

LEXICAL DEVELOPMENT, SPEECH LANGUAGE DISORDERS AND SCHOOL PERFORMANCE: LITERATURE REVIEW

Desenvolvimento lexical, alterações fonoaudiológicas e desempenho escolar: revisão de literatura

Bárbara Amélia Costa Pedrosa⁽¹⁾, Jordana Siuves Dourado⁽¹⁾, Stela Maris Aguiar Lemos⁽²⁾

ABSTRACT

Lexical development is directly associated with the ability to understand and produce various types of meaning. Mental lexicon is accessed to represent an object, an attribute or any other information. The word learning and association processes are necessary for lexical development. The purpose of this study is to analyze and compile findings about the relationship between lexical development, speech disorders, phonological awareness, school performance and auditory processing through literature review. The scientific productions found in this review suggest the relevance of lexical development to phonological acquisition and to the subsequent written language acquisition. As for phonology, the articles expose the importance of appropriate lexical development to effective phonological acquisition.

KEYWORDS: Speech, Language and Hearing Sciences; Language; Vocabulary; Language Development

■ INTRODUCTION

Lexical development is directly related to the ability to understand and produce various kinds of meanings. The mental lexicon is accessed to represent an object, an attribute or any other information¹. It increases over the years with the development of the learning process and use of words. The literature shows the importance of the lexical acquisition and development and synchronicity with the other language subsystems, especially the syntactic subsystem^{2,3}.

During the lexical acquisition process, many semantic deviations may occur since the significant traces feature the different use of the words in different contexts. Thus, when the meaning of a particular word is not the same in the lexical

inventory of the child as of the adult, generating lack of correspondence, it is defined that there is presence of semantic deviations. Such deviations can be classified as: overextension, subextension, antonymy, deviation by contiguity relations, and deviation by morphological and phonological proximity⁴.

From the early stages of literacy, the lexical development directly influences writing, as to write any word it is necessary to search in the mental lexicon⁵.

To find this lexical representation, it is crucial both an orthographic as a phonological processing, as the two information are contained in the word representation⁵. Given these facts, it can be seen that both the vocabulary as the phonological development are important for the acquisition and development of the written language, since the phonological decoding enables the child to acquire word-specific spelling information⁵. Thus, writing becomes the link between the basic understanding between sounds and their spelling, establishing therefore the relationship between spoken and written language.

In this context, it is necessary to analyze the studies already conducted on the theme, aiming at a critical reflection and analysis of the contributions

⁽¹⁾ Universidade Federal de Minas Gerais – UFMG; Belo Horizonte, MG, Brasil.

⁽²⁾ Departamento de Fonoaudiologia da Universidade Federal de Minas Gerais – UFMG; Belo Horizonte, MG, Brasil.

Source of support: Institutional Program of Scientific Initiation Scholarship PIBIC CNPq - UFMG

Conflict of interest: non-existent

of the literature for planning actions of prevention of disorders and promotion of positive environments for the language development of the children. The purpose of this study is to analyze and compile findings about the relationship between lexical development, speech disorders, phonological awareness, school performance and auditory processing through literature review.

■ METHODS

It is an integrative review of research works that address aspects concerning the prevalence of alterations of vocabulary as well as its acquisition and development. The following steps were taken for the study: elaboration of the guiding question, literature search, data collection, critical analysis of the included studies, discussion of results, review planning and writing.

This review was developed from December 2011 to May 2012, by seeking articles in the following databases: Scielo, Lilacs, Pubmed, Medline and CAPES Portal. So, scientific articles and literature reviews from 2006 to 2012 in Portuguese, English and Spanish were selected. The following descriptors were selected for the study: “vocabulary”, “prevalence”, “language development”, “speech” and “language tests”.

The search for descriptors occurred in two steps. At first, there was the search for articles that answer the following guiding question: “Which is the prevalence of vocabulary changes by the Brazilian and international population?”. In a second step, it was performed a careful analysis of the summary of the articles found and the selection of those that met the inclusion criteria.

Thus, publications of at most six years, in Portuguese, English and Spanish, in which the sample was composed of male and female children were included. Articles that did not belong to the area

of Health, studies on subjects aged equal or older 12 years and that did not submit freely available complete texts were excluded.

The data analysis was performed in two steps and in a descriptive and analytical way. First, the location data, year, authorship, purpose, methodology, age groups, main results and conclusions of the article were identified. Then, a critical analysis of the articles and discussion on the main findings and advances showed by the studies was performed.

■ LITERATURE REVIEW

This review consists of nineteen^{2,4-21} national articles. The design of each study was surveyed, and if not specified, the classification was made according to the theoretical framework on scientific methodology²². For a better understanding of the thematic, the studies were separated by themes, which are presented below.

