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The use of nouns and verbs by children with Down syndrome in two different situations

Utilização de substantivos e verbos por crianças com síndrome de Down em duas situações diferentes

ABSTRACT

Purpose: To verify the use of nouns and verbs by children with Down syndrome and to compare this use between conditions of interaction with the mother and the Speech-Language Pathologist (SLP). **Methods:** Participants were 21 children aged between 5 and 11 years, divided into three groups, according to chronological and mental age as established by the results of the Primary Tests of Nonverbal Intelligence. The speech sample was obtained through free interaction situations that were videotaped during session of 30 minutes and transcribed in specific protocols. The first 100 utterances from the first five minutes were used. The interval between each situation ranged from 7 to 15 days. *T*-test and analysis of variance were used for statistical analysis and the significance level adopted was of 5%. **Results:** More verbs than nouns were used in both conditions; however, a higher number of nouns was observed during the interaction with the SLP. The between-group comparison in the interaction with the SLP shows significant differences for verbs and nouns, but during the interaction with the mother, there was tendency for difference only for the verbs. **Conclusion:** The data indicate the growing development on using of nouns and verbs according to the increase of age. There was a higher use of verbs when compared with nouns mainly in the condition of interaction with the SLP.

RESUMO

Objetivo: Verificar a utilização de substantivos e verbos por crianças com síndrome de Down e comparar esse uso em situações de interação com o terapeuta e com a mãe. **Métodos:** Participaram 21 crianças com idades entre 5 e 11 anos, divididas em 3 grupos iguais com base nas idades cronológica e mental, a partir da aplicação do *Primary Test of Nonverbal Intelligence*. A coleta de fala foi feita a partir de situações de interação livre, gravadas em vídeo por período de 30 minutos e transcritas em protocolo específico, sendo utilizados os primeiros 100 enunciados, a partir dos 5 minutos iniciais. O tempo de intervalo entre cada situação foi de 7 a 15 dias. A análise estatística utilizou o teste-*t* pareado e a análise de variância (ANOVA). Foi adotado o valor de significância de 5%. **Resultados:** Foram produzidos mais verbos do que substantivos nas duas situações de interação, sendo mais verbos e substantivos com o terapeuta do que com a mãe. A comparação entre os grupos na interação com o terapeuta mostrou diferença tanto para substantivos quanto para verbos e, com a mãe, apenas tendência à diferença para os verbos. **Conclusão:** Os dados apontam para crescente desenvolvimento no uso de substantivos e de verbos de acordo com o aumento da idade. Houve maior utilização de verbos que de substantivos, principalmente na situação de interação com o terapeuta.

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INTRODUCTION

Studies on language development reinforce the existence of synchronicity between lexical and grammatical development and indicate that, at first, lexical development occurs faster because of the need for a minimum number of words in order for grammar to develop, allowing the use of prepositions and conjunctions⁽¹⁻⁵⁾. A strong source of information for the child to categorize nouns and verbs is the lexical co-occurrence in similar sentence structures, that is, the use of the same noun or verb in sentences that maintain the same syntactic structure, which leads to the ability of generalization⁽¹⁾. Another important source is the position in which the word appears on the sentence^(6,7).

The literature suggests the presence of a higher number of nouns than verbs in early language development^(8,9) and ensures that the difference between these terms decreases with the increasing age of child^(1-3,8). Some factors are cited as influencing the preference in the initial acquisition of nouns over verbs, such as⁽⁸⁾ frequency, salience by the position on the sentence, morphological transparency and pragmatic salience.

In general, it is considered that nouns are learnt earlier and more easily than verbs because they are related to concrete and basic objects of usual knowledge in addition to being conceptually simpler; have the possibility to be hierarchically ordered in a category; present more predictable semantic relations than other word classes^(4,7,8).

As for verbs, it is argued that their emergence is late due to factors such as being directly related to the argument that precede it or follow it on the sentence structure; refer to transient events that are not perceived by the young child although situational aspects are relevant to meaning; are more likely to have their meaning changed according to the context^(8,9).

