

Communicative skills of children with autism


Habilidades comunicativas de crianças com autismo

Habilidades comunicativas de niños con autista

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Abstract

Introduction: Autism Spectrum Disorder (ASD) is a neurodevelopmental disorder. Some features of the disorder are difficulties in communication and language, which are important elements for early diagnosis. **Objective:** To investigate the communication skills of a group of children with autism spectrum disorder and the relationship with an age group and speech therapy intervention. **Methods:** The study included 11 children with ASD, aged between two and seven years old, and attended at the Speech-Language Pathology Clinic. To assess the functional profile of communication, the ACOTEA protocol - Communication Assessment in Autism Spectrum Disorder was used. After two sessions with games and toys to establish communicative situations, the therapists answered the thirty-six statements related to communication (expression, comprehension and social behavior). In addition, data were collected from the anamnesis on age, gender and whether the child had already undergone speech therapy with extended and alternative communication. **Results:** According to the results, deficits in expressive skills (pragmatic and morphosyntactic) were observed; shared attention and skills related to interaction with the environment, such as playing alone or with the environment. It was observed that children between five and seven years old performed better in shared attention, functional play and responding to names. And children who underwent the intervention with alternative communication showed significant improvement in shared care. **Conclusion:** The results obtained demonstrate that there is a relationship between communication skills and age group and that intervention with alternative communication contributes to the development of shared attention.

Keywords: Autistic Disorder; Communication; Children's language; Child

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Authors' contributions:

JEAP: article writing, data collection and analysis

ACSS, GAL: article writing and data collection

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Resumo

Introdução: O Transtorno do Espectro do Autismo (TEA) é um transtorno do neurodesenvolvimento. Algumas características marcantes do transtorno são as dificuldades na comunicação e na linguagem, elementos importantes para o diagnóstico precoce. **Objetivo:** Investigar as habilidades de comunicação de um grupo de crianças com transtorno do espectro do autismo e a relação com a faixa etária e intervenção fonoaudiológica. **Método:** Participaram da pesquisa, 11 crianças com TEA, entre dois e sete anos de idade, atendidas numa Clínica-Escola de Fonoaudiologia. Para a avaliação do perfil funcional da comunicação, foi utilizado o protocolo ACOTEA – Avaliação da Comunicação no Transtorno do Espectro do Autismo. Após duas sessões com jogos e brinquedos para estabelecer as situações comunicativas, os terapeutas responderam trinta e seis afirmativas, relacionadas à comunicação (expressão, compreensão e comportamento social). Além disso, foram coletados dados na anamnese sobre idade, sexo e se a criança já tinha se submetido à intervenção fonoaudiológica com comunicação ampliada e alternativa. **Resultados:** De acordo com os resultados, foram observados déficits nas habilidades expressivas (pragmáticas e morfosintáticas); na atenção compartilhada e em habilidades relacionadas à interação com o ambiente. Foi observado que as crianças entre cinco a sete anos apresentaram melhor desempenho na atenção compartilhada, no brincar funcional e em responderem ao nome. E as crianças que foram submetidas à intervenção com comunicação alternativa apresentaram melhora significativa na atenção compartilhada. **Conclusão:** Os resultados obtidos demonstram que há relação entre as habilidades comunicativas e faixa etária e que a intervenção com comunicação alternativa contribui para o desenvolvimento da atenção compartilhada.

