

Profile of communicative acts of children with developmental language disorder

Perfil de atos comunicativos de crianças com transtorno do desenvolvimento de linguagem

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ABSTRACT

Purpose: To characterize the communicative acts of children with Developmental Language Disorder, verifying the number of communicative acts, interactive communicative acts, and their relationship with chronological age. **Methods:** Forty children of both sexes with a diagnosis of Developmental Language Disorder aged between 3 years and seven years and 11 months were subjects. All subjects were assessed with the ABFW Pragmatics Test - Child Language Test in their initial assessment. Specifically, this study focused on verifying the number of communicative acts, communicative acts per minute, interactive communicative acts, and the number of communicative initiatives. **Results:** The data indicate that children with Developmental Language Disorder present significant alterations concerning communicative acts and communicative interactions, and there is a correlation between these variables and chronological age. **Conclusion:** Children with Developmental Language Disorder show a decrease in the number of communicative acts, interactive communicative acts, and communicative interactions when compared to the reference values of typical children, regardless of age.

Keywords: Communication; Children; Specific language disorder; Developmental Language Disorder

RESUMO

Objetivo: Caracterizar os atos comunicativos de crianças com transtorno do desenvolvimento da linguagem, verificando a quantidade de atos comunicativos, atos comunicativos interativos e sua relação com a idade cronológica. **Métodos:** Foram participantes 40 crianças de ambos os gêneros com diagnóstico de transtorno do desenvolvimento da linguagem com idades entre 3 anos e 2 meses e 7 anos e 11 meses. Todos os sujeitos foram avaliados com a Prova de Pragmática ABFW - Teste de Linguagem Infantil, em sua avaliação inicial. Especificamente para este estudo, focou-se na verificação da quantidade de atos comunicativos, atos comunicativos por minuto, atos comunicativos interativos e número de iniciativas comunicativas. **Resultados:** Os dados indicaram que crianças com transtorno do desenvolvimento da linguagem apresentam alterações importantes em relação aos atos comunicativos e interações comunicativas e há correlação dessas variáveis com a idade cronológica. **Conclusão:** Crianças com transtorno do desenvolvimento da linguagem apresentam diminuição no número de atos comunicativos, atos comunicativos interativos e interações comunicativas, quando comparadas aos valores de referência de crianças típicas, independentemente da idade.

Palavras-chave: Comunicação; Criança; Linguagem infantil; Transtorno específico de linguagem; Transtornos do desenvolvimento da linguagem

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INTRODUCTION

By definition, communicative acts are spoken utterances that rely on linguistic-discursive structures to occur and produce effects on the interlocutor to whom they are directed⁽¹⁾. The intonation and gestures accompanying these utterances play a pivotal role in communication. Communicative acts include oral language, gestures, eye gaze, and body language^(1,2). Thus, the expression of oral language must have intentionality and linguistic structure in order to be truly effective and functional — characteristics that are relevant to the construction of pragmatics (i.e., the functional/social use of language)^(3,4).

Pragmatics is concerned with the effective use of language and its functional purposes in communication. It relates different intrinsic meanings to communicative processes determined by extralinguistic information (e.g., contextual and situational cues) and linguistic messages^(2,4). The study of pragmatics involves the phonological, semantic, and syntactic aspects of language in different contexts, which explains its diverse uses^(3,4). Indeed, primitive speech acts constitute the child's initial steps in the realm of pragmatics, even if they are utterances of a single word or prosodic pattern, and serve to communicate a specific intention before acquiring lexical, morphosyntactic, and phonological elements⁽²⁾. In some cases, the typical acquisition of pragmatics is not observed. Disruptions or functional changes in communication are the main features identified in pragmatic disorders^(2,5). Alterations in this language subsystem manifest themselves as difficulties in interpreting one's actions correctly or in expressing desires and intentions appropriately⁽⁶⁾.

