ECHOLALIA'S TYPES IN CHILDREN WITH AUTISM SPECTRUM DISORDER

Tipo de ecolalia em crianças com transtorno do espectro autista

Marina Mergl [1], Cíntia Alves Salgado Azoni [2]

ABSTRACT

The Autistic Spectrum Disorder (ASD) is a syndrome characterized by persistent impairments in reciprocal social communication, social interaction and restricted repetitive behavior patterns, interests and activities. Regarding the domain of repetitive behaviors in language, the manifestation can occur by echolalia, divided into two categories, immediate or delayed. This research checked the type of echolalia and communication skills in seven boys with ASD, aged between 4 and 7 years old, which make use of oral communication and attend a research center and intervention of children with developmental changes. Children were assessed by behavioral observation protocol and filmed in a speech therapy session. It was also used a questionnaire with parents and professionals in this group. From the seven children in the study, six had immediate echolalia and only one late. Communication skills were the most affected in subjects where the one with lower scores on language assessment was the only one to show delayed echolalia. In the other subjects, there was no direct relationship between the type and number of echolalia with the performance in behavioral observation protocol. The questionnaire with parents and professionals showed agreement for the presence of echolalia. Children with ASD had committed and more immediate echolalia communication skills. This case reports can contribute to future research regarding the diagnosis and therapeutic management of the speech and language therapists.

KEYWORDS: Autistic Disorder; Echolalia; Language

INTRODUCTION

Autistic Spectrum Disorder (ASD) is a neurodevelopmental disorder characterized by persistent deficits in social communication and social interaction in multiple contexts. It has restricted and repetitive patterns of behavior, interests and activities, with early symptoms in the development period, causing losses in social life of individual[1]. The main symptoms are often related to language delay, poor understanding of speech, echolalic speech, use of literal and unilateral language and little or no social initiative. These symptoms are present from early childhood, resulting limitations and impairments in daily life. According to ICD-10[2], autism is a "pervasive developmental disorder defined by the presence of abnormal development and / or commitment that is manifested before the age of three and the characteristic type of abnormal functioning in all three areas of social interaction, communication and restricted and repetitive behavior." This new classification includes the aforementioned disorders such as infantile autism, pervasive disorder non-specific development, childhood disintegrative disorder and Asperger's disorder.

With regard to the field of repetitive language behavior, the repetitive speech is prominent and can manifest through self-repetition of speech or other, by ecolalia[3]. In ASD children with predominant use of verbal communication, echolalia is a persistent phenomenon which is characterized as a language disorder, defined as the repetition in eco of other's speech[4]. The echolalia is usually distinguished into two categories: immediate or delayed, characterized

(1) Universidade Estadual de Campinas, UNICAMP, Campinas-SP, Brasil.

(2) Universidade Federal do Rio Grande do Norte, UFRN, Natal-RN, Brasil.

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by short time after the original emission and after long production by the interlocutor, respectively[5]. It is considered a constant and prolonged speech characteristic of children with ASD, it may decrease or go away, as speech develops; their structure makes it possible to assess the language skills and provide for the training of communication skills with the assumption that it develops the social skills of the subject[6].

Some autistic children have echolalia and use it as a communication device, with use of repetition as confirmation of desire, behavior regulation mechanism or means to speak when they are still unable to use their own words freely. The delayed echolalia, however, regards as an early sign of ASD[7]. During speech therapy of a child with ASD it can be said that the use of statements clipping heard by the child confirms the participation of language as a singular process in each subject[8]. Importantly, echolalia often is found in the normal process of language acquisition and it distinct from the pathological is that it is continuous and persistent[9].

In a study intended to examine the immediate and delayed echolalia in a six-year-old with ASD, it was noted the presence of both in normal and spontaneous situations and in the most immediate, the occurrence took place when the adult corrected speech of the child or in an attempt to change their behavior. Another aspect described is that these two types of immediate echolalia, the child added a new component to his speech or modified and added variations, suggestive of a repossession of the model. Delayed echolalia were divided into self-echolalia (*self*), other-echolalia (*other*) and impersonal-echolalia (*impersonal)* and all were stereotypical. A look at the context it suggests that echolalia are used by the child as a way to position themselves in relation to their partners, can serve as an emotional or posture appeal to the situation it faces. Thus, echolalia should be seen as a great and flexible means of communication, considering it a phenomenon of interaction and not only a pathological manifestation[10].