In lexical acquisition and development as well as in lexical use, many researchers point out the great influence of the environmental context and the relationship with the mother. The strong association between how the mother responds to her child's communication and the level of functional communication made by the child is also pointed out⁽¹⁰⁾, which include preferential use of nouns and verbs by mothers depending on cultural characteristics and language structure⁽¹¹⁾. The manner in which children use words is also pointed to be strongly linked to the frequency and pattern of use of these words by their mother⁽⁷⁾, besides the emphasis on the word at the end of the sentence⁽⁶⁾.

Findings of national studies⁽¹²⁻¹⁴⁾ in which the evolution in the use of verbs in Brazilian Portuguese in children with typical development are compatible with findings of international studies and indicate that the acquisition of this word class is based on usage and attention to cues that are provided by context, syntactic and semantic structures. In contrast, data from these national studies show that, unlike the international literature reports, children between 2 and 4 years of age express more verbs than nouns. The researchers indicate that these children are in the expansion

phase of verb use because they are already older than 2 years, and had undergone an important growth in terms of use of number of nouns and, therefore, verbs are needed for combination of words.

Several studies on language development of children with Down syndrome (DS)⁽¹⁵⁻²⁰⁾ highlight the existing gap regarding comprehension and expression of oral language, the latter being most affected, in addition to demonstrating the important influence of cognitive development as well as the environment and family in the process. As for vocabulary, some authors^(15,17,20,21) affirm that what contributes to the efficiency of lexical acquisition and subsequent combination of words into sentences in children with DS is the frequency with which words are used as well as their position within the sentence, especially for nouns and verbs.

When studying the role of the mother as an active participant in the learning process, authors^(22,23) have reported that children with delayed language development, including those with DS, have certain characteristics that favor the use of shorter sentences with simplified syntax and morphology by their parents. These characteristics can be synthesized into unintelligibility, inappropriate use of grammar, and difficulties to initiate, sustain and adapt conversational topics.

When considering language interventions in these children and the role of the Speech-Language Pathologist (SLP), studies have discussed the performance of these professionals⁽²⁴⁻²⁶⁾, but few refer to children with cognitive deficits and, more specifically, DS^(10,25).

From the foregoing, the purpose of this study was to verify the use of nouns and verbs by children with DS and compare their use in situations of interaction with their SLP and mother.

METHODS

This study was approved by the Ethics Committee for Analysis of Research of the institution, under number 0940/07, and procedures were only initiated after reading and approval by parents or guardians of the informed consent form.

Twenty-one children with DS with chronological ages between 5 and 11 years participated. Children were divided into three groups of seven children each, according to their mental age (MA) obtained through the Primary Test of Nonverbal Intelligence⁽²⁷⁾, which provides this information based on nonverbal intelligence to cognitive abilities. The groups were composed of G1: MA between 3 years and 3 years and 11 months (mean age of 3 years and 1 month); G2: MA between 4 years and 4 years and 11 months (mean age of 4 years and 2 months); G3: MA between 5 years and 5 years and 11 months (mean age of 5 years and 3 months).

The following inclusion criteria were considered: simple trisomy of chromosome 21; MA between 3 years and 5 years and 11 months; audiological results suggesting normal hearing; absence of visual impairment, psychiatric disorders and/or psychological and neurological diseases; speech and language therapy at the institution for at least 1 year.

The collection of speech samples was carried out from the SLP-child and mother-child interactions with the use of toys during symbolic play. The sessions were videotaped for a period of 30 minutes and transcribed into a specific protocol. With the aim of controlling the interference of time between the two interaction conditions, an interval between 7 and 15 days was considered between the two sessions. The order of interaction conditions was not established.

The SLP-child interaction condition was obtained with the SLP of each child to control for possible interference of unfamiliarity with experimenter. The contact between the dyad should be taking place for at least 6 months. Although dyads were composed of different SLPs, all were under the same therapeutic model training and under supervision by the same SLPs.