For language to be functional and interactive, the acquisition of its structural properties, namely semantics, morphosyntax, and phonology, is necessary. These aspects are often altered in children with Developmental Language Disorder (DLD)⁽⁷⁾, which affects the entire process of language acquisition and development across its various subsystems. The diagnosis requires the observation of several parameters that encompass DLD, such as sensory and cognitive integrity, persistent linguistic alterations not explained by biomedical conditions, and the absence of neurological or sensory deficits. These parameters have been outlined in recent publications^(2,6,7).

Studies of DLD typically focus on its most commonly described linguistic manifestations: persistent impairments in semantics, phonology, syntax, more complex grammatical structures, and alterations in the storage and processing of content in phonological and/or verbal short-term memory^(2,3,8,9). One study⁽⁸⁾ that examined the communicative functions of children with DLD found impairments in their responses compared to neurotypical ones. The communicative functions used by this population indicated lower levels of interactivity and complexity⁽⁴⁾. Overall, there is a preponderance of qualitative over quantitative research in the study of pragmatic skills in DLD^(2,4,8,9).

International indicators^(10,11) highlight the high incidence of DLD in children. Especially in Brazil, the majority of research with children focuses on the structural aspects of language, somewhat neglecting their pragmatic/functional communicative profile. It refers to alterations that impact social integration and the participation of these individuals in different life stages, resulting in social, academic, and social

cognitive impairments, as described by the CATALISE group⁽⁷⁾ and also by the Diagnostic and Statistical Manual of Mental Disorders (DSM-V-TR)⁽⁵⁾.

In addition, there is a well-known, widely discussed steep increase in the incidence of Autism Spectrum Disorder (ASD)⁽¹²⁾. ASD has as one of its main features purely pragmatic alterations that do not result from deficits in other language components. Therefore, the high incidence of two neurodevelopmental disorders that share alterations in the same language subsystem, albeit of a different nature, may lead to misdiagnosis and incorrect approaches that hinder appropriate referral and care for these children. These circumstances become even more critical when considering children dependent on the Unified Health System (*Sistema Único de Saúde* [SUS]), for whom a diagnostic failure with inappropriate referrals can cost many years of waiting and inappropriate interventions.

Therefore, it is essential to characterize the profile of communicative acts in children with DLD in order to more precisely delineate their manifestations quantitatively. This can be a crucial ally in the differential diagnosis between pragmatic alterations resulting from language impairments (e.g., DLD) and purely pragmatic alterations (e.g., ASD)⁽⁶⁾.

Therefore, the present study aims to characterize the communicative acts of children with DLD by examining the number of communicative acts, interactive communicative acts, and their relationship with chronological age. A deeper understanding of pragmatic changes in DLD could significantly contribute to the advancement of scientific knowledge in this field and also inform clinical speech-language pathology practice.

METHODS

Ethics committee

The present retrospective study was conducted at the Speech-Language Pathology Investigation Laboratory in Pediatrics of the Speech-Language Pathology Course at the School of Medicine, University of São Paulo (USP). It was approved by the USP Ethics Committee (opinion number 55206). Since this is a study based on medical records, it was not necessary to sign an informed consent form (ICF).

Study participants

This study included 40 children of both sexes aged between 3 years and two months and seven years and 11 months. They were treated between 2013 and 2019 at the Speech-Language Pathology Investigation Laboratory in Pediatrics of the Speech-Language Pathology Course at the School of Medicine, USP. To participate in the study, the following inclusion criteria had to be met: children diagnosed with DLD according to current international criteria⁽⁷⁾; children who had not previously undergone speech and language therapy assessment or intervention and who had data on pragmatic skills as assessed by the ABFW Child Language Test⁽¹³⁾ in their initial assessment. The following exclusion criteria were applied: children who did not meet the criteria for a diagnosis of DLD; children who had previously received

speech-language assessment or intervention; children without an assessment of pragmatic skills in their initial evaluation or with inadequately recorded test results in the protocols and records analyzed.