Figures 1-5 detail the methodological design, main findings related to the theme and prevalence of vocabulary changes, which are distributed among the vocabulary subthemes, vocabulary and phonology, vocabulary and school performance, vocabulary and phonological awareness and vocabulary and hearing processing. Figure 6 shows the prevalence of alterations of the studies of this review.

To study the children’s vocabulary development it is necessary to understand the meaning of the words and the lexical acquiring process⁴. The words can be categorized in three types according to their meanings. The first type are those that have a lexical meaning related to verbs, nouns and adjectives. The second type of words are those that have a verbal meaning, i.e., prepositions, adverbs, conjunctions and pronouns. The third type are the words that have a figurative meaning, which goes beyond the literal meaning, involving metalinguistic skills⁴.

ESTUDY/YEAR	METHODOLOGY	MAIN RESULTS
Athayde et al, 2010	<p>Type of study: Cross-sectional Subjects: 36 children -SG: 14 children with phonological disorders-CG: 22 children with normal language development Age Group: 5y1m to 5y11m29d Tools: Evaluation of the Test of Children's Language-ABFW. Analysis: qualitative and comparative analysis of the performance between the groups using the Kruskal-Wallis statistical test.</p>	<p>In the usual verbal designation (UVD) there were statistically significant differences between SG and CG regarding the conceptual field Shapes and Colors. In relation to No Designations (ND), there was a statistically significant difference only in the Place field. Regarding the substitution process, CG had better performance than SG in the conceptual field Toys and Musical Instruments, with statistically significant difference.</p>
Befi- Lopes et al, 2010	<p>Type of study: Cross-sectional Subjects: 54 children SG: 18 children with diagnosis of Specific Language Impairment (SLI). CG: 36 children without language alterations Age Group: 4y to 8y9m Tools: 48 trissyllables words were selected from the expressive vocabulary of the Test of Children's Language-ABFW Analysis: t test for independent sample and for paired samples, considering the equality of variances, and the analysis of variance (ANOVA).</p>	<p>Children of the CG, aged 4 years, presented better performance in recognition than those of SG. Children of the CG, aged 5 and 6 years, presented better performance in words, pseudowords, and total hits. Children of the SG, aged 4 years, presented significantly poorer performance than those aged 6 years in words, pseudowords and total hits. Regarding age, children of the CG, aged 4 years presented significantly poorer performance than those aged 5 and 6 years in words, pseudowords and total hits. Children of the SG, aged 4 years, presented significantly poorer performance than those aged 6 years in all tasks evaluated. Regarding the extension and modification of the pseudowords, the children of the SG, aged 5 and 6 years, present poorer performance than those of the CG with the same age.</p>
Mota et al, 2009	<p>Type of study: Cross-sectional and quantitative Subjects: 44 children Severe phonological disorders: 6 children Moderate-severe phonological disorders: 3 children Mild-moderate phonological disorder: 15 children Mild phonological disorders: 20 children Age Group: 3y5m to 8y6m29d Tools: Phonological Assessment of Children; Percentage of correct consonants - PCC; and Evaluation of the Test of Children's Language-ABFW. Analysis: Descriptive analysis</p>	<p>The "co-hyponym" substitution process was the most used by all groups, regardless of the degree of severity, and an average of 98.75% was found. Children belonging to average-moderate degree perform more substitution processes presenting an average of 41.57%. The conceptual field with larger number of children with alteration was "Places" and an average of 82.92% of the children of the sample was found. The average-moderate degree showed altered conceptual fields (38.52%), followed by mild degree (31.67%), severe degree (31.48%) and moderate-severe degree (25.93%).</p>
Brancalioni et al, 2011	<p>Type of study: Quantitative cross-sectional Subjects: 150 children GDF (group with phonological disorders): 75 children GDFN (group with normal phonological development): 75 children Age Group: 6y to 6y11m29d Analysis: Independent samples through T Test</p>	<p>GDF showed a lower number of UVD than GDFN in all conceptual fields, being such difference statistically significant; 75% of GDFN children presented two or less occurrences of No Designations (ND), thus GDF presented higher percentages of ND. Regarding the occurrence of Substitution Processes, it was higher for GDF in all conceptual fields, and there was no statistically significant difference only for the conceptual field Shapes and Colors.</p>
Athayde et al, 2009	<p>Type of study: analytical cross-sectional Subjects: 17 children Age Group: 3y5m29d to 8y6m29d Tools: Phonological Assessment of Children; Percentage of correct consonants - PCC; and Evaluation of the Test of Children's Language-ABFW. Analysis: Prevalence</p>	<p>Children with mild phonological disorder presented better results than the others in all tests applied. It was also possible to observe that children of the severe degree performed more no designations and the children of the moderate-severe and mild-moderate degrees performed more substitution processes. The children of the average degree showed results within the normal limits expected.</p>
Costa et al, 2010	<p>Type of study: Comparative Cross-Sectional Subjects: 56 preschool children SG: 28 school children with phonological disorder CG: 28 children with normal speech Age Group: 4y0m29d to 6y11m29d Tools: Evaluation of the Speech and Vocabulary of the Test of Children's Language-ABFW; Tasks of identification and rhyme production and alliteration of the CONFIAS test; Multivariate analysis using the tests: Statistical Package for Social Sciences (SPSS) version 16.0, Mann - Whitney U, Kruskal Wallis and Spearman Coefficient.</p>	<p>SG and CG presented similar performance regarding UVD and substitution process, and a difference was found only in ND, being that SG presented a higher number of no designations. CG showed better performance in metalinguistic competence. There were differences between the age groups in relation to the UVD and substitution process in both groups. Regarding meta phonological competence there were significant differences between the age groups only in the CG. Positive correlations were found among the lexical and metalinguistic skills, most of them good to moderate.</p>