For transcription of the speech samples, the first 100 segments (utterances) were used. The first 5 minutes were discarded because they were considered as the period of the child's adaptation to each condition. For the division of segments, the same criterion adopted in other studies with Brazilian children⁽¹²⁾ was used, considering the mean length of utterances. Thus, segment or utterance was considered the oral emission that occurred until the change of subject by the child, change the focus of attention of the child, or the interruption by the speaker. Nouns and verbs were analyzed.

Data were statistically analyzed with paired *t*-test and analysis of variance (ANOVA). The value of significance was set at $p \leq 0.05$.

RESULTS

Table 1 displays the descriptive statistics of the performance of children as a single group for each grammatical category (nouns and verbs) in each of the contexts of interaction.

Table 1. Performance of all children on each grammatical category in the two interaction conditions

Condition	Mean \pm SD	Min–Max	Med. (1stQ–3rdQ)
Therapist			
Noun	36.5 \pm 20.5	7.0–90.0	33.0 (22.0–47.0)
Verb	70.1 \pm 26.5	22.0–133.0	71.0 (51.0–89.5)
Mother			
Noun	43.6 \pm 18.4	17.0–83.0	43.0 (31.0–50.5)
Verb	55.5 \pm 25.7	17.0–99.0	55.0 (32.0–74.5)

Legend: SD = standard deviation; Min = minimum; Max = maximum; Med. = median; 1stQ = first quartile; 3rdQ = third quartile

Children produced more verbs than nouns during interactions with the SLP and the mother, and in higher numbers with the SLP. It is interesting to note that for nouns and verbs the maximum values were observed on the SLP condition. In the comparison between nouns and verbs in each condition, the *t*-test indicated that the use of both differs with the SLP ($t_{20}=5.485$, $p<0.001$) and mother ($t_{20}=2.152$, $p=0.044$). In the comparison between SLP and mother for each grammatical class, the *t*-test indicated that the use of nouns do not differ depending on the interlocutor ($t_{20}=1.465$, $p=0.158$), but a

difference in the use of verbs is observed ($t_{20}=2.958$, $p=0.008$), with higher frequency occurring on the SLP condition.

Table 2 presents the descriptive statistics of the performance of each group for each grammatical category (nouns and verbs) in each of the contexts of interaction.

Table 2. Performance of each group according grammatical categories and interaction condition

	Therapist		Mother	
	Noun	Verb	Noun	Verb
G1	21.6 (\pm 10.0)	50.7 (\pm 18.7)	35.4 (\pm 12.4)	40.1 (\pm 23.5)
G2	37.1 (\pm 14.6)	70.0 (\pm 19.5)	44.0 (\pm 18.6)	53.7 (\pm 16.2)
G3	50.9 (\pm 24.2)	89.6 (\pm 26.8)	51.4 (\pm 21.9)	72.6 (\pm 27.7)

*Mean (\pm standard deviation)

Legend: G1 = group 1; G2 = group 2; G3 = group 3.

A gradual increase in the values corresponding to the average use of nouns and verbs with the increase in age of the groups is observed for each interaction situation.

Table 3 shows the between-group comparison for each grammatical class in interactions with the SLP.

Table 3. Between-group comparison for nouns and verbs on the interaction with the SLP

	Mean difference	Standard error	p-value	CI
Noun				
G1xG2	-15.57	9.27	0.240	-39.2–8.1
G1xG3	-29.29	9.27	0.014*	-52.9–5.6
G2xG3	-13.71	9.27	0.324	-37.4–9.9
Verb				
G1xG2	-19.29	11.76	0.255	-49.3–10.7
G1xG3	-38.86	11.76	0.010*	-68.9–8.8
G2xG3	-19.57	11.76	0.246	-49.6–10.4

*Significant value ($p<0.05$) – Tukey test.

Legend: G1 = group 1; G2 = group 2; G3 = group 3; CI = confidence interval

The one-way ANOVA revealed between-group difference for nouns ($F=5.001$, $df=2$, $p=0.019$) and verbs ($F=5.461$, $df=2$, $p=0.014$). The Tukey test indicated that this difference is restricted to the comparison between groups 1 and 3 for both grammatical classes.