The population served by the service has a medium to low socioeconomic profile, a characteristic that is strongly considered in both the assessment and diagnosis of DLD in the children served. In that service, it is common for families to respond to a socioeconomic questionnaire during the screening, which includes information on family income, the metric most commonly used by the Brazilian Institute of Geography and Statistics (*Instituto Brasileiro de Geografia e Estatística* [IBGE]) to characterize the socioeconomic level (SEL) of Brazilian families. When conducting a specific language assessment, these data are considered to provide greater reliability in assessments and diagnoses. Furthermore, according to the guidelines of the DSM-V-TR⁽⁵⁾, the response to intervention, along with family guidance, is a crucial factor in mitigating the influence of the SEL on language performance and, thus, in arriving at an accurate diagnosis. In addition, the speech-language assessment conducted in the service is comprehensive, covering all language subsystems and their supporting skills (e.g., phonological short-term memory, symbolic development) as well as intellectual abilities, which results in a large amount of data to analyze. Assessments are typically conducted by interns under the supervision of at least two speech-language pathologists with extensive expertise in child language.

For the present study, medical records were carefully analyzed to include children who strictly met the criteria updated by the CATALISE group⁽⁷⁾ for the diagnosis of DLD in all linguistic and intellectual dimensions. The collected data were supervised and analyzed by two speech-language pathologists with doctoral degrees in the field of child language. They categorized the children according to the inclusion and exclusion criteria and ensured the proper analysis of both the diagnosis of DLD according to the updated criteria and the reliability of the pragmatic analysis of the test data.

Initially, 166 medical records were reviewed to select those to participate. A total of 40 records were selected and analyzed after applying the inclusion and exclusion criteria. Figure 1 shows the medical record selection process.

Thus, the medical records of 40 children of both sexes aged between 3 years and two months and seven years and 11 months (mean age of 4 years and two months) were selected. These children were treated in the mentioned service between 2013 and 2019 and had data on their pragmatic skills in their initial assessment, carried out with the ABFW Child Language Test⁽¹³⁾.

The pragmatic test of the ABFW Child Language Test⁽¹³⁾ consists of analyzing a recording of the interaction between the patient and the evaluator, which is dedicated to the evaluation of the child's pragmatic profile. To this end, the predominant communicative medium (gestural and/or vocal and/or verbal) is observed, along with the number and types of communicative functions used by the individual. The analysis includes assessing the proportion of occupancy of the communicative space, categorizing communicative acts as interactive or noninteractive, and determining the number of communicative initiatives.

Procedure

Specifically for this study, the focus was on verifying the number of communicative acts, communicative acts per minute, interactive communicative acts, and the number of communicative initiatives. As described in the test manual, a communicative act is defined by the child-adult or child-object interaction, which is analyzed together with the communicative functions of the act itself, which are also described in the test norms. Subsequent studies have further elaborated on these analyses by classifying communicative acts into non-interactive acts, in which the child does not seek or establish interaction with the adult/rater, and interactive communicative acts, in which the child seeks or establishes communication with the adult/rater, such as requesting an action, requesting an object, and playing together⁽¹⁴⁾.

For the analysis, data on the variables mentioned and the age of the children were tabulated, and the results were compared with the reference values of the pragmatic test for each age group, according to the norms of the original test⁽¹³⁾. Data were split into two groups: children aged 3 to 4 years and 11 months and children aged 5 years and older, according to the organization of the test norms.

All data were subjected to statistical analysis. The statistical significance level was set at 5% ($p \leq 0.05$). SPSS Statistics, version 26.0 (IBM Corp., Armonk, NY, USA), was used for the analysis. The theoretical framework for the statistical analysis presented in this study was described in detail in a previous study⁽¹⁵⁾.