Another recent study investigated the nature of echolalia phenomenon in similar situations to real life. In induced context (researcher and autistic subject) and incidental (researcher, another subject and autistic in the same environment), listing the amount of echolalia produced and the degree of severity in the communication field, using Vineland and the Observational Rating Scale of Basic Functions. The eighteen participants with ASD, between 17-36 years old had a higher number of echolalia in induced context, and those who got lower scores showed less interaction capabilities, affective and communicative domain most affected and did not seem to be able to inhibit echolalic behavior, especially in more stressful situations[11].

There are different views on echolalia in the speech of children with ASD and their implications. It understands in the context in which it occurs and the allocation of different communicative functions for speech and in some cases, may present as stereotypical talks and not communicative[12]. A reflection on the role of echolalia in the language development of people with ASD and their functions can contribute as a therapeutic resource and communication tool. Despite it being identified as part of speech of children with ASD, there are few quantitative methods to evaluate this specific behavior[13]. In this regard, a study has developed an automated technique for quantifying the repetition by comparing the transcripts and frequency of behavior among children with ASD, typical development and language disorders. The findings showed that children with ASD repeat the language of the other more than other studied populations[14].

In this way, the relevance of case reports related to the lack of national studies that differently describe the echolalia's characteristics and their effect on communication skills of children with ASD. The initial hypothesis is that the child with ASD often uses echolalia in their media, with loss to communication skills compared to children with adequate language development. Thus, this qualitative experimental study aimed to verify the type of echolalia and communication skills in children with ASD, as well as the perception of parents/guardians and professionals as echolalia of children with ASD.

CASE REPORT

The Ethics Committee of the School of Medical Sciences - UNICAMP, approved this study under protocol number 437.740, and begun after the signing of free and informed consent form (ICF) by those in charge, having been guided by the researcher. It is a qualitative cross-experimental study of seven male children with interdisciplinary diagnosis of autistic spectrum disorder (ASD), according to the DSM-5[1] (Table 1). The children had use of oral communication and attending speech therapy weekly.

Table 1 – Sample characteristics

Variable	Sample (N /%)
Sex	
Female	0 (0)
Male	7 (100)
Current age	
3-4 years	4 (57.15)
5-7 years	3 (42.85)
Age at diagnosis	
0-3 years	4 (57.15)
4-7 years	3 (42.85)
Speech therapy time	
0-1 year	2 (28.58)
2-4 years	4 (57.15)
+ 4 years	1 (14.27)

Data collection and analysis

In the first stage, there was a session of interviews with six parents/guardians, (one responsible is the mother of twin brothers), through a questionnaire with fourteen questions about the age of ASD diagnosis, use of dialogue, use immediate and/or delayed echolalia, occurrence and frequency of echolalia, emergence of echolalic behavior, speech therapy time and the reduction or not of echolalic speech after the beginning of the therapeutic intervention (Figure 1). In addition to the parents, the questionnaire was applied with the two speech therapists who met the children. Among the seven children, six attended speech therapy and only one had not attended because the diagnosis was still recent at the time of the survey.

Later, the children went on a 30-minute speech therapy session with individual filming of children at play. This shooting took place with the participation of the researcher in the same environment of the child and the professional, but where was noted behavioral instability, it was decided to perform the activity only between the therapist and the child.

The analysis of the videos was drawn from the Behavioral Observation Protocol[15], which describes the observation of the child's behavior in a playful situation to see the children's cognitive and communicative skills. The description of the instrument is qualitative and quantitative, with a maximum score of 70 points for communication skills, 60 points for understanding of oral language and 70 points for aspects of cognition, with a total score of 200 points. Communication skills are divided into conversational skills, communicative function, and language contextualization levels.