Table 4 shows the between-group comparison for each grammatical class during interactions with the mother.

Table 4. Comparison between groups for nouns and verbs, the interaction with the mother

	Mean difference	Standard error	p-value	CI
Noun				
G1xG2	-8.57	9.66	0.655	-33.2–16.1
G1xG3	-16.00	9.66	0.249	-40.7–8.7
G2xG3	-7.43	9.66	0.726	-17.2–32.1
Verb				
G1xG2	-13.57	12.26	0.522	-44.9–17.7
G1xG3	-32.43	12.26	0.042*	-63.7–1.1
G2xG3	-18.86	12.26	0.297	-50.1–12.4

*Significant value ($p<0.05$) – Tukey test; CI = confidence interval

Legend: G1 = grupo 1; G2 = grupo 2; G3 = grupo 3.

The one-way ANOVA revealed no between-groups difference for nouns ($F=1.373$, $df=2$, $p=0.279$), but showed a tendency to significance for verbs ($F=3.528$, $df=2$, $p=0.051$). The Tukey test confirmed no difference between groups for nouns, but confirmed difference for verbs between groups 1 and 3.

DISCUSSION

In this study, the participants were grouped by cognitive development based on nonverbal intelligence to cognitive abilities⁽²⁷⁾ to minimize the variability between chronological age and cognitive development⁽²⁸⁾. There are many studies that relate to the performance variability in the different areas of development of children with DS such as cognitive, language, social, emotional and motor. Some studies present findings in relation to language development and disorders⁽¹⁵⁻²¹⁾. It is suggested that study participants are grouped by MA besides chronological age^(16,17,19,21).

Another precaution was taken about the participation of interlocutors in both interaction conditions. The participation of mothers was selected as most of the studies on this topic present data obtained with this interlocutor^(10,22,23,29). The option of having the SLP as one interlocutor was made to maintain the professional who was already working on the intervention of the child to avoid an unfamiliarity bias. To ensure uniformity in the intervention method, all SLPs were under the same supervision for at least 9 months, as suggested by studies on the training of professionals working with language^(10,24-26).

Findings of the responses of all participants of this study revealed that children used more verbs than nouns in the two conditions (mother and SLP), contradicting the literature when referring to the early period of language development^(4,5,8,9). Some studies point to the syntactic structure of the verb associated to language structure. In Portuguese, the use of the verbs is related to such a structure^(8,12). National studies focusing on the use of word classes by children during language development show this factor as one of the reasons for the increased use of verbs^(12,13). The data of this study corroborate these results.

The literature suggests that the process of learning nouns occurs during the first year of a child's life and is intensified during the second year; furthermore, nouns are easily learnt due to factors such as their frequency in adult speech, relationship with concrete objects and conceptual simplicity, besides pragmatic salience^(4,5,7,8). The increased use of verbs follows this period, as their function is to promote the syntactic structure of utterances, essential for the proper combination of words^(3,6-8). In short, these factors would justify the predominance of nouns over verbs in the early periods of language development^(4,5,7-9), but similar with increasing age of the children^(3,6,8). Comparative studies of different languages show that romanic languages, including the Portuguese, have richer morphology in relation to verbs with inflections related to time, mode, number and person, which would hinder the acquisition by young children^(2,6,8,12,13,28).

Other factors that favor the findings on increased use of verbs by participants of this study refer to the process of learning new verbs at the initial period of language acquisition during which children use syntactic cues to interpret sentences with

these verbs⁽¹⁾ and count with the help of more general verbs (used in context with greater frequency) that are important because they allow the discovering of syntactic patterns governing groups of verbs⁽⁴⁾. The influence of the semantic domain of a particular meaning for the child — such as the use of solicitation or attention actions — may be involved in certain verbs or the way they are used⁽⁸⁾, which frequently occurs in the communication of the adult to the child.

