teacher having requested;
- inappropriate interactions with peers: calling, talking, showing object, borrowing material from peers unrelated to ongoing activity;
- making comments out loud: making loud speeches that are out of context, whether or not directed to the teacher or classmates;
- stereotypy:for C1, repetitive body rocking back and forth, sitting in a chair; for C2, side-to-side head shakingrepeatedly, quickly, and head slapping;
- leaving the room:consisted of asking the teacher to leave the room again and again, without need.

Construction of social stories

Social stories were written and produced differently and individually for each participant on a computer, considering that they should reflect inappropriate and alternative expected behaviors. Each story was then presented to the participants' teachers for conference and modification, if necessary, before the final version. Story-related images were used to illustrate each situation. For C1, inappropriate behavior of mishandling of material and alternative behavior of performing activities were selected; for C2, inappropriate behaviors of calling the teacher and commenting out loud and alternative behavior of performing activities were selected. Among the inappropriate behaviors identified for each participant, these were the ones chosen for intervention due to the request of the teachers, who claimed that these were the ones that most hindered the participants' and other children's engagement in classroom activities. The other behaviors were recorded to see if the intervention had any effect on them. The choice of two behaviors for C2 was made so that the effect of SS on more than one behavior at a time could be verified. APPENDIX I presents the social stories to each participant.

Experimental design

The ABAB reversal design (baseline - intervention - return to baseline - intervention) was used (Cozby, 2014).

Procedure

Pre-intervention. A test was applied to check if participants were able to distinguish between happy and sad facial expressions in two face images of people. In each trial, the two images were placed in front of the participant, on a table, followed by the instruction "Point to happy [or sad] face". The block consisted of eight trials (fourtrials for each image, randomly distributed between left and right). The participant had up to 15 seconds to respond. After the response or the 15-second interval, a retry was made. Responses were recorded on a sheet of paper for each trial. There were no programmed consequences for correct or incorrect responses. This procedure was applied due to the inclusion of images with expressions of sad and happy in social stories. In addition, prior to the intervention, teachers were presented with behavioral concepts of positive reinforcement and extinction (Cooper, Heron, & Heward, 2007). The notion of such processes is important for teachers to end inappropriate behaviors and, in parallel, to positively reinforce appropriate alternative behavior, increasing the likelihood that modeled behavior will continue. If the teachers acquired this repertoire, they could continue to use it even after the end of this study, in which the researcher would no longer be present.

Baseline.The frequency of inappropriate and appropriate behaviors in the natural situation was recorded in six 30-minute sessions. The sessions took place during the classes, in the afternoon for C1 and in the morning for C2. The researcher sat in the back of the room, in a place that gave visibility to where the participant was sitting. A behavioral record sheet was used, in which it was recorded every time the student emitted one of the target behaviors. If a given target behavior occurred continuously for more than 15 seconds, a new record would be made (for example, as soon as the participant engaged in a stereotypy, a record would be made; if stereotypy continued for more than 15 seconds, one new record was made).