QUESTIONNAIRE TO PARENTS AND PROFESSIONALS

1. How old was the child diagnosed with autism?
2. How long has the child performed and/or held therapeutic intervention?
3. Is the child able to talk using short sentences?
4. Can you have a dialogue with the child involving shifts? In other words, they talk, she says, she answers, you talk.
5. Does child say the same thing several times and in the same way?
6. Does child say phrases he heard someone else say exactly the same way it was spoken?
7. Does the child imitate phrases spoken by others (present, radio, television) soon after listening to it?
8. Does the child imitate phrases spoken by others? How long after their reproduction? That is, with a long interval, for example heard today and tomorrow reproduced, hence a week or even months later.
9. Does the repetition of these phrases by the child occur for no apparent reason?
10. Is this repetition of phrases usually about a specific subject?
11. Does repetition of phrases occur in ordinary moments? For example, when the child is angry when the child is isolated, when the child is afraid, among others.
12. How often is this repetition (echolalia) happening? For example, several times daily, daily, several times a week, weekly and monthly.
13. When the observation of this behavior (repetition of speech of another) occurred? What was the child's age?
14. Did you observe (parents / professionals) a decrease or an increase in the frequency of repetitions over time?

Figure 1 – Questionnaire applied to parents and professionals

A second analysis performed on the video focused on the presence or absence of echolalia and their type. For this study, it was defined as immediate echolalia the issue of children in the zero to five seconds of time that is related to response immediately after, or within two phrases from the caller's phrase model. To determine delayed echolalia the time after six seconds, related to the response after two or more of the interlocutor phrases[16].

RESULTS

Questionnaire to parents and professionals

Among the questions in the questionnaire focused on the echolalia, it was noticeable that there was greater agreement of parents and professionals about the presence of dialogue, echolalia presence and delayed echolalia, followed by immediate echolalia, frequency and decrease over time.

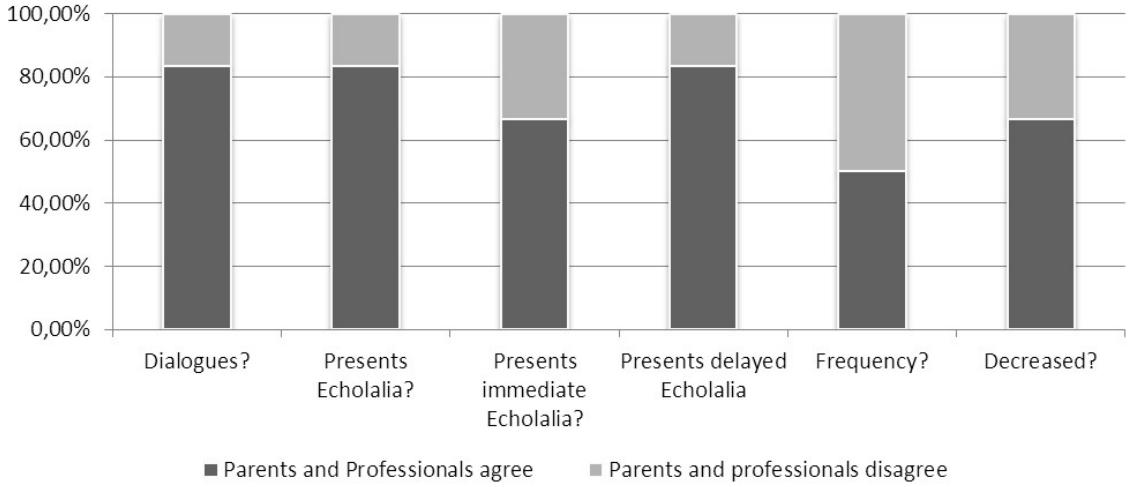

Figure 2 – Relationship between responses of parents / professionals

Regarding to the presence of dialogue, four parents agreed with professionals that their children use dialogue to communicate (S1, S2, S3, S5); there was agreement in a case that the child does not use the dialogue (S6); a disagreement, in which the father claims to have dialogue and professional believes in the opposite direction (S7). As for the S4, parents claim to be dialogue, but the child was not yet in speech therapy.