The findings of this study corroborate the age effect argument. Studies focusing on typical language development indicate that the preference for the use of nouns over verbs occurs during the period of early lexical acquisition (until approximately the age of 2 years) when a linear increase in the use of verbs occurs^(3,7,8). This issue was mentioned in national studies^(12,13) on the discussion that participation of children between 2 and 4 years of age may have interfered on the finding of increased use of verbs when compared with nouns precisely because this is the phase of expansion in the use of verbs.

One cannot ignore the fact that the children in this study were between 5 and 11 years old although they had cognitive development between 3 and 5 years of age. Their chronological age yield them benefits in terms of years of experience and exposure to the structure of their language, despite the cognitive deficits that permeates DS. The international literature reinforces these comments and advocates studies on language development of children with DS from approximately 24 to 30 months of age due to the fact that these children have delayed oral expression^(16-18,20).

Importantly, when comparing the performance between the groups in both conditions, there was a gradual increase in the use of both verbs and nouns, but always with a predominance of verbs. This demonstrates that participants were in a situation of lexical and grammatical development, moving toward higher quality in relation to grammar. According to studies^(2,3,5,6), this fact will allow the occurrence of grammatical complexity with the use of adjectives, prepositions and conjunctions. The environmental linguistic input contributes to the development of the child's linguistic ability and cognitive development⁽³⁾. Once again, data obtained with the studied children with DS are in agreement with the literature.

Studies dealing with lexical development of nouns and verbs concern naturalistic or structured observations, or data obtained from questionnaires with the participation of parents, mostly mothers^(2,6,7,11,23). Researchers who study different disorders, with focus on DS, use the same data-obtaining method with both mothers and SLPs in the field of speech and language^(10,22,23,28,29). The communication partner and the task are important components of the context of which the children will be part of, and their communicative performance may vary; however, studies that compare different situations in the study of lexical development are scarce⁽²²⁾. Thus, this study aimed to obtain data that offered the possibility of such comparison. In this sense, the findings showed that, in both conditions, children with DS used more verbs than nouns. But one fact deserves attention: the use of these classes of words in interactions with the SLPs was greater than that during interactions with their mothers.

The fact that the participants of this study produced more verbs than nouns during interaction with their mothers may corroborate findings from the literature showing that mothers of children with DS are more directive in their oral communication, formulate few questions and use more affirmative sentences besides making few references to the environment. It is observed that these mothers refer more often to children's actions^(22,23). The fact that mothers emphasize the final word in a sentence structure and the way children use words is strongly linked to the frequency and pattern of use of these words by their mother^(6,7,10,22).

Researchers have also pointed out a strong association between how mothers respond to oral expressions of their children and the level of functional communication to make adjustments in oral language according to their perception on the linguistic competence of the children regardless their chronological age^(10,22). Although this was not the focus of this study, analysis of situations of mother-child interaction points to the possibility of considering these facts as feasible for the population studied, suggesting the importance of being analyzed in a systematic way.

Literature is incipient specifically with regard to the role of the SLP in situations of interaction with children with DS on lexical use. It is pointed out that these professionals work in a directive manner to model and elicit communicative behaviors, including oral expression⁽¹⁰⁾. A study that aimed to understand the role of these professionals in their work with children with cognitive deficits of no specific source reported that the therapist also seeks the oral communication environment adequacy with these children⁽³⁰⁾. Such facts are not a part of studies that focus on the SLP approach with a concern on tasks/procedures and use of materials that not always aim at the pursuit of realistic situations in therapy^(24,26).

The analysis of the data on the use of nouns and verbs by children with DS in interaction with their mothers and SLPs allows the observation that the role played by the SLP showed selective actions and greater concern with situations that allow oral responses by the participants, which corroborates the literature. The greater difference on average use of verbs and nouns in interactions with the SLP than with the mother is highlighted.

A study conducted with children with language delay of different etiologies, including children with cognitive impairment, found that during therapeutic intervention most of the SLP attention was focused on activities that would promote children's oral language, such as situations of competitive play and symbolic play in which his directive action was apparent⁽³⁰⁾. During speech and language therapy focusing on language of children with DS such situation can also be observed, although no study in the national literature deal specifically with this fact. The analysis of the findings of this study points to the importance of such investigation.

