



Social communication in autistic spectrum disorder: teenagers in a theater context

Comunicação social no transtorno do espectro autista: adolescentes no contexto teatral

Comunicación social en el trastorno del espectro autista: los adolescentes en el contexto teatral

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Abstract

Introduction: Autism spectrum disorder (ASD) is characterized by persistent impairments in communication and social interaction and by restricted patterns of interests and activities. The condition's manifestations are present at different levels between individuals and can be evidenced as social demands exceed the limits of their abilities. The hypothesis is that exposure to theatrical activity would generate social communication impacts. **Objective:** To compare performance in social and language aspects before and after performing a theatrical activity in a group of adolescents with ASD. **Method:** Twelve individuals with a multidisciplinary diagnosis of ASD with an average age of 16.1 years participated in the study, all with predominantly verbal communication, engaged in educational and/or occupational activities and with at least 75% of frequency in theatrical activities. The aspects of verbal comprehension, inference and memory from the retelling of a story and the answers to a short text in a joke format were evaluated before and after the theatrical activity. These data were related to variables of level of intelligence and adaptive abilities. **Results:** There was a relationship between performance in language

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skills and cognitive aspects and adaptive skills and those relationships remained positive before and after the proposed activity. **Conclusion:** The initial hypothesis was partially confirmed and the results suggest a trend towards improvement in social communication in this context.

Keywords: Autism Spectrum Disorder; Language Development; Social Communication; Adolescent

Resumo

Introdução: O transtorno do espectro autista (TEA) é caracterizado por prejuízos persistentes na comunicação e interação social e por padrões restritos de interesses e de atividades. As manifestações do quadro são presentes em níveis variáveis entre indivíduos e podem ser evidenciadas à medida que as demandas sociais excedem o limite de suas habilidades. A hipótese é de que a exposição à atividade teatral geraria impactos na comunicação social. **Objetivo:** Comparar o desempenho em aspectos sociais e de linguagem antes e após realização de atividade teatral em um grupo de adolescentes com TEA. **Método:** Participaram do estudo 12 indivíduos com diagnóstico multidisciplinar de TEA com média de 16,1 anos de idade, todos com comunicação predominantemente verbal, inseridos em atividade pedagógicas e/ou ocupacionais com frequência de participação na atividade teatral de pelo menos 75%. Foram avaliados pré e pós-atividade teatral os aspectos de compreensão verbal, realização de inferência e memória a partir do reconto de uma história e as respostas diante de um texto curto em formato de piada. Esses dados foram relacionados a variáveis de nível de inteligência e de habilidades adaptativas. **Resultados:** Houve relação entre desempenho em habilidades de linguagem e aspectos cognitivos e de habilidades adaptativas e essas relações mantiveram-se positivas pré e pós-atividade proposta. **Conclusão:** A hipótese inicial foi parcialmente confirmada e os resultados sugerem tendência de melhora da comunicação social nesse contexto.

Palavras-chave: Transtorno do Espectro Autista; Desenvolvimento da Linguagem; Comunicação Social; Adolescente

Resumen

Introducción: El trastorno del espectro autista (TEA) se caracteriza por deficiencias persistentes en la comunicación y la interacción social y por patrones restringidos de intereses y actividades. Las manifestaciones de la condición están presentes en distintos niveles entre individuos y pueden evidenciarse a medida que las demandas sociales superan los límites de sus capacidades. La hipótesis es que la exposición a la actividad teatral generaría impactos en la comunicación social. **Objetivo:** Comparar el desempeño en aspectos sociales y lingüísticos antes y después de realizar una actividad teatral en un grupo de adolescentes con TEA. **Método:** Participaron del estudio doce personas con diagnóstico multidisciplinario de TEA con una edad promedio de 16,1 años, todas con comunicación predominantemente verbal, dedicadas a actividades educativas y / u ocupacionales con una frecuencia de participación en la actividad teatral de al menos 75%. Se evaluaron los aspectos de comprensión verbal, inferencia y memoria a partir del recuento de una historia y las respuestas a un texto breve en formato de broma antes y después de la actividad teatral. Estos datos se relacionaron con variables de nivel de inteligencia y habilidades adaptativas. **Resultados:** Hubo una relación entre el desempeño en las habilidades del lenguaje y los aspectos cognitivos y las habilidades adaptativas y estas relaciones se mantuvieron positivas antes y después de la actividad propuesta. **Conclusión:** La hipótesis inicial fue parcialmente confirmada y los resultados sugieren una tendencia hacia la mejora de la comunicación social en este contexto.