Palavras-chave: Transtorno Autístico; Comunicação; Linguagem Infantil; Criança

Resumen

Introducción: El trastorno del espectro autista (TEA) es un trastorno del desarrollo neurológico. Algunas características del trastorno son las dificultades en la comunicación y el lenguaje, que son elementos importantes para el diagnóstico temprano. **Objetivo:** Investigar las habilidades comunicativas de un grupo de niños con trastorno del espectro autista y la relación con un grupo de edad y la intervención de logopedia. **Métodos:** Participaron de la investigación 11 niños con TEA, entre dos y siete años de edad, atendidos en una Clínica-Escuela de Logopedia. Para la evaluación del perfil funcional de la comunicación se utilizó el protocolo ACOTEA - Evaluación de la comunicación en el trastorno del espectro autista. Tras dos sesiones con juegos y juguetes para establecer situaciones comunicativas, los terapeutas respondieron a treinta y seis afirmaciones, relacionadas con la comunicación (expresión, comprensión y comportamiento social). Además, se recopilaron datos en la anamnesis sobre la edad, el sexo y si el niño ya se había sometido a terapia del habla con comunicación expandida y alternativa. **Resultados:** De acuerdo con los resultados, se observaron déficits en las habilidades expresivas (pragmáticas y morfosintáticas); atención compartida y habilidades relacionadas con la interacción con el medio ambiente. Se observó que los niños de entre cinco y siete años se desempeñaron mejor en la atención compartida, el juego funcional y la respuesta a los nombres. Y los niños que experimentaron la intervención con comunicación alternativa proporcionaron una mejora significativa en el cuidado compartido. **Conclusión:** Los resultados obtenidos demuestran que existe una relación entre las habilidades comunicativas y el grupo de edad y que la intervención con la comunicación alternativa contribuye al desarrollo de la atención compartida.

Palabras clave: Trastorno autista; Comunicación; Lenguaje infantil; Niño

Introduction

Autism Spectrum Disorder (ASD) is classified by the Diagnostic and Statistical Manual of Mental Disorders (DSM-V) as a neurodevelopmental disorder characterized by persistent difficulties in communication and social interaction, as well as restrictive and repetitive patterns of behavior, interests or activities¹.

Due to its high prevalence, ASD has been the subject of debates at global level. According to the 2020 ADDM (Autism and Developmental Disabilities Monitoring) report on the prevalence of autism, prevalence has increased to one in every fifty-four 8-year-olds. In 2014, the same ADDM network reported a prevalence of one in every fifty-nine children. Such prevalence estimates refer to information collected among 8-year-olds in 11 US states in 2016².

There is extensive discussion regarding etiological factors, the description of the disorder, and intervention approaches³. In addition, as this condition is heterogeneous, the etiology of communication difficulties is also poorly understood, although it is known that the impairment in communication and language is one of the most striking characteristics, being an important element for the early identification of ASD⁴. Such impairment affects both verbal and non-verbal at different degrees.

Among linguistic alterations found in children with ASD, there is a delay in language acquisition and development, and children may present linguistic impairments in morphology, phonology, syntax, semantics, and pragmatics⁵. Such changes can be manifested both in terms of understanding and expression⁶.

The functional use of language is compromised, with failures to initiate or maintain communicational exchange; echolalia and jargon; atypical prosody in speech; pronoun reversals and difficulties in understanding subtleties of language, jokes, sarcasm, humor, and figurative meaning, as well as problems interpreting body language, gestures, and facial expressions⁷.

Communication assessment should explore non-verbal communication, prosodic elements of speech, conversational content and initiative, syntax, semantics and phonology, reciprocity, and conversational rules⁸. However, verbal and non-verbal language manifestations are traditionally interpreted only as symptoms in ASD. It is important to take into consideration the uniqueness of each

case and pay attention to manifestations such as echolalic speeches, stereotypes, interests, and even screams and agitations^{9,10}. The observation and evaluation of these manifestations are important to draw a profile of the patient's communication, which will determine the objectives and intervention strategies.

Therefore, this study aimed to investigate the communication skills of a group of children with autism spectrum disorder and their relationship with age group and speech therapy intervention.

Method

The data refer to a descriptive study with a quantitative approach carried out in a speech therapy clinic. The present study was approved by the ethics committee, protocol No. 2,106,800, and those responsible for the children involved in the study signed the free and informed consent.

Eleven children aged between three and seven years participated in the research. The diagnosis of ASD was established as an inclusion criterion, while the diagnosis of cognitive deficit, attention-deficit hyperactivity disorder, Down syndrome, and other syndromes was established as an exclusion criterion.

Data such as gender, age, degree of autism, and the information that the child had undergone a speech-language intervention with augmentative and alternative communication were collected in April 2019 by reading their medical records, which contained the interview carried out with the parents/guardians and the degree of ASD according to the autism treatment evaluation checklist (ATEC), answered by the guardians/parents.

Data collection for the evaluation of communication skills was carried out by two therapists, who accompanied the child during two sessions with games and toys to establish communicative situations with variable communicative contexts, according to the activities proposed by the therapists and taking into consideration the focus of interest of the subjects. During the evaluation sessions, augmentative and alternative communication resources were not used. After the sessions, the protocol for Assessment of Communication in Autism Spectrum Disorder (ACOTEA, acronym in Portuguese) was completed jointly by the two therapists who performed the activities and by a third therapist who observed the sessions.