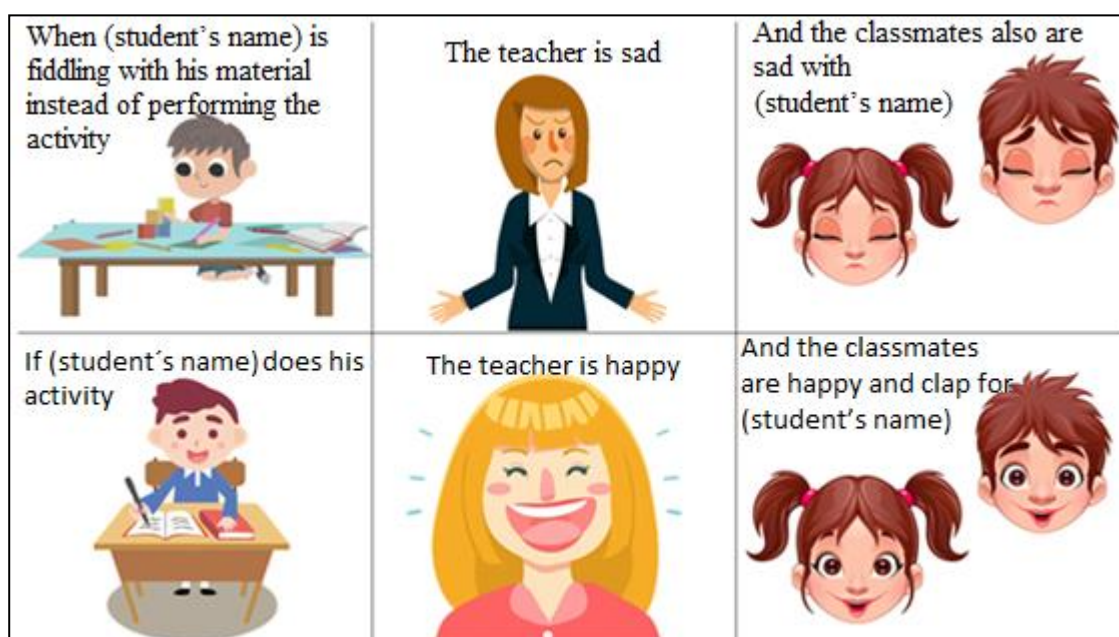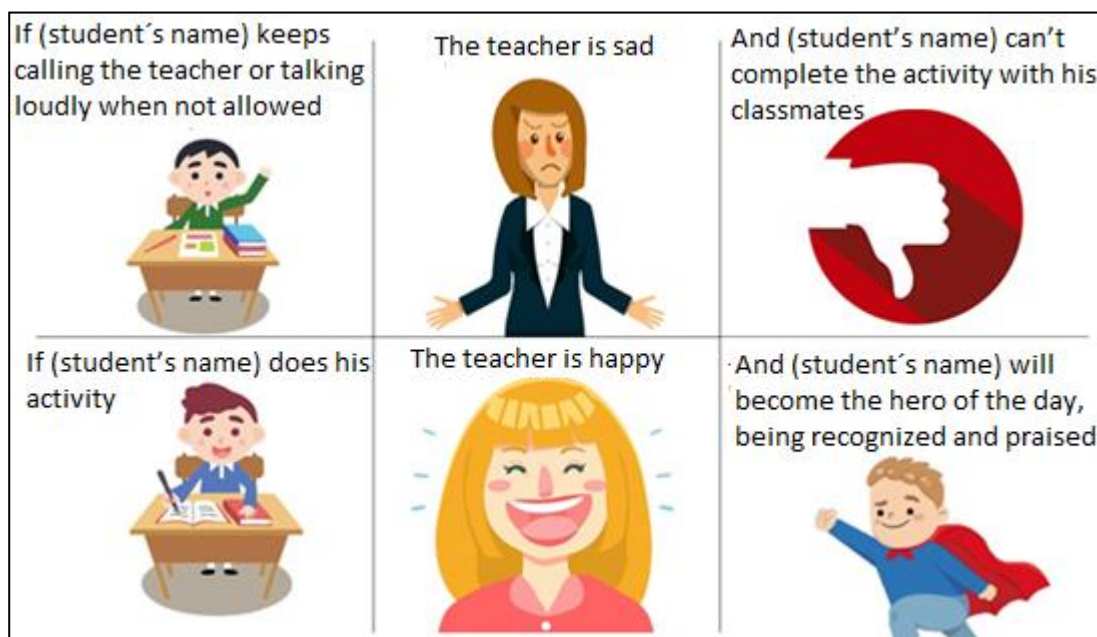**Figure 1**. Social Story of C1

Figure 2. Social Story of C2

Intervention. The intervention took place in six sessions (three sessions in the 1st intervention phase and three sessions for the 2nd intervention phase), each session lasting 30 minutes. The intervention sessions started with the individual reading of the social story, made by the researcher, for each participant, lasting a maximum of 03 minutes, just before the beginning of the classes or the return from the break. For SS reading, the researcher sat next to and slightly behind each participant, in front of the computer, in a room provided by the school. Prior to reading SS, the researcher provided the following explanation: "This is you, [student's name], I'll tell you his story". This introduction was made with the aim of directing the child's attention to the visual stimuli and what they represented, before receiving the description of contingency and suggestion of appropriate alternative behavior. The researcher then read the story while pointing to the corresponding images and provided a brief comment (for example, "Look, [student's name] is doing the task", "See, [student's name] is calling the teacher"). Immediately after reading the SS, the researcher would accompany the student to the classroom. If the student emitted the appropriate behaviors suggested in SS, the teacher would present social reinforcer (attention, conversation) and also praised the student's performance and behavior (with brief comments such as "Congratulations, you are behaving well", "Your activity is great, very good", "You're doing what I asked, I'm very happy").

Correction procedure. In the presence of inappropriate behavior, the researcher provided corrective verbal prompts, indicating inappropriate behavior and what behavior was expected in that situation, for example, "[Student's name], do you remember the story I told you? What should [student's name] do now? Are you doing this?". If the student did not answer, or answered incorrectly, he was told what he was doing, what negative consequences, what he should do, and what positive consequences, retelling the story verbally without the support of visual material. This correction procedure was given in the classroom, in a low voice, only to the participant, to try to prevent colleagues from noticing.