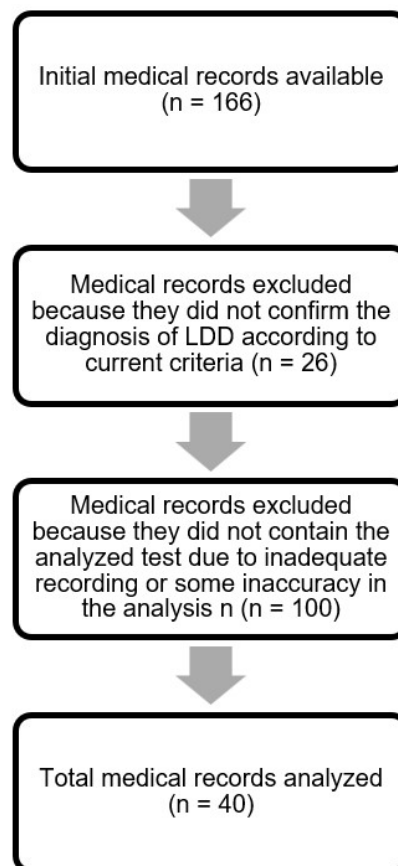


Figure 1. Process of selecting research participants

The bias-corrected and accelerated method based on 1000 bootstrap samples was used to calculate 95% confidence intervals (CIs). The values in brackets in the tables indicate the upper and lower limits of the 95% CIs. Correlation coefficients and *p*-values were calculated using the Pearson correlation test. Correlation coefficients, 95% CIs, and *p*-values were calculated using the bootstrap sampling method with bias correction and acceleration based on 1000 samples.

RESULTS

Table 1 presents descriptive data indicating a higher number of communicative acts, communicative acts per minute, communicative initiatives, and the number and percentage of interactive communicative acts in children 5 years and older.

Table 2 shows that the majority of the participants in the sample scored below the expected range for the number of communicative acts per minute, especially the younger children. Overall, most children scored below the expected range for their age group.

Table 3 presents the correlation analysis between the number of communicative acts, the number of interactive acts, and age, considering the whole sample of the study. The aim was to check if there was a correlation between chronological age and the number of communicative acts and interactive communicative acts.

Data showed a statistically significant and positive correlation, which indicated that an increase in one variable was associated with an increase in the other variable. Thus, in the age group between 3 years and 4 years and 11 months, age was positively correlated with an increase in interactive communicative acts, which was not observed in the group over 5 years of age. However, when looking at the whole sample, there was statistical evidence that there was an increase in interactive communicative acts with increasing age.

Data were confirmed by the scatter plot analysis shown in Figures 2 and 3, where it was possible to observe the increase in the average number of communicative acts with increasing age (Figure 2) and an even more significant increase when age increase was correlated with the number of interactive communicative acts (Figure 3).

Table 1. Descriptive values of measures of communicative function and age for the total study sample

Variables	Age group	n	Mean	SD	Median	Min.	Max.
No. of communicative acts	3 years to 4 years and 11 months	26	29.42 [25.92. 32.77]	8.97	30.50 [29.75. 33.00]	13.00	48.00
	Over 5 years old	14	32.86 [27.71. 38.17]	11.29	32.00 [27.00. 38.50]	15.00	60.00
	Total	40	30.63 [27.83. 33.75]	9.84	30.50 [29.00. 33.50]	13.00	60.00
Communicative acts/minute	3 years to 4 years and 11 months	26	4.96 [4.20. 5.76]	2.20	4.80 [4.00. 6.20]	1.60	9.60
	Over 5 years old	14	5.77 [4.63. 6.94]	2.59	5.60 [4.50. 6.27]	2.60	12.00
	Total	40	5.24 [4.57. 5.90]	2.34	5.20 [4.00. 6.00]	1.60	12.00
No. of communicative initiatives	3 years to 4 years and 11 months	26	54.92 [50.12. 59.42]	12.56	58.50 [46.00. 61.00]	34.00	75.00
	Over 5 years old	14	57.00 [52.14. 62.14]	9.96	54.50 [51.00. 64.00]	41.00	76.00
	Total	40	55.65 [52.22. 59.30]	11.63	56.50 [51.50. 61.50]	34.00	76.00
No. of interactive acts	3 years to 4 years and 11 months	26	19.23 [15.15. 23.04]	10.94	20.00 [13.00. 27.00]	1.00	37.00
	Over 5 years old	14	24.93 [20.36. 29.57]	8.97	24.00 [21.00. 29.50]	8.00	40.00
	Total	40	21.23 [17.48. 24.53]	10.55	23.50 [17.50. 26.00]	1.00	40.00
Interactive communicative acts (%)	3 years to 4 years and 11 months	26	63.75 [52.44. 74.17]	29.84	70.77 [45.11. 86.69]	3.03	100.00
	Over 5 years old	14	76.81 [66.16. 86.87]	18.09	77.52 [70.00. 88.10]	42.11	100.00
	Total	40	68.32 [59.69. 76.34]	26.82	77.52 [60.42. 83.72]	3.03	100.00