Chart I. ACOTEA statements with the respective codes

P1. Expresses discomfort when in pain, when wet, hungry, or scared
P2. Protests to show not wanting something or when something is denied
P3. Shows to like things
P4. Expresses interest in other people
P5. Requests to be continued when an activity, gesture or game is interrupted
P6. Asks when something is taken from her or when she wants some more food
P7. Get your attention
P8. Intentionally chooses something among other objects
P9. Requests something that you have never been offered, but that is in the field of visual, auditory, tactile range
P10. Requests objects that are not in sight
P11. Expresses affection, affection
P12. greet people
P13. Offers things or shares them
P14. shows you something
P15. Uses social expressions (hello, thank you, bye)
P16. Asks questions for having yes or no answers
P17. Makes questions
P18. Names objects or people, spontaneously or in response to your question
P19. Makes comments
P20. Shows shared attention
P21. Plays functionally (with toys or performs more abstract activities, "make believe")
P22. Imitates the other (gestures in the body (such as grimaces), toys (dolls, cars) or vocalizing
P23. Plays engaged with each other
P24. Features eye contact
P25. Presents stereotypes
P26. Has sensory changes (visual, auditory, tactile, palatal, aromatic, vestibular)
P27. Answers by name
P28. Directs the gaze when you point, look at or show something
P29. Understands and executes Yesple order
P30. Obeys the "no"
P31. Uses sentences of four or more words
P32. Respects turns and keeps a conversation going
P33. Has tantrums
P34. Smiles
P35. Shows initiative to carry out some activity
P36. Shows attachment to some object, situation, food

Table I describes the questions of ACOTEA with their respective codes. The communication aspects assessed in the ACOTEA involve expressive skills (pragmatic and morphosyntactic); comprehension skills (primary comprehension skills, Yesple commands, and shared attention); and social behavior skills (skills related to interaction with the outside, such as playing alone or with others and issues related to sensory integration).

Data analysis

The data were entered into an EXCEL spreadsheet and the software IBM SPSS, version 23, was

used to obtain the statistical calculations. For the purpose of analysis, children were divided into two groups according to age group (G1 - 2-4 years old and G2 - 5-7 years old), with six children belonging to G1, and five to G2. In addition, the closed-ended answers referring to the questions of the ACOTEA were coded in numerical order preceded by the letter P (Question 1 = P1, for example). Data were descriptively analyzed using absolute frequencies and percentages for categorical variables and the following measures of the age variable: mean, standard deviation, and median. The Fisher's exact test was used to assess the association between two



categorical variables (since the condition for using the chi-square test was not verified). The margin of error used in the decision of the statistical tests was 5%.

Results

The surveyed children were male; six were

aged between two and four years and five were aged between five and seven years. Five of the children had already undergone speech therapy with augmentative alternative communication (AAC). Regarding the degree of autism, ten children were classified as having moderate autism and one as having severe autism, according to the result of the ATEC.

Chart II. Sample Characterization

Subjects	Age in years	Degree of ASD according to ATEC	Intervention with CAA
Subject 1	4	Severe	Yes
Subject 2	3	Moderate	No
Subject 3	6	Moderate	No
Subject 4	7	Moderate	Yes
Subject 5	4	Moderate	No
Subject 6	5	Moderate	Yes
Subject 7	4	Moderate	No
Subject 8	2	Moderate	No
Subject 9	6	Moderate	Yes
Subject 10	5	Moderate	Yes
Subject 11	4	Moderate	No

Table 1 shows the results of ACOTEA in the total group and according to age group. There is a significant association between children aged from five to seven years in the following questions: P20 (shared attention), P21 (plays functionally), and P27 (responds to their own name), taking into consideration that these questions were less present in most children aged from two to four years. In addition, 100% of the children did not express interest in other people (P4), did not ask for objects that were not in sight (P10), did not ask questions (P16 and P17), did not use sentences with four or more words (P31), and did not respect conversation turns (P32). In addition, 90.9% of children did not use social expressions (P15), 72.7% had difficulty playing with others (P23), 100% did not greet

people (P12), 72.7% did not imitate people (P22), 72.7% protested (P2), 81.8% smiled (P34), 54.5% expressed discomfort (P1), and 90.9% expressed comfort (P3).