When asked about the presence of echolalia, parents of children S1, S2, S3, S5 and S7 agreed with professionals, both noting their existence; already the parents of S6 said that his son was not used to echolalia, when the trader noticed the presence of the phenomenon. The parents of S4 observed use of echolalia in their child.

Specifically on the type of immediate echolalia, the parents of S1, S2, S5, and S7 agreed with the professionals that children had this kind of echolalia; parents of S3 and S6 deny the occurrence, while the professional says its use. The response of the S4's parents was positive about the presence. As for the delayed echolalia, the parents of S1, S3, S5, S7 were in accordance with professional regarding the occurrence; if S6, parents and professionals said they did not observe immediate echolalia; there was no agreement on the S2, since the parents said the presence of delayed echolalia and professional does not notice this fact. The parents of S4 observed presence of delayed echolalia.

As for the frequency of echolalia, the parents of S1, S3, S5 and S7 said their children use echolalia several times a day, consistent with the professional who observed several times during the weekly speech therapy sessions. The parents of S2 and S6 were unable to describe the frequency of occurrence, and the professionals who serve both often noticed echolalia; parents of S4 said rarely observe this fact.

As regards the use of echolalia decreased over time, parents S2, S3, S4, S5 and S7 state that a noticeable reduction, consistent with professionals. Only for S7, however, it was different professional parents, stating that noted to have increased over time due to the fact the child has developed speech. Parents of S6 were unable to report and professionals claimed to have increased also due to the development of speech; parents of S1 opined that there was no decrease in echolalia, discordant to what the professional reported.

Among the moments in which noticed the use of echolalia by children, parents cited the following times: jokes, times that the child is not in activity, situations of nervousness and anger. Professionals cite isolation contexts of symbolic gaming activities and the construction of narrative discourse.

Analysis of playful activity

During playful activities, six children had episodes of immediate echolalia and only one episodes of delayed echolalia. Of total echolalia (immediate + late), 92.31% of the episodes referred to the immediate echolalia and 7.69% of delayed echolalia, held by a child (S7). It is of note thus the prevalence of the immediate echolalic speech. Only one child (S3) did not present any kind of echolalia during shooting.

Table 2 – Number of echolalia and score in the Behavioral Observation Protocol

Children	*N° of Immediate* Echolalia	*N° of Delayed* Echolalia	PROC total
S1	4	0	154
S2	4	0	194
S3	0	0	190
S4	3	0	189
S5	10	0	166
S6	4	0	119
S7	11	3	101
Total	**36**	**3**	**-**

Caption: PROC - Behavioral Observation Protocol

As for the evaluation of the child's cognitive and communicative development, by analyzing the PROC, the seven children with ASD showed expressive communication skills and aspects of cognitive development lower than expected for their age; two children showed performance in understanding verbal language below expectations and all showed total score lower than expected (Table 3).

Table 3 – Score Behavioral Observation Protocol

Observed aspects	Expected score	S1	S2	S3	S4	S5	S6	S7
1. CS	70	44	68	65	62	54	34	25
2. CVL	60	60	60	60	60	60	40	40
3. ACD	70	50	66	65	67	52	45	36
Total	200	154	194	190	189	166	119	101

Caption: CS = communication skills (expressive); CVL = comprehension of verbal language; ACD = aspects of cognitive development; S = subject.

In addition to the quantitative analysis of PROC, the qualitative characteristics of language of each child are described below:

- General characteristics of the communication skills

Children S1, S5 and S6 had intentional multi-functional communication, broad participation in dialogic activity by verbal means, connected to the immediate context. Yet S2, S3 and S4 presented intentional multifunctional communication, broad participation in dialogic activity by verbal means unrelated to the immediate context. However, the S7 presented intentional communication with primary functions, restricted participation in dialogic activity by verbal means.

- General characteristics of the linguistic organization

Children S1, S5 and S6 had statement production (two or more words organized at the level of the sentence); S2, S3 and S4 presented speech productions (chained phrases); S7 showed only production of single words.