Subtitle: n = Number of medical records; SD = Standard deviation; Min. = Minimum; Max. = Maximum; % = Percentage

Table 2. Characterization of the sample in terms of the adequacy of the number of communicative acts per minute

Variables	Categories	3 years to 4 years and 11 months		Over 5 years old		Total	
		n	%	n	%	n	%
Adequate performance in terms of the number of communicative acts per minute	No	16	61.54	11	78.57	27	67.50
	Yes	10	38.46	3	21.43	13	32.50

Subtitle: n = Number of medical records; % = Percentage

Table 3. Correlation analysis between the number of communicative acts, interactive acts, and age, considering the age range and the total sample of the group

Variables	Age group	Number of acts			
		Communicative		Interactive Communication	
		Coeff.	P-value	Coeff.	P-value
Age	3 years to 4 years and 11 months	0.332 [-0.084. 0.662]	0.097	0.594 [0.313. 0.799]	0.001*
	Over 5 years old	0.378 [-0.126. 0.742]	0.183	0.386 [-0.005. 0.720]	0.173
	Total	0.347 [0.059. 0.586]	0.028*	0.480 [0.261. 0.653]	0.002*

Pearson's correlation test; *statistically significant at 5% level ($p \leq 0.05$)

Subtitle: Coeff. = Coefficient

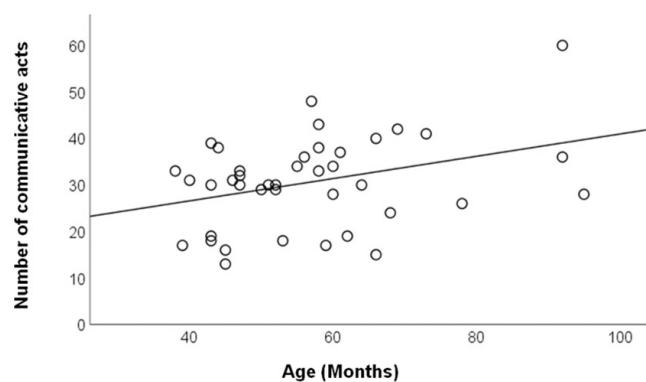


Figure 2. Number of communicative acts according to age

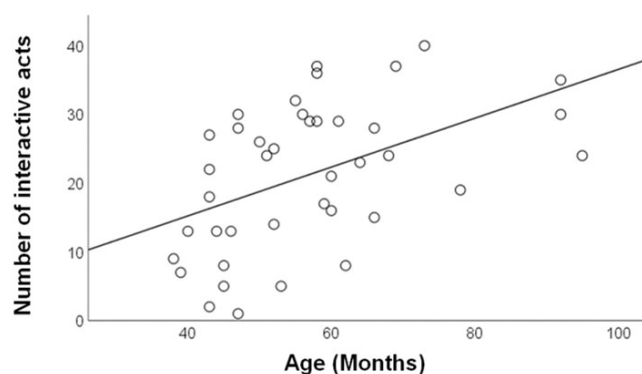


Figure 3. Number of interactive communicative acts according to age

DISCUSSION

The current study aimed to characterize the profile of communicative acts in children with DLD by examining the number of communicative acts, interactive communicative acts, communicative initiatives, and their relation to chronological age. Data revealed significant deficits in the number of communicative acts and interactive communicative acts in children with DLD between the ages of 3 and 7 as well as showed a remarkable relationship between these skills and chronological age.