Table 2 presents the results referring to speech therapy with augmented and alternative communication (AAC). Question P20 (shared attention) was the only variable that presented a significant association with the variable “underwent speech therapy”. Out of the total sample of children, 45.5% underwent speech therapy intervention using AAC. Out of these, 80% presented shared attention, while children who had not undergone speech-language intervention using AAC presented negative responses regarding the presence of shared attention.

Discussion

The results show that all participants in the *Autismo Comunica* project were male, corroborating statistical data that presents a higher prevalence of ASD among boys than among girls².

Regarding language findings, it is known that children in the first year of life begin to vocalize to regulate behavior, to interact, and to obtain at-

tention¹¹. Children with ASD present a delay in the development of communication, and their most used communicative forms are unconventional pre-symbolic forms⁶. In the present study, pre-linguistic characteristics such as protesting (72.7% - P2, Table 1), smiling (81.8% - P34, Table 1), expressing discomfort (54.5% - P1, Table 1), and expressing comfort (90.9% - P4, Table 1) were observed in children aged from two to seven years.

Table 1. ACOTEA results, according to age group, Recife, 2019

Question	Age range (years)						P Value
	2 to 4		5 to 7		Total		
	n	%	n	%	n	%	
P1							p ⁽¹⁾ = 0,242
Yes	2	33,3	4	80,0	6	54,5	
No	4	66,7	1	20,0	5	45,5	
P2							p ⁽¹⁾ = 1,000
Yes	4	66,7	4	80,0	8	72,7	
No	2	33,3	1	20,0	3	27,3	
P3							p ⁽¹⁾ = 0,455
Yes	4	80,0	6	100,0	10	90,9	
No	1	20,0	0	0,0	1	9,1	
P4							*
Yes	-	-	-	-	-	-	
No	6	100,0	5	100,0	11	100,0	
P10							*
Yes	-	-	-	-	-	-	
No	6	100,0	5	100,0	11		
P12							*
Yes	-	-	-	-	-	-	
No	6	100,0	5	100,0	11	100,0	
P15							p ⁽¹⁾ = 0,455
Yes	-	-	1	20,0	1	9,1	
No	6	100,0	4	80,0	10	90,9	
P16							*
Yes	-	-	-	-	-	-	
No	6	100,0	5	100,0	11	100,0	
P17							*
Yes	-	-	-	-	-	-	
No	6	100,0	5	100,0	11	100,0	
P20							p ⁽¹⁾ = 0,028**
Yes	-	-	4	80,0	4	36,4	
Sometimes	1	16,7	-	-	1	9,1	
No	5	83,3	1	20,0	6	54,5	
P21							p ⁽¹⁾ = 0,028**
Yes	-	-	4	80,0	4	36,4	
Sometimes	1	16,7	-	-	1	9,1	
No	5	83,3	1	20,0	6	54,5	

Question	Age range (years)						P Value
	2 to 4		5 to 7		Total		
	n	%	n	%	n	%	
P22							$p^{(1)} = 1,000$
Yes	2	33,3	1	20,0	3	27,3	
No	4	66,7	4	80,0	8	72,7	
P27							$p^{(1)} = 0,015^{**}$
Yes	1	16,7	5	100,0	6	54,5	
Sometimes	3	50,0	-	-	3	27,3	
No	2	33,3	-	-	2	18,2	
P31							*
Yes	-	-	-	-	-	-	
No	6	100,0	5	100,0	11	100,0	
P32							*
Yes	-	-	-	-	-	-	
No	6	100,0	5	100,0	11	100,0	
P34							$p^{(1)} = 1,000$
Yes	4	66,7	5	100,0	9	81,8	
Sometimes	1	16,7	-	-	1	9,1	
No	1	16,7	-	-	1	9,1	

(1) Though Fisher's Exact Test

(*) Not calculated due to the occurrence of data in a single category.

In addition to the delay in language development, children with ASD present impairments in functional play and symbolic play¹². In the present study, it was observed that 83.3% of children up to four years of age did not develop this skill (P21, Table 1). Taking into consideration that playing is associated with the development of language skills, the ability to take initiative, and the understanding of concepts, besides contributing to the process of affective, social, cultural, and motor development¹³, children with changes in play may present learning problems and limitations in social participation and interaction with peers¹⁴.