Palabras clave: Trastorno del Espectro Autista; Desarrollo del Lenguaje, Comunicación Social; Adolescente

Introduction

Autism Spectrum Disorder (ASD) is a neurodevelopmental disorder characterized by persistent impairments in social communication and restricted patterns of interests and activities. The manifestations within this spectrum may be quite diverse and tend to become more evident as the demands and complexity of social interactions increase¹⁻², thus confirming that during adolescence, individuals with ASD face significant challenges in establishing and maintaining social bonds, sharing interests, and gaining independence and autonomy³. Currently, the estimated prevalence in the population is one individual with ASD for every fifty-nine children, a rate that has been increasing over the years⁴.

In the field of speech therapy, language represents the main aspect that should be developed to promote and enhance the possibilities of social insertion and communication of individuals with ASD, given that its structuring is strongly linked to the development of other cognitive aspects, such as memory and attention. The language alterations that occur in these disorders may be diversified across different levels and subsystems, predominantly impairing the semantic and pragmatic aspects of language⁵⁻⁶. Although the perspective of better quality of life, autonomy, and social insertion of these individuals is much better today than fifty years ago⁷, to a greater or lesser extent these aspects compromise the relationships of these individuals with their peers, hindering the understanding and following of rules and social expectations and limiting engagement in interactions^{8,9}. Therefore, authors^{10,11} suggest that despite such a significant language impairment, individuals with ASD can develop attention, perception, and memory skills, among others, supporting and sustaining communicative interaction in the most varied contexts.

There has been growing research¹² seeking to delineate the developmental profile of individuals with ASD; however, there are still relatively few studies describing the profile of adolescents and young adults and their participation in social activity contexts. Studies have suggested³ that this population shows an increasing interest in socializing over the years, although due to the lack of enabling contexts and the persistent inabilities, many of these individuals remain without expanding their social circle or developing new affective bonds.

Participating in a group with pre-established circumstances fosters interaction, role-plays, and games, thus broadening the social references, empathy, and communication among individuals with ASD, tending to generalize these aspects to school, professional, and social environments^{9,13,14}. In this scenario, recreational activities using drama and music techniques have been regarded as favorable means for developing social and communication skills in individuals with ASD, in addition to contributing to lower stress levels and better quality of life for these individuals^{13,15}.

Aiming to promote contexts of language stimulation and sociability for this profile of individuals, we viewed the drama activities as an opening for the social insertion and interaction of adolescents with ASD, given that drama uses verbal and non-verbal resources that mobilize cognitive, affective, and social, and motor aspects in a natural context of the development of such skills. In addition to being a collective activity, facilitating interaction and cooperation among individuals¹⁶. Thus, this study aimed to compare the performance in social and language aspects before and after performing drama activities in a group of adolescents with ASD.

Methods

This research was approved by the Ethics Committee of the Federal University of São Paulo, decision 326,778 (annex)

This study included 11 male and 1 female subjects with a multidisciplinary diagnosis of ASD according to the criteria established in DSM V and ICD 10^{1,17}. The subjects' mean age was 16:1 years (10:6 to 27:1). All communicated predominantly by verbal code and performed educational and/or occupational activities routinely.

A pre-selection of individuals for the drama activity was performed by health professionals who work in the evaluation, diagnosis, and intervention of individuals with ASD, according to the disclosure of the proposal by the professionals involved in the project in the outpatient setting. All individuals had a multidisciplinary diagnosis of ASD previously carried out by multidisciplinary teams that accompanied them. Under these conditions, the families were informed about the possibility of participating in research alongside the drama activity. Upon agreement, the guardians were interviewed on age, education, diagnosis, and development, as well as

current and past educational, clinical, and occupational activities, according to a clinical reasoning script¹⁸.