- General characteristics of oral language comprehension

Among the evaluated children, S7 did not respond systematically; S1 and S6 understand orders up to two actions linked to the immediate context; S2, S3, S4 and S5 understand orders with three or more actions outside the immediate context.

- General characteristics of imitation

The S1, S6 and S7 imitated gestures visible on himself, and S7 imitated only non-verbal sounds; S2, S3, S4 and S5 imitated gestures visible and not visible to the own body and imitated verbal and non-verbal sounds, including children S1 and S6 in this latter aspect.

- General characteristics of cognitive development

S7 showed up at the advanced sensorimotor stage; S1 and S6 in the transition between sensorimotor and representative; S2, S3, S4 and S5 were in the representative phase.

It is worth mentioning in this report the results of S7, because this is the only child with episodes of delayed echolalia over the 30 minutes of speech therapy session and had lower scores on the PROC with significant deficits in communication skills. Within conversational skills, communicative intent little is present; does not start the conversation; responds, waits his turn and rarely participates actively in the dialogue activity. Their communicative functions are absent as instrumental, interactive, appointment, informative, heuristics and narrative. Only rarely demonstrates the protest function; It makes use of statements of two words as a means of communication and its contextualization level of language refers only to the immediate and concrete situation.

It was not found qualitatively direct relationship between the number and type of presented echolalia and its performance in communication skills PROC in the other subjects. Thus, not necessarily the highest score hereof meant larger or smaller number of speech echolalia in children.

DISCUSSION

From the results found, it can see that the characterization of the sample is compatible to that found in international literature[17,18]. ASD affects between four to five times more male subjects compared to females[17]. One possible explanation for this is that females are only identified with ASD when they demonstrate more committed behavior and cognition[19], resulting in late diagnosis. In this study, the sample is composed only of male children, as demand for a reference institution in the region. This may confirm the prevalence of this kind, even when dealing with a small group. Regarding the age of diagnosis, it is known that a few years ago, children were diagnosed in the age group of three to four years of age[18], but recent surveys show that the study of the characteristics and behaviors of children with ASD while still babies provide clues to recognition atypical development and thus is increasingly common early diagnosis[20,21]. Corroborating this fact, most of the children in this study were diagnosed with ASD before four years of age. The diagnosis after this age, however it is still common and that fact is a warning sign to the need for greater dissemination of information about the disorder and its aspects, enabling future early identification of ASD characteristics of the parents, as they are, a priori, the main source of contact with the child.

The use of the questionnaire with parents and professionals was essential in the quest to identify the use and type of echolalia performed by children with ASD. Both were committed to contribute their experiences in daily and targeted activities with respect to the language of children. The questionnaire provided to parents reflection on the speech and language of their children and greater perception of the painting, which is essential for the development of children with ASD[22]. The proposal to investigate the perception of parents about echolalic speech of their children was effective for comparison between the responses and the actual use by the child, as only a mother did not agree on the use of echolalia, even with the presence filmed during the session. The divergence between the responses obtained by parents and professionals can be justified by the fact that language is one of the aspects worked during therapy session, which can provide the professional greater sensitivity to the occurrences of episodes of echolalic speech. Concerning the increase or decrease in the occurrence of echolalia in the speech of children, one study found that 10 children with ASD who communicated it with their parents primarily through echolalia after 20 weeks of therapy showed a reduction in the use of this feature

and increased spontaneous communication[23]. This finding strengthens the evidence that the increased use of echolalia can be considered an important and positive step in the language acquisition process and its reduction will occur as increasing the language skills of the subject.

Immediate echolalia was the predominant type in this study, because only the S7 presented episodes of delayed echolalia. This result may be related to the short length of the film, since the delayed echolalia was reported by practitioners in four subjects. A feature that can be found in the immediate echolalia is the addition of a new component to speech[10], a fact only found in S2, which vary in the echolalic speech, suggesting a repossession model. This same subject had the highest score in the PROC and showed more communicative resources, demonstrating echolalia as a linguistic resource from its repossession. On the classification of delayed echolalia, the three episodes presented by S7 are classified[10] as echolalia other (*other-echoes*), as the speech of children referred to the statements interlocutor with whom she interacted. Regarding delayed echolalia, occurrences in this research suggests its categorization as requests[24], since, from the qualitative analysis of the context, the subject uses it to make changes in playful activity.