Reliability calculations. Data from all sessions were recorded by the first author and data from 30% of each participant's sessions (half at baseline and half at intervention) were recorded by a second observer, properly trained to make the records but unknowingly of the research objectives. The calculation was made as follows for each session recorded by the researcher and the observer: [number of agreements /(number of agreements + disagreements) * 100]. For C1, the average agreement was 86% (ranging from 75% to 92%); for C2, the average was 82.5% (ranging from 75% to 90%). According to Kazdin (1982), if the agreement rate between observers is above 70%, the data obtained were reliable.

Results

Figures 3 and 4 show, respectively, data for C1 and C2. The top panels of the figures show the number of behaviors directly illustrated in the SS that were the focus of the intervention and the bottom panels show the number of other behaviors in 30-minute sessions.

Figure 3. Number of responses from C1 for each behavior recorded. The top panel presents behavioral data directly illustrated in social story. The bottom panel shows data for other behaviors. The vertical dotted lines indicate the change between experimental conditions.

Figure 4. Number of responses from C2 for each behavior recorded. The top panel presents behavioral data directly illustrated in social story. The bottom panel shows data for other behaviors. The vertical dotted lines indicate the change between experimental conditions.
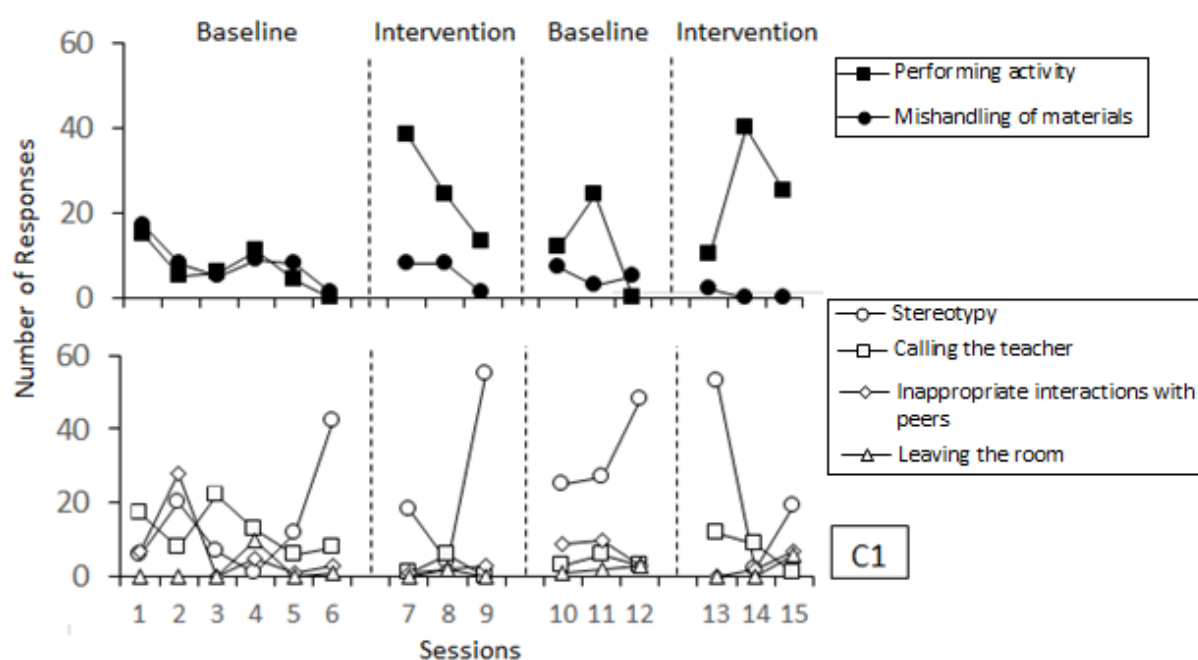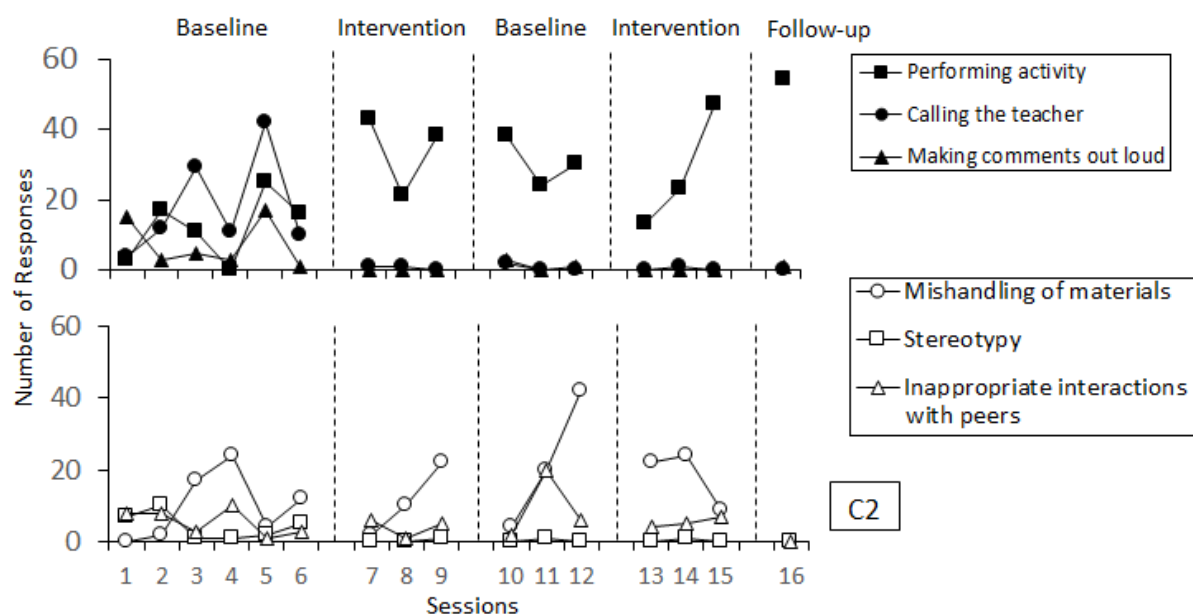