The individuals were evaluated in two sessions, one before and one after being introduced to the drama activity, in terms of verbal comprehension, inference-making, and memory. We also had an initial evaluation of the intellectual level and adaptive skills, carried out by qualified psychologists.

To evaluate memory, understanding, and inferences, the story “The Vulture and the Doves” was retold, which is part of the items in the Luria Nebraska Neuropsychological Assessment Battery¹⁹. The story told comprises 14 sentences distributed in three episodes that sequentially represent the introduction, development, and conclusion. Sentences 3, 4, 11, and 14 compose the central theme of the story²⁰. Sentence 3 [he painted himself white] features the purpose of the first episode, and sentence 4 [he flew there] features the setting and reveals considerable importance for its retelling allowing the understanding of the remaining of the story²⁰. Sentences 11 [they threw him out] and 14 [they didn’t accept him] reveal the ending of the story. The participants would listen to the story being read, and then the evaluator would ask them to retell it, thereby evaluating the memory aspect. Next, the participants answered specific questions according to the number of nodes retold, being considered as criteria of adequacy for oral reproduction of the story for 10-year-old children: reproduce 8 items or more (memory), say or answer the question - why didn’t the vultures recognize him? (4 questions, summary inference); or answer 8 questions (summary inference)²¹.

For the Theory of Mind evaluation, we used the text “Joke”²², the evaluator read the text and the participant answered two questions. The first [Is it true what John said?] was a judgment question based on memory, and the second [Why did he say that?] was of inference and intention. The answers were classified as correct (No) or incorrect (Yes) for the first question, and as physical or mental for the second question. The answers were considered either physical if the content determined a concrete characteristic (e.g., It’s big; It’s gray; It looks like) or mental if the content determined a characteristic or attribution of intention (e.g., He’s kidding; It’s a joke).

The speech-language pathology evaluation by applying the items “Vulture and the doves” and

“Joke” was recorded on a Samsung ST64 digital camera with 640 x 480 resolution. It was performed by three speech therapists outside the research in April 2012 (phase 1). After eight months, the individuals were reevaluated following the same procedures as the first evaluation (phase 2).

In the neuropsychological evaluation, the intellectual level of the individuals was measured using the shortened versions of the Wechsler Intelligence Scales; WISC III – Brazilian version for children²³ and WAIS-III – adapted for the Brazilian population²⁴. The two subtests applied were Vocabulary and Cubes, and the estimated total IQ values were recorded. The Vineland Adaptive Functioning Scale²⁵ was used to evaluate adaptive behaviors. This scale evaluates adaptive behaviors from birth to adulthood and comprises the domains of communication, autonomy, socialization, and motor function.

Initially, both instruments were applied and analyzed by a trained psychologist. At the end of the drama activity, the family members were interviewed about their perceptions of the development of the youngsters during the activity.

Drama performance

All individuals in the study participated in a regular 8-month drama course offered by the Oficina dos Menestréis²⁶ theater group in partnership with non-governmental organizations (NGOs) and health professionals involved in working with young people with ASD. The drama activities were performed according to the method of artistic training in musical theater proposed and applied by a theatrical director with no connection to the research.

The drama sessions were held weekly for an hour and thirty minutes, and in the previous twenty minutes, the support team gathered the students on a stage in the theater so that they could prepare and adapt to the space and their classmates. Throughout the process, the support team, formed by a speech therapist and two psychologists, acted as a priority role of mediation aiming at favoring the relationship of the individuals with the environment and with their peers, in addition to supporting and organizing the knowledge for the proposed context, without engaging in any kind of therapeutic intervention. The role of mediation in this context consisted of following the instructions given by the director, introducing changes as needed to make the

instructions simpler and more concrete; acting as a total or partial model of the actions to be performed, as in choreographies and stage movements, allowing the students to imitate or complement such actions. According to this proposal, the models and instructions disappeared as the students had more autonomy and followed up on them.