Application of PROC allowed noting that the communication skills and aspects of cognitive development were the most affected, since all children performed below the expected score for this protocol. Only two children did not have adequate score on the verbal comprehension of language. These data strengthen the diagnostic criteria of DSM-51 as the ASD, characterized by little or no social initiative at different levels of severity, associated with intellectual disability or global developmental delay. Regarding the use of PROC as a tool for evaluation, we found no studies that pointed its use as ASD signal detection tool. Thus, the analysis based on this protocol can help clinical assessment in children with this situation, since its goal is to detect signs of compromised communication skills.

CONCLUSION

This study indicated that most of the children in this sample showed echolalia, being the most frequent immediate than the delayed type. It was also observed that there was no direct relationship between the type of echolalia and overall performance in the evaluation of language skills. In this study, all children showed poor performance in communication skills and aspects of cognitive development and less involvement in understanding verbal language.

As for language features observed by parents and professionals, the majority was in agreement on the presence, type and frequency of echolalia in children. It being a frequent behavior in the construction of the child's speech with ASD, their presence can contribute to the therapeutic approach of the speech therapist in order to use it in improving the language skills of the subject. Therefore, studies with larger numbers of subjects involved are required for further characterization of echolalia in ASD.

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RESUMO

O Transtorno do Espectro Autista (TEA) é uma síndrome caracterizada por prejuízos persistentes na comunicação social recíproca, com interação social restrita e padrões repetitivos de comportamentos, interesses e atividades. Os comportamentos repetitivos na linguagem podem manifestar-se pelo aparecimento da ecolalia, fenômeno persistente caracterizado como um distúrbio de linguagem, com repetição da fala do outro, dividida em imediata ou tardia. Teve como objetivo a verificação do tipo de ecolalia e das habilidades comunicativas em sete meninos com TEA, com idades entre quatro e sete anos, que fazem uso da comunicação oral. Foram realizadas duas atividades distintas: avaliação das crianças em uma sessão de atendimento fonoaudiológico em situação lúdica, analisada pelo Protocolo de Observação Comportamental e aplicação de um questionário com os pais e profissionais para verificar suas opiniões quanto ao uso, tipo e frequência de ecolalia. Das sete crianças do estudo, seis apresentaram ecolalia imediata e uma tardia; a criança que utilizou ecolalia tardia apresentou menor pontuação no protocolo de observação comportamental, porém para os demais sujeitos não houve relação direta entre o tipo e número de ecolalia com a pontuação. O questionário aplicado com pais e profissionais mostrou concordância quanto à presença da ecolalia. As crianças com TEA deste estudo apresentaram habilidades comunicativas e aspectos do desenvolvimento cognitivo comprometidos e maior número de ecolalias imediatas. Estudos com o tema ecolalia ainda são escassos na literatura nacional. Este relato de casos clínicos pode contribuir para futuras pesquisas sobre a caracterização da linguagem em crianças com TEA e conduta terapêutica dos fonoaudiólogos.

DESCRITORES: Transtorno Autístico; Ecolalia; Linguagem

REFERENCES

1. American Psychiatric Association: Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition. Arlington, VA: American Psychiatric Association; 2013.

2. Organização Mundial de Saúde. CID-10: Classificação Internacional de Doenças. São Paulo: EDUSP; 2000

3. Tager-Flusberg H, Rogers S, Cooper J, Landa R, C Lord, Paul R et al. Defining spoken language benchmarks and Selecting Measures of expressive language development for young children with autism spectrum disorders. J Speech Lang Hear Res 2009;52(3):643-52.

4. Oliveira MT. A Diversidade Sintomática na Ecolalia. Rev Dist Comum. 2003;2(4):351-60

5. Fernandes FDM. Autismo Infantil - Repensando o enfoque fonoaudiológico - aspectos funcionais da comunicação. São Paulo: Ed. Lovise; 1996.