In the top panel of Figure 1, note that the number of tasks completed increases after the intervention is introduced compared to the first baseline, with a slight decrease in return to baseline and a further increase in intervention reintroduction to C1. At the same time, it is generally noted that inappropriate behaviors in the two panels of Figure 1 have decreased frequencies in the first three intervention sessions compared to the first baseline, with a slight increase in frequency in return to baseline and further drop in the reintroduction of intervention. The only exception refers to stereotypy responses, which occurred with greater variability throughout the procedure.

In the top panel of Figure 2, the number of tasks completed increases after the intervention is introduced compared to the first baseline, with a slight decrease in return to baseline and a further increase in the third session after reintroduction of the intervention for C2. At the same time, it is generally noted that inappropriate behaviors, focus on the intervention in the upper panel of Figure 2 (calling the teacher and making comments out loud) decrease in frequency to virtually zero occurrences from the introduction of the intervention and remains at this frequency until the end of the procedure. In the bottom panel of Figure 2, it is observed that stereotypy, which already happened at low frequency, have its frequency decreased in the first intervention sessions and remain close to zero until the end of the procedure. The other behaviors presented in the bottom panel (mishandling of materials and inappropriate interactions with peers) suffer a slight drop in frequency with the introduction of the intervention, happen more frequently on the return to baseline (sessions 11 and 12), and show a new drop with the reintroduction of the intervention. At follow-up with C2 (C1 was no longer available for this phase) after three months of completion of the research, the frequency of task completion remained high and only one occurrence of

commenting out loud was identified. Other inappropriate behaviors did not occur in this session.

Regarding the correction procedure when participants did not follow the rules of their SS, for C1, in the first intervention session, four verbal prompts were presented; in the second, two prompts and in the third, just a prompt; in the reintroduction of the intervention, three prompts were presented in the first session and no prompts were required in the last two sessions. For C2, in the first and second intervention sessions, a prompt was presented in each and in the third session no prompts; in reintroducing the intervention, a single prompt was presented in the second session.

Discussion

This study checked the effects of social stories and differential reinforcement on learning appropriate behaviors and reducing inappropriate behaviors in two boys with ASD in the classroom. The results were very promising, especially regarding behaviors when performing activities requested in the classroom by the teacher. The results also indicated the reduction of certain inappropriate behaviors in the classroom, such as repeatedly and out of context manipulation of school materials for C1; and call the teacher persistently and speak out loud at times not suitable for C2. According to the teachers, in the initial report of complaints, these would be the behaviors that most prevented the boys from following the classroom activities and disturbed their classmates.

The data also indicated that other inappropriate behaviors not directly treated in SS were modified, such as improper material handling and inappropriate interactions with colleagues for C1 and stereotypy for C2. It can be speculated that these behaviors decreased because they were, most of the time, concurrent and incompatible with the behaviors of performing tasks. Therefore, ensuring participants' engagement in tasks can result in certain inappropriate behaviors not having to be addressed directly as long as they stop producing the reinforcers that maintain them. Additionally, the individual is not deprived of reinforcers, which are produced by appropriate behaviors, which temporarily alters the reinforcing value of certain consequences produced by the abolishing operation of satiation (Michael 1982).