The activity was divided into two modules, the first being called “Theater Training”²⁶ and lasting 4 months, and the second, “Putting on a Show”, also lasting 4 months. The activities developed during the drama course comprised the mobilization of cognitive, affective, social, and motor aspects. In the first module, the activities were theater games²⁶, and their main objective was to develop spatial perception and organization, attention, memory, spontaneity, improvisation, and group formation skills. To this end, we carried out exercises of occupying the space on stage through orientation and time control, imitation through peripheral vision, imitation in “mirror” mode, and statue and focus maintenance, among others. In the second module, the activities performed in the first module were adapted to the content proposed for the creation of the show, which consisted of short scenes in sketch format and involved the interpretation of short texts, choreographed scenes, and short dialogues. This content was developed in partnership with a scriptwriter and a choreographer, and sound and light resources from the theater itself were used. In addition, throughout the module, the students were invited and encouraged to spontaneously go on stage to perform the contents assigned to them and played the role of the audience in front of the individual and small group presentations.

At the end of the course, as an outcome of the project, the students and the team produced the musical *Aut*, with a season of three performances in the theater where the classes took place, with the public present as an audience invited by the students and from the promotion of the theater itself.

This research considers the set of activities developed during Project *Aut* by the theater team and the support team as stimulation in a contextualized social environment.

Statistical method

The Mc Nemar test was applied to compare performance on the retelling task of the story “Vulture and the Doves” at the initial and final assessments, as well as the performance on the questions of the text “Joke” subtest at the initial and final assessments.

The main nodes (3, 4, 11, and 14) of the story “Vulture and the Doves” and the total number of nodes in the two moments of the evaluation were correlated through the nonparametric Mann-Whitney test was used, while the first question of the text “Joke” and the second question were correlated using the Fisher’s test.

Wilcoxon’s tests were applied to compare the number of words emitted in the retelling of the story “Vulture and the Doves” with the total number of nodes in the story at the two assessment times.

Finally, Spearman’s correlation coefficient was calculated to correlate the performances on the retelling of the story “Vulture and the Doves” and on the answers to the text “Joke” to the variables age, cognitive level, and adaptive skills.

Results

There was a direct relationship between performance on the story retelling and the variables of total adaptive skills and in the communication subarea at the initial assessment. In addition, total adaptive skills and the social subarea at the final assessment were also related, as well as performance on the initial response to the illustrated story and the variables of cognitive level and adaptive skills in the communication subarea.

The initial assessment showed a relationship between two of the main nodes (3 and 14) and performance on total story retelling, while the final assessment indicated a relationship between 3 of the main nodes (3, 11, and 14) and performance on total story retelling.

When comparing the pre- and post-theatrical activity assessments, the relationships between

Table 1. Relationship between initial and final speech evaluation and psychological evaluation

		Estimated_QI	total_VIN	comunic_VIN	social_VIN	ABVD_VIN
Total URUBU stage 1	Coefficient of correlation	0.471	.678(*)	.589(*)	0.567	0.371
	Sig. (p)	0.122	0.015	0.044	0.054	0.235
	N	12	12	12	12	12
Total URUBU stage 2	Coefficient of correlation	0.427	.877(**)	0.552	.784(**)	0.542
	Sig. (p)	0.166	0.000	0.063	0.003	0.069
	N	12	12	12	12	12
Happé Answers sta. 1	Coefficient of correlation	.616(*)	0.410	.667(*)	0.385	-0.102
	Sig. (p)	0.033	0.185	0.018	0.216	0.751
	N	12	12	12	12	12
Happé Answers sta. 2	Coefficient of correlation	.616(*)	0.410	.667(*)	0.385	-0.102
	Sig. (p)	0.033	0.185	0.018	0.216	0.751
	N	12	12	12	12	12
Happé attribute sta. 1	Coefficient of correlation	0.044	0.394	0.306	0.175	0.393
	Sig. (p)	0.893	0.205	0.333	0.586	0.206
	N	12	12	12	12	12
Happé attribute sta. 2	Coefficient of correlation	0.044	0.394	0.306	0.175	0.393
	Sig. (p)	0.893	0.205	0.333	0.586	0.206
	N	12	12	12	12	12

*. Significant Correlation at 0.05

** Significant Correlation at 0.01

The above correlations allow us to conclude:

- 1) IQ and VIN-communication correlate positively to Happé (answer to the first question).
- 2) VIN-total correlates positively to Reconto do Urubu.
- 3) VIN-communication is close to correlating positively to Reconto do Urubu
- 4) VIN-social is close to correlating positively to Reconto do Urubu.

the language tests performed and the cognitive variables remained positive.