Another relevant aspect was the proportion of children who did not imitate people, 72.7% (P22, Table 1), thus revealing a deficit in imitation. The correlation between ASD and the imitation deficit has been pointed out for decades¹⁵. In typically developing children, this skill is observed throughout the first two years of age, while among children with ASD, even older children present failures in imitation tasks¹⁶. The frequency of socially engaged

imitation, in which imitation and social gaze are synchronized, is high in typically developing children and impaired in children with ASD^{17,18}.

Knowing that imitation is considered important for social, language, and cognition skills¹⁶, it is observed that the deficit in this skill further impairs the development of communication. Shared attention (SA), which is a skill observed at approximately six months of age in typically developing babies, is one of the deficient skills in children with ASD, being identified as an early sign of risk for autism¹⁹.

SA appears later in children with ASD or impairments - being less frequently and appearing for shorter periods of time compared to typically developing children²⁰. In this study, 83.3% of the younger children (aged from two to four years) did not have this skill (P20, Table 2), which draws attention to the importance of early intervention as a fundamental factor for the improvement of the clinical picture of ASD, as it is known that it generates significant gains in the development of children's language skills.

Table 2. ACOTEA result, referring to shared attention, according to speech therapy with CAA, Recife, 2019

Question	Speech therapy						P Value
	Yes		No		Total		
	N	%	n	%	n	%	
P20							
Yes	4	80,0	-	-	4	36,4	p ⁽¹⁾ = 0,028**
Sometimes	-	-	1	16,7	1	9,1	
No	1	20,0	5	83,3	6	54,5	

(1) Through Fisher's exact test.

(*) Not calculated due to the occurrence of data in a single category.

In the socio-cognitive perspective (Tomasello, 2003)²¹, SA is the socio-cognitive basis of language acquisition and is related to the understanding of communicative intention, occurring when children start to perceive others as intentional agents.

The use of AAC systems as an intervention strategy increases SA, as children undergoing AAC issue a greater number of initiations and communicative interactions. In addition, the use of AAC systems favor the development of functional skills²², and according to the results found in this study, 80% of children who had already undergone intervention with AAC presented better performance in shared attention (P20, Table 2).

Besides observing deficits in shared attention, great difficulty in understanding the other as an intentional agent was also observed in this study, since 100% of children in the sample were not interested in other people (P4, Table 1), 90.9% did not use social expressions (P15, Table 1), 72.7% had difficulty playing with each other (P23, Table 1), and 100% did not greet people (P12, Table 1), while among younger children, 33.3% did not respond to their own names (P27, Table 1). All of these difficulties are related to the pragmatic aspect of communication, which is one of the most affected in ASD.^{23,24,25,26} These difficulties in social engagement are largely responsible for difficulty in communicating⁴. Thus, 100% of the children analyzed in this study have difficulties in respecting conversation turns and maintaining a conversation (P32, Table 1).

Regarding language skills, 100% of children in the present study did not formulate sentences with four or more words (P31, Table 1), 100% did not ask questions (P16, P17, Table 1), and 100% did not ask for objects that are not in sight (P10, Table 1), which are difficulties in oral language present

in ASD related to the following linguistic dimensions: morphosyntax, pragmatics, and semantics²⁷. It is known that some children have communicative intent, but the difficulty in using four or more words and understanding the exchange of turns, as well as the use of facial expressions and prosody that are not suited to the context, complicate the continuity of conversation^{28,29}.

Conclusion

Delay in language development was observed through the presence of primary aspects of communication and delay in pragmatic and morpho-syntactic development, as well as through the presence of difficulty in understanding the other as a functional agent.

Relationship between age group and the skills of shared attention, functional playing, and answering to the own subject's name was observed, presenting better results in children aged from five to seven years.

In addition, children undergoing intervention with augmented and alternative communication showed significant improvement in shared attention. We can infer the importance of using alternative communication in the development of shared attention and consequently in the development of communication and social interaction.

The results suggest the performance of further studies with a larger sample size, as they can provide important data for understanding the communication characteristics of these subjects, thus contributing to interventions in this field.

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