6. Bleszynski JJ. Speech of People with Autism. The New Educational Rewiew. 2009;18(2):119-37.

7. Bell TP, Cohly HHP, Isokpehi RD, Kostyuk N, Oyeleye TO, Rajnarayanan RV. Areas of language impairment in autism. Autism Insights [Internet], 2010; 2p.318. Available in: http://www.lapress.com/redirect_file.php?fileId=3052&filename=2234-AUI-Areas-of-Language-Impairment-in-Autism.pdf&fileType=pdf

8. Delfrate CB, Santana AP. A aquisição de linguagem na criança com autismo: um estudo de caso. Psicol estud. 2009;14(2):321-31.

9. Gauderer C. Autismo e outros atrasos do desenvolvimento: Guia prático para pais e profissionais. 2ª edição. Rio de Janeiro: Revinter; 1997.

10. Sterponi L,Shankey J.Rethinking echolalia: repetition the interactional resource in the communication of a child with autism. J Child Lang. 2014;41(2):275-304.

11. Grossi D, R Marcone, Cinquegrana T, M. Gallucci On the differential nature of induced and incidental echolalia in autism. J. Intellect disabil Res. 2013;57(10):903-12.

12. Saad AGF, Goldfeld M. A ecolalia no desenvolvimento da linguagem de pessoas autistas: uma revisão bibliográfica. Pró-fono R Atual Cient. 2009;21(3):255-60.

13. Troyb E, Knoch K, Barton M. Phenomenology of ASD: Definition, syndromes, and major features. In: Fein DA, editor. The neuropsychology of autism. New York: Oxford University Press; 2011. p. 9-34.

14. Santen JPH, Sproat RW, Hill AP. Quantifying Repetitive Speech in Autism Spectrum Disorders and Language Impairment. Autism Res. 2013;6(5):372-83.

15. Zorzi JM, Hage SRV. Protocolo de Observação Comportamental: Avaliação de Linguagem e

Aspectos Cognitivos Infantis. 1ª edição. São José dos Campos: Ed. Pulso; 2004.

16. Prizant BM, Duchan JF. The functions of immediate echolalia in autistic children. J Speech Lang Hear Dis. 1981;46(3):241-9.

17. Fombonne E. Epidemiology of pervasive developmental disorders. Pediatr Res. 2009;65(6):591-8.

18. Lai, MC, Lombardo MV, Baron-Cohen S. "Autism". The Lancet. 2014;383(9920):896-910.

19. Dworzynski K, Ronald A, Bolton. P; Happe F. How different are girls and boys above and below the diagnostic threshold for autism spectrum disorders. J Am Acad Child Adolesc Psychiatry. 2012;51(8):788-97.

20. Elsabbagh M, Johnson MH. Getting answers from babies about autism. Trends Cogn Sci. 2010;14(2):81-7.

21. Zwaigenbaum L, Bryson S, Lord C. Clinical assessment and management of toddlers with suspected autism spectrum disorder: insight from studies of right-risk infants. Pediatrics. 2009;123(5):1383-91.

22. Kozlowski AM, Matson JL, Horovitz M, Worley JA, Neal D. Parents's first concerns of their child's development in toddlers with autism spectrum disorders. Developmental Neurorehabilitation. 2011;14(2):72-8.

23. Bernard-Optz V, Chen A, Kok AJ, Srira N. Analysis of pragmatic aspects of communication behavior of verbal and nonverbal autistic children. Prax Kinderpsychol Kinderpsychiatr. 2000;49(2):97-108.

24.Prizant MB, Rydell PJ. Analysis of functions of delayed echolalia in autistic children. J Speech Lang Hear Res. 1984;27(2):183-92

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Mailing address:
Cíntia Alves Salgado Azoni
Rua Pastor Jeronimo Gueiros, 1234, ap.802 -
Bairro Tirol
Natal – RN – Brasil
CEP: 50020-660
E-mail: cintiasalgadoazoni@gmail.com