Discussion

The evaluation and analysis of the data obtained, along with the long-term follow-up of the group of individuals, favored the approach between clinical practice and a naturalistic context of social insertion and communication. Our findings are both quantitative and qualitative and will be presented in this order.

By analyzing the ability to retell the story “Vulture and the Doves” considering the number of nodes at the initial and final evaluations, most individuals did not retell the expected number of nodes²¹ for 10-year-old children. It seems possible that the difficulty in retelling the expected number of nodes considering the age range of the group occurs due to the typical flaws of the disorder, such as the impairment in shared attention and the recogni-

tion and assignment of mental states, as previously considered²⁶. However, the relationship between the retelling of the main nodes of the story in the two moments with the higher number of retold nodes that occurred in the evaluations reiterates the support between the linguistic and cognitive aspects, since just memorizing the highest number of nodes does not guarantee understanding²⁰, and the highlighted nodes contain information on the main contents and a high level of meaning.

In the initial assessment, we found a relationship between two of the main story nodes (3 and 14) and performance on total story retelling, while in the final assessment, there was a relationship between three of the main nodes (3, 11, and 14) and performance on total retelling. The retelling of node 3 (He painted himself white) and node 14 (They didn’t accept him) stood out compared to the total number of nodes. These are considered central as they sustain the problem situation and outcome of the text. Node 3 constitutes the reaction to the initial

event of the story and provides the main information of the first episode. Node 14 suggests the ability to integrate information and central coherence, and its retelling in particular reveals an important aspect by constituting a summarizing inference of the text, an aspect in which individuals with ASD generally have greater difficulty than typically developing individuals²⁷. The retelling of node 11 indicates the conclusion of the second episode and denotes chaining the first episode to the last episode of the story. Although the retelling of nodes 3 and 14 at the initial moment denotes understanding, the retelling of node 11 at the second moment of the evaluation favors the interlocutor from a social point of view, contextualizing them and providing relevant data to integrate the information in the story. Older individuals generally performed better in the retelling activity. These findings agree with what is expected, due to the maturation of physical, cognitive, and social aspects that coincides with the development of language, which supports the progressive improvement of memory^{11,20}.

As for the relationship between language skills and cognitive and adaptive aspects, the direct relationship between performance in the retelling of the story “Vulture and the Doves” and the variables of total adaptive skills, as well as in the subarea of communication in the initial assessment, indicates that the functionality of such skills in everyday contexts is directly related to the results achieved in formal language assessment. Aspects such as attention to the interlocutor and information for a reasonable time, ability to structure sentences, intelligible articulation of speech phonemes, and ability to follow instructions assessed from the family report in the psychological evaluation suggest good language performance, thus supporting this relationship.

The final evaluation showed a relationship between the performance in retelling the story and the social subdivision in adaptive skills. Although the evaluations did not allow us to verify improvement in social skills compared to pre- and post-drama activity, we could say that the better language performance measured through the retelling favors establishing and sustaining social relationships, since language aspects are an essential element in social interaction. Moreover, items such as looking at the interlocutor’s face, showing initiative, and adequacy of social behavior belong to this sub-

domain and contribute to a better performance in formal evaluations, such as those performed herein.

It is worth mentioning that the relations between retelling and social subdivision at the initial assessment and retelling and communication subdivision at the final moment, although very close, were not statistically significant. However, the relationship between retelling and global adaptive functioning, which comprises the total of the subdivisions in the areas of communication, socialization, and daily living skills, remained significant in both pre- and post-theatrical activity.