These data may be due to the low linguistic domain characteristic of this population, which also leads to functional impairments. These include inappropriate manifestations in maintaining conversational topics, exchanging turns, inference skills, and providing inappropriate responses, which is consistent with international studies on this topic^(2,6,7). Pragmatic difficulties include not only inappropriate oral productions but also difficulties in understanding language in context⁽⁷⁾. Thus, the results of this study support the characterization of the recently proposed DLD framework⁽⁷⁾, which emphasizes diffuse and multifactorial impairments in language development across its various subsystems.

There is ample evidence in the literature that alterations in language structure typical of DLD, coupled with impairments in executive function, oral comprehension, and social cognition, lead to alterations in the development of pragmatics in this population^(6,16). The analysis in the present study focused on the initial assessment of pragmatic skills in children within the service.

As the age range of the data collected varied from 3 to 7 years, the results presented contribute to the understanding of the development of pragmatic skills as children grow older. This is of paramount importance for a more comprehensive understanding of the clinical picture and represents novel information in the national literature.

In examining the data across age groups, younger participants exhibited fewer interactive patterns compared to their older counterparts. This observation may indicate a delay and impairment in the initial communicative development of this population. In the absence of language structure/communicative skills, younger children with DLD exhibited fewer communicative acts, both in terms of quantity and interactivity. As children with DLD grew older, the number of communicative acts and interactive behaviors increased. However, they still fell short of the expected levels for their age in the absence of therapeutic support.

Individuals with DLD increase the total number of communicative initiatives and interactions and also increase the degree of interactivity for these acts, which is similar to what occurs during typical development^(8,17,18). However, they remain below the reference values suggested by the test used, indicating that despite the gradual increase in communicative interaction, there is a persistent impairment in this area. This finding may contribute to the understanding that the cognitive maturation of these children allows aspects of communicative compensation for interaction, even in the presence of structural language impairment. These results are consistent with a recent study⁽⁶⁾ showing that these children tend to improve their communicative skills and social use depending on the situation. Nevertheless, pronounced deficits in oral comprehension and expression may be complicating factors for adequate improvement of pragmatic skills.

Children with DLD exhibit pragmatic deviation due to their diffuse language deficit rather than a pattern of social inability as observed in other language disorders such as ASD and Social Communication Disorder (SCD)⁽¹⁶⁻¹⁹⁾. This finding is of critical scientific and clinical importance because it challenges common beliefs by providing scientific evidence that the pragmatic/interactive profile of different neurodevelopmental disorders follows a different developmental pattern. This expands knowledge in the field and provides important tools for proper understanding and clinical management of various childhood language disorders.

Pragmatic skills are often referred to as one of the less affected language subsystems in children with DLD. However, this does not mean that there are no significant impairments in this skill when compared to the performance of typically developing children. For example, deficits in social cognition, low scores on pragmatic tests and questionnaires, and difficulty understanding linguistic contextual cues are commonly observed in children with DLD^(6,15,18). In addition, these children typically have difficulty grasping key points in a conversation, which can lead to deficits in social interaction^(9,20).

Therefore, the literature indicates that both children with DLD and those with ASD tend to have difficulty initiating conversations, understanding context during conversations, and relying on contextual cues to infer the topic of conversation⁽²¹⁻²³⁾. The literature also reports impairments in asking questions and requesting objects or actions in both developmental disorders.

However, children with ASD show more severe deficits than those with DLD, as alterations in nonverbal communication and low social interest are typical characteristics of this population and do not improve naturally over time without therapeutic support^(20,21,23). Authors state that despite the pragmatic difficulties presented by children with DLD, they appear to be qualitatively more interactive, demonstrating important nonverbal communication skills and tending to engage in a greater number of interactive actions^(20,23). The results of the present study confirm this hypothesis, as an evolution in the number of interactive communicative acts and interactive actions was observed in children with DLD as they aged.