In contrast, one can observe greater balance on children's use of the classes of words studied during interaction with their mothers. Although this deserves more detailed analyses, the justification for this fact might be in the finding^(10,22,23) that mothers of children with DS adapt their language to the level

of their child development, addressing them with attention to competence and not to the chronological age besides aiming a functional and not ideal communication.

The focus of this study was to investigate the use of nouns and verbs by children with DS during the interactions with their mothers and with their SLPs. The option to compare both situations was based on the literature, with emphasis on a study⁽²²⁾ that investigated the influence of the communicative partner and the context in which communication is performed. A limitation of this study was not analyzing the type of phrasal structures used by mothers and therapists to promote more detailed analysis of the relationship between the use of nouns and verbs according to the communication context. It is noteworthy that, although it had not been part of the central objective of the study, this point deserves attention.

In contrast, the general data analysis indicates a point that deserves to be considered. The use of some of the findings of literature that can influence the effectiveness of the therapeutic process on the language of children with DS, with a focus on lexical and grammatical development: position of the word in the sentence^(5-7,17); redundancy and regularity^(5,11,17); co-occurrence of the word in similar sentence structures⁽⁵⁾; imitation of the model given by the adult and focal attention allied with speech (responsiveness by the adult)^(6, 10,11,15,23,30); references to context and living (naturalistic condition); and the use of non-directive questions with wait for responses^(23,30).

CONCLUSION

The data indicate greater use of verbs than nouns in both conditions of interaction for the children with DS with cognitive development between 3 and 5 years. It is noteworthy that there was greater use of both types of words during the interaction with the SLP when compared to that with the mother and, in the latter case, there was a greater balance between such use. The use of nouns as verbs increased according to the increasing age of the groups studied. The literature supports the results relating them to the influence the language development of the child by the structure of the language, and the context and role of interactions with mothers and SLPs.

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REFERENCES

1. Gertner Y, Fisher C, Eisengart J. Learning words and rules: abstract knowledge of word order in early sentence comprehension. *Psychol Sci*. 2006;17(8):684-91.