There was also a direct relationship between the performance in the answers to the “Joke” text and the cognitive level variables. The answer is given correctly to question 1 in the text “Joke” was also correlated to performance in adaptive skills in the subarea of communication. We consider that individuals demonstrated memory skills and understanding of the concept of truth to answer the question, which suggests that although individuals with ASD have difficulties in integrating skills in social situations and fail to interpret humorous comments and speech expressions, these did not interfere with judgment competence in the situation presented. Moreover, the most basic aspects of language, such as grammatical structure, had already been described as more relevant to ensure either difficulty or success in understanding this type of content²⁸.

In the Theory of Mind activities on the story “Joke”, all individuals answered the questions provided. We found that most of them answered the trial correctly, which indicates functional use of the memory skill in context. We also found that the answers to question 2, of intention, were mostly correct, but based predominantly on physical attributes rather than mental attributes in providing the answers. This finding corroborates clinical and scientific evidence that individuals with ASD have differences in perceiving and appreciating mood verbally, whereas such differences are not observed when the content does not involve the Theory of Mind and is only visually presented²⁹.

The follow-up of this group of individuals provided, in addition to the findings, discussed so far, the analysis of qualitatively significant aspects. The family reports collected in the interviews highlight the relevance of this kind of activities as a favorable context for the integration and development of young people with ASD, such as:

“As time went on, the students greeted each other and the parents waiting at the theater entrance. Families and students started to socialize inside and outside the theater, in outside leisure activities.” “Although my son has already participated in drama performances, in this group, due to these characteristics, he felt more at ease to take initiative and express himself.”

“He still has the same difficulties, but today he is more willing to participate in social situations. I was surprised to see him receiving compliments from his family members who went to watch the show.”

The profile of the individuals in this group allowed them to perform the activities without constant supervision or the help of family members, an unusual context for this population, since such activities usually rely on the presence of parents, which is the main reference of the individuals in the group. This highlights the need for a wider social network³ and therefore the family members who remained outside the theater during the classes were invited in specific situations to attend parts of the rehearsals, which also allowed parents to play a new role, as spectators. From the perspective of some family members, this proved to be favorable to group formation and enabled a new view of the individuals, according to some of the reports obtained:

“At the beginning of the activities, you would see many boys on a stage, by the end of the course a group had formed.”

“I didn’t imagine that he would accompany the group, that he would be able to do these things. Even with all the difficulty and in his own time, he participated.”

The group experiences, especially in this artistic modality, promote interaction and cooperation between individuals naturally and have a pragmatic and structured character. In addition to being diverse, the opportunities for social interaction in the context of drama activity are developed, for example, through the relationships between the student and the director, between the student and the technical team, and among the students when performing a prominent role before others as the background of the scene representing different roles. However, we highlight a particular relationship that is established between the actor and the audience. The individuals in this study were exposed to such experience throughout the course,

constantly alternating positions, sometimes being encouraged to act and maintain the posture of an active audience, sometimes on stage conducting gestures, words, and looks, having its outcome in the final presentation of the theater¹⁶.

Although the drama activity was not the focus of the study, with the main markers being the pre- and post-exposure evaluation, we consider the regular participation of the individuals as an assertive response to the proposal, in addition to the effective engagement of 91% of the students in the drama class formed for the following year.

From the results obtained and the analyses performed, we highlight the relevance of incidental contexts with playful and leisure proposals that favor the inclusion and stimulation of language and social skills of individuals with ASD. As limiting factors of the study, we point out the heterogeneity and the low number of individuals, as well as the convenience sample obtained from the theater proposal, which determined the choice of isolated tests of language skills instead of routine batteries in speech therapy.

Conclusion

The abilities of comprehension, inference-making, memory, and theory of mind in this group of adolescents with ASD were related to the variables of cognitive level and adaptive skills.

By comparing the evaluations before and after the theatrical activity, there was an improvement in understanding skills as the group’s individuals expanded the retelling of the story they heard. Moreover, in the final evaluation, understanding was also related to the social subdivision in adaptive skills.

Such results and family reports indicate a trend toward change in the communication initiative and social engagement of these individuals in the proposed context.

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