These data are of fundamental importance, both theoretically and clinically, because they provide significant scientific evidence of features that may be critical in the differential diagnosis of children with DLD and ASD, particularly in younger children where the diagnostic process may be more challenging. It is important to note, however, that future studies should include a group of participants with ASD to provide more detailed results regarding pragmatic differences between these populations.

A recent study⁽²⁴⁾ showed that children and adolescents with DLD tend to have significant deficits in social cognition due to their structural language alterations. This is another common impairment in individuals with ASD and should be the focus of future studies to deepen our understanding of this type of alteration in children and adolescents with DLD and to differentiate it from that of children with ASD.

CONCLUSION

Children with DLD showed a decrease in the number of communicative acts, interactive communicative acts, and communicative interactions compared to reference levels for typical children, regardless of age. Furthermore, there is an age-related improvement in these skills, with increased communicative initiatives and an increased number of communicative acts. The results also provided significant evidence for distinguishing pragmatic skill changes in children with DLD from those observed in children with ASD.

REFERENCES

1. Austin JL. How to do things with words. Oxford: Clarendon Press; 1962.
2. Matthews D, Biney H, Abbot-Smith K. Individual differences in children's pragmatic ability: a review of associations with formal language, social cognition, and executive functions. *Lang Learn Dev.* 2018;14(3):186-223. <http://dx.doi.org/10.1080/15475441.2018.1455584>.
3. Befi-Lopes DM, Puglisi ML, Rodrigues A, Giusti E, Gândara JP, Araújo K. Perfil comunicativo de crianças com alterações específicas no desenvolvimento da linguagem: caracterização longitudinal das habilidades pragmáticas. *Rev Soc Bras Fonoaudiol.* 2007;12(4):265-73. <http://dx.doi.org/10.1590/S1516-80342007000400003>.
4. Lopez KMJ, Kraljević JK, Struntze ELB. Efficacy, model of delivery, intensity and targets of pragmatic interventions for children with developmental language disorder: a systematic review. *Int J Speech Lang Pathol.* 2022;57(4):764-81. <http://dx.doi.org/10.1111/1460-6984.12716>. PMID:35445482.
5. American Psychiatric Association. Referência rápida aos critérios diagnósticos do DSM-5-TR. Porto Alegre: Artmed; 2023.
6. Andreou G, Lymperopoulou V, Aslanoglou V. Developmental Language Disorder (DLD) and Autism Spectrum Disorder (ASD): similarities in pragmatic language abilities. A systematic review. *Int J Dev Disabil.* 2022;1-15. <http://dx.doi.org/10.1080/20473869.2022.2132669>.
7. Bishop DVM, Snowling MJ, Thompson PA, Greenhalgh T, CATALISE-2 consortium. Phase 2 of CATALISE: a multinational and multidisciplinary Delphi consensus study of problems with language development: terminology. *J Child Psychol Psychiatry.* 2017 Oct;58(10):1068-80. <http://dx.doi.org/10.1111/jcpp.12721>. PMID:28369935.
8. Rocha LC, Befi-Lopes DM. Análise pragmática das respostas de crianças com e sem distúrbio específico de linguagem. *Pro Fono.* 2006;18(3):229-38. <http://dx.doi.org/10.1590/S0104-56872006000300002>. PMID:17180791.
9. Monteiro TI, Befi-Lopes DM. Pragmatic difficulties in children with Specific Language Impairment. *Rev Soc Bras Fonoaudiol.* 2011;16(1):115-6. <http://dx.doi.org/10.1590/S1516-80342011000100021>.
10. Norbury CF, Gooch D, Wray C, Baird G, Charman T, Simonoff E, et al. The impact of nonverbal ability on prevalence and clinical presentation of language disorder: evidence from a population study. *J Child Psychol Psychiatry.* 2016;57(11):1247-57. <http://dx.doi.org/10.1111/jcpp.12573>. PMID:27184709.
11. DLD Advisory Group. Developmental Language Disorder. A guide for every teacher on supporting children and young people with Developmental Language Disorder (DLD) in mainstream schools [Internet]. United Kingdom: Department of Education; 2023 [citado em 2023 Jun 27]. Disponível em: https://speechandlanguage.org.uk/media/3349/ican_dld_guide_final_aug4.pdf
12. CDC: Centers for Disease Control and Prevention. Autism Spectrum Disorder (ASD). [Internet]. USA: CDC; 2023 [citado em 2023 Jun 27]. Disponível em: <https://www.cdc.gov/ncbddd/autism/data.html>
13. Fernandes FDM. Pragmática. In: Andrade CRF, editor. ABFW: Teste de Linguagem infantil nas áreas de fonologia, vocabulário, fluência e pragmática. Carapicuíba: Pró-Fono; 2004. p. 83-97.
14. Miiher LP, Fernandes FDM. Análise das funções comunicativas expressas por terapeutas e pacientes do espectro autístico. *Pró-Fono R Atual Cient.* 2006;18(3):239-48.
15. Field A. Discovering statistics using IBM SPSS statistics. 5th ed. California: SAGE Publications; 2017. p. 1070.
16. Andrés-Roqueta C, Garcia-Molina I, Flores-Buils R. Association between CCC-2 and structural language, pragmatics, social cognition, and executive functions in children with developmental language disorder. *Children (Basel).* 2021;8(2):123. <http://dx.doi.org/10.3390/children8020123>. PMID:33572382.
17. Yuan H, Dollaghan C. Measuring the Diagnostic Features of Social (Pragmatic) communication disorder: an exploratory study. *Am J Speech Lang Pathol.* 2018;27(2):647-56. http://dx.doi.org/10.1044/2018_AJSLP-16-0219. PMID:29587307.
18. Weismer SE, Tomblin JB, Durkin MS, Bolt D, Palta M. A preliminary epidemiologic study of social (pragmatic) communication disorder in the context of developmental language disorder. *Int J Lang Commun Disord.* 2021;56(6):1235-48. <http://dx.doi.org/10.1111/1460-6984.12664>. PMID:34383380.