The literature on Applied Behavior Analysis (ABA) provides studies (Spira, Koven, & Edelstein, 2004; Wardany & Choiri, 2017) that used differential reinforcement of incompatible (DRI) behavior to reduce or eliminate inappropriate behavior. DRI is a procedure used to mitigate behavioral problems in which the reinforcer is delivered to behavior that is incompatible with the target problem behavior while problematic behavior is put to extinction (Cooper et al., 2007). Since differential reinforcement favors adequate behavior, the individual allocates more time responding to appropriate behavior and less time to inappropriate one (which does not produce consequences) (Vollmer, Roane, Ringdahl, & Marcus, 1999). Friman (1990), for example, differentially reinforced sitting behaviors in a student with hyperactivity, and as a result, rising from the chair decreased significantly.

Both C1 and C2 had their behaviors modified, especially those contained in SS, in which the SS of C1 only illustrated one inappropriate behavior and that of C2 contained two inappropriate behaviors. Again, the contingency for performing tasks, such as following the teacher's instructions, answering questions regarding the ongoing activity, and interacting appropriately with classmates, could be incompatible with more than one inappropriate

behavior, which also caused a reduction in other behaviors not shown in SS. In this sense, future studies could investigate the use of SS that contain only contingencies that illustrate appropriate behaviors, as long as they are incompatible with inappropriate ones.

According to Cooper et al. (2007), there are at least three ways to reduce or eliminate behavior by extinction, punitive contingencies, and forgetting. In forgetting, a behavior is weakened by the passage of time during which a person does not have the opportunity to emit such behavior. So, if the individual spends more time to proper behavior and little or no time to inappropriate behavior, the latter may suffer from the phenomenon of forgetting.

As in Freitas and Del Prette (2013), who identified that children with autism have the lowest scores on social skills scales compared to the other children, in this study, the two boys with ASD showed inappropriate behaviors of interaction with peers and with the teacher. Often, these behaviors are the only way to get reinforcers and may have communicative function, usually with the function of achieving certain specific consequences (configuring mand verbal operants; Skinner, 1957), either by social attention or the withdrawal of aversive activities (Schlosser & Sigafoos, 2011). It is also worth remembering that, according to Del Prette and Del Prette (2005), academic social skills are essential to improve interpersonal relationships with peers and teachers and in the fulfillment of school activities and the demands of the teaching-learning process.

The results of this study partly replicate the results of Lorimer et al. (2002), where there was a decrease in behavioral problems when social stories were available and an increase in these behaviors when stories were withdrawn. And, as in Kuoch and Mirenda (2003), from the moment the researcher read the story for the first time, problem behaviors decreased and did not increase even after the intervention was withdrawn, suggesting the irreversibility of learning appropriate behaviors occurred during the intervention phases.

On the other hand, unlike Thiemann and Goldstein (2001), who used visual cues with video feedback, and Chan and O'Reilly (2008), who used questions of understanding and story-based staging, in addition to SS, in this study it was not necessary to include additional procedures, and the reading of SS and the modification of the teachers' behavior (which began to reinforce appropriate behaviors and extinguish the inappropriate ones) were enough for the students' behaviors to be modified.

However, there are limitations in the procedure and study design that can be better analyzed in future studies, given that more than one inappropriate behavior was identified throughout the study, leading to the need to test effective ways to address this multiplicity of target behaviors. Given this demand, one can make a story with two behaviors described simultaneously, as done with participant C2, but there is also the possibility of using more than one story with the same participant, performing the intervention by reading one story at a time, a condition that was not tested in the present study in a multiple baseline design across behaviors.

In addition, the sample number has another limitation, as it is a small amount to discuss the real effectiveness of the method in the Brazilian context, and it is necessary to expand the sample population not only in quantity, but in variability of age, gender and educational institutions.

Final considerations

A common feature found in people with ASD is the difficulty or delay in learning appropriate skills of language and social communication, making it difficult for them to

participate in educational, social, leisure and employment settings, mainly because they do not understand the social rules in force (following instructions, greeting people, being punctual, performing activities, among others).

In this sense, it is essential that techniques and strategies empirically demonstrated as effective be developed and easy to apply, especially when students with ASD attend regular school.

The present study presented and empirically verified one of these strategies, the social stories, and the results were very promising, with a short intervention time (a total of 03 hours) and low cost of construction of the materials used.

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