2. Dixon JA, Marchman VA. Grammar and the lexicon: developmental ordering in language acquisition. *Child Dev.* 2007;78(1):190-212.
3. Le Normand MT, Parisse C, Cohen H. Lexical diversity and productivity in French preschoolers: developmental, gender and sociocultural factors. *Clin Linguist Phonet.* 2008;22(1):47-58.
4. Childers JB. Early verb learners: creative or not? *Monogr Soc Res Child Dev.* 2009;74(2):133-9.
5. Lany J, Saffran JR. From statistics to meaning: infant's acquisition of lexical categories. *Psych Sci.* 2010;21(2):284-91.
6. Bornstein MH, Cote LR, Maital S, Painter K, Park SY, Pascual L, et al. Cross-linguistic analysis of vocabulary in young children: Spanish, Dutch, French, Hebrew, Italian, Korean, and American English. *Child Dev.* 2004;75(4):1115-39.
7. Goodman JC, Dale PS, Li P. Does frequency count? Parental input and the acquisition of vocabulary. *J Child Lang.* 2008;35(3):515-31.
8. Bassano D. Early development of nouns and verbs in French: exploring the interface between lexicon and grammar. *J Child Lang.* 2000;27(3):521-59.
9. Spanoudis GC, Natsopoulos D. Memory functioning and mental verbs acquisition in children with specific language impairment. *Res Dev Disabil.* 2011;32(6):2916-26.
10. Mahoney G, Perales F, Wiggers B, Herman B. Responsive teaching: early intervention for children with Down syndrome and others disabilities. *Down Syndr Res Pract.* 2006;11(1):18-28.
11. Hoff E. How social contexts support and shape language development. *Dev Rev.* 2006;26(1):55-88.
12. Araujo K. Aspectos do desenvolvimento gramatical de crianças pré-escolares em desenvolvimento normal de linguagem [dissertação]. São Paulo: Faculdade de Filosofia, Letras e Ciências Humanas, Universidade de São Paulo; 2003.
13. Befi-Lopes DM, Cáceres AM. Aquisição de verbos em pré-escolares falantes do português brasileiro. *Rev CEFAC.* 2007;9(4):444-52.
14. Befi-Lopes DM, Cáceres AM. Análise da diversidade de verbos enunciados na fala espontânea de pré-escolares brasileiros. *Pró-Fono R Atual Cient.* 2010;22(1):3-6.
15. Bird EKR, Gaskell A, Babineau MD, Macdonald S. Novel word acquisition in children with Down syndrome: does modality makes a difference? *J Commun Disord.* 2000;33(3):241-66.
16. Ypsilanti A, Grouios G, Alevriadou A, Tsapniki K. Expressive and receptive vocabulary in children with Williams and Down syndromes. *J Intellect Disabil Res.* 2005;49(Pt 5):353-64.
17. Abbeduto L, Warren SF, Connors FA. Language development in Down syndrome: from the prelinguistic period to the acquisition of literacy. *Ment Retard Dev Disabil Res Rev.* 2007;13(3):247-61.
18. Roberts J, Price J, Barnes B, Nelson L, Burchinal M, Hennon EA, et al. Receptive vocabulary, expressive vocabulary, and speech production of boys with Fragile X syndrome in comparison to boys with Down syndrome. *Am J Ment Retard.* 2007;112(3):177-93.
19. van Balkom H, Verhoeven L, van Weerdenburg M. Conversational behaviour of children with Developmental Language Delay and their caretakers. *Int J Lang Commun Disord.* 2010;45(3):295-319.
20. Martin GE, Klusek J, Estigarribia B, Roberts JE. Language characteristics of individuals with Down syndrome. *Top Lang Disord.* 2009;29(2):112-32.
21. Vicari S, Caselli MC, Gagliardi C, Tonucci F, Volterra V. Language acquisition in special populations: a comparison between Down and Williams syndromes. *Neuropsychologia.* 2002;40(13):2461-70.
22. Pino O. The effect of context on mother's interaction style with Down's syndrome and typically developing children. *Res Dev Disabil.* 2000;21(5):329-46.
23. Venuti P, de Falco S, Esposito G, Zaninelli M, Bonrstein MH. Maternal functional speech to children: a comparison of autism spectrum disorder, Down syndrome, and typical development. *Res Dev Disabil.* 2012;33(2):506-17.
24. Horton S, Byng S, Bunning K, Pring T. Teaching and learning speech and language therapy skills: the effectiveness of classroom as clinic in speech and language therapy student education. *Int J Lang Comm Dis.* 2004;39(3):365-90.
25. Law J. The implications of different approaches to evaluating intervention: evidence from the study of language delay/disorder. *Folia Phoniatr Logop.* 2004;56(4):199-219.
26. Werner S, Grayzman A. Factors influencing the intention of students to work with individuals with intellectual disabilities. *Res Dev Disabil.* 2011;32(6):2502-10.
27. Ehrler DJ, McGhee RL. Primary Test of Nonverbal Intelligence – PTONI. Texas: Pro-Ed; 2008.
28. Marques SF, Limongi SCO. A extensão média do enunciado (EME) como medida do desenvolvimento de linguagem de crianças com síndrome de Down. *J Soc Bras Fonoaudiol.* 2011;23(2):152-7.
29. Ruser TF, Arin D, Dowd M, Putnam S, Winklosky B, Rosen-Sheidley B, et al. Communicative competence in parents of children with autism and parents of children with specific language impairment. *J Autism Dev Disord.* 2007;37(7):1323-36.
30. Marshall J, Goldbart J, Phillips J. Parents' and speech and language therapists' explanatory models of language development, language delay and intervention. *Int J Lang Commun Disord.* 2007;42(5):533-55.