19. Georgiou N, Spanoudis G. Developmental language disorder and autism: commonalities and differences on language. *Brain Sci.* 2021;11(5):589. <http://dx.doi.org/10.3390/brainsci11050589>. PMID:33946615.
20. Andreou G, LEMONI G. Narrative Skills of Monolingual and Bilingual Pre-School and Primary School Children with Developmental Language Disorder (DLD): A Systematic Review. *Open J Mod Linguist.* 2020;10(5):429-58. <http://dx.doi.org/10.4236/ojml.2020.105026>.
21. Baixauli-Fortea I, Miranda Casas A, Berenguer-Former C, Colomer-Diago C, Roselló-Miranda B. Pragmatic competence of children with autism spectrum disorder. Impact of theory of mind, verbal working memory, ADHD symptoms, and structural language. *Appl Neuropsychol Child.* 2019;8(2):101-12. <http://dx.doi.org/10.1080/21622965.2017.1392861>. PMID:29161137.
22. Loukusa S, Mäkinen L, Kuusikko-Gauffin S, Ebeling H, Leinonen E. Assessing social-pragmatic inferencing skills in children with autism spectrum disorder. *J Commun Disord.* 2018;73:91-105. <http://dx.doi.org/10.1016/j.jcomdis.2018.01.006>. PMID:29576384.
23. Malkin L, Abbot-Smith K, Williams D. Is verbal reference impaired in autism spectrum disorder? A systematic review. *Autism Dev Lang Impair.* 2018;3:1-24. <http://dx.doi.org/10.1177/2396941518763166>.
24. Forrest CL, Lloyd-Esenkaya V, Gibson JL, St Clair MC. Social cognition in adolescents with Developmental Language Disorder (DLD): evidence from the social attribution task. *J Autism Dev Disord.* 2023;53(11):4243-57. <http://dx.doi.org/10.1007/s10803-022-05698-6>. PMID:35971042.