ESTUDY/YEAR	METHODOLOGY	MAIN RESULTS
Barbosa et al, 2011	Type of study: Cross-sectional Subjects: 587 children Age Group: 5y7m29d the 8y7m29d Tools: Speech Disorder Screening Test (TERDARF) Analysis: Two types of analysis were made: the first with the full corpus and the second, corpus without sociocultural change. The collected data were coded and entered using the Statistical Package for Social Sciences software - SPSS, version 15.0, to provide the values of prevalence, sensitivity and specificity, positive and negative predictive values, with the relevant confidence intervals of 95%.	The prevalence of the phonological disorder was of 36.2%. The test had a sensitivity of 94.0%, but low specificity (41.1%). When considering the linguistic variations as normal production, the test showed a sensitivity of 86.7%, specificity 75.3%, positive predictive value 66.7% and negative predictive value of 90.9%

Figure 1 – Summary of the research works related to lexical development.

In the vocabulary subtheme it was verified that three of the articles found^{4,6,7} studied the acquisition of words that have a lexical meaning, being that two^{4,8} evaluated the ability of nominal evocation according to certain figures, and one⁷ studied the most frequent verb types used by the age group studied. Only one of studies⁸ correlate the presence of Specific Language Impairment (SLI) with the performance in naming tests, being that children with this diagnosis showed better performance in the naming test as in the drawing definition tests. Regarding the study of the typology of the most used verbs, the analyzed variables were age and gender⁷. The variable age related to the lexical development of children with SLI should be studied with caution, since the language skills of children with specific language impairments evolve more slowly so that the investigation measure should consider the language development of the individual⁹. It is worth noting that the assumption that the effects of the age may vary according to the interactions between the interference source, nature of the target, and the perceived task characteristics, i.e., the literature draws attention to the possible effects of the perceived task characteristics on the response and semantic access in children²³.

It is worth mentioning the studies^{10,11} that have as subject the acquisition of the expressive and receptive vocabulary, especially in the comparison between the expressive and receptive modalities of vocabulary acquisition. It must be highlighted that the literature points to higher performance in receptive vocabulary tests⁹.

The international literature has stated the importance of the study on lexical development taking into consideration the performance in expressive and receptive vocabulary tasks²⁴.

The data analysis found that a study¹² correlates the vocabulary acquisition of children with Down syndrome with children without alterations and that present similar cognitive development. The study suggested that the lexical performance, both expressive as receptive, of subjects with Down syndrome is lower than of children with proper development, even when they are paired according to mental age.

It is noteworthy that no articles describing the influence of the family environment and the importance of social relationships on the lexical acquisition and development were found, as well as the impacts on the child population, however, there are studies showing the importance of the parental communicative style and profile for the overall language development^{25,26}.

ESTUDY/YEAR	METHODOLOGY	MAIN RESULTS
Araújo et al, 2010.	Type of study: Cross-sectional observational Subjects: 159 children of Daycare Centers 89 children of the first stage - first grade of the early childhood education 70 children of the third stage - last grade of the early childhood education Age Group: 4 to 7 years Tools: Peabody Picture Vocabulary Test –PPVT Analysis: Pearson correlation coefficient and Student T Test.	Regarding age, there were no statistically significant differences between the two age groups. A lower performance than expected for the age in the PPVT was found in 61.0% of the preschool children, 19.4% of children of the first stage, 49.4% of students and 75.7% of the children in the third stage. The children of the first stage performed better than those of the third stage. Most children aged 5, 6 and 7 years presented a poorer performance than the average expected for their age.
Bento et al, 2010	Type of study: Comparative observational cross-sectional Subjects: 60 children Age Group: 7y to 10y11m29d Tools: Sequence of stories, represented by figures, selected by the researchers. Analysis: Non-parametric statistical tests and Kruskal-Wallis statistical test.	Regarding the temporal ordering: there were no statistical differences regarding age, i.e., the performance of all groups was similar. In speech it was observed that with increasing age there is a reduction in the occurrence of descriptive speech and increased intentional speech.
Santos et al, 2012	Type of study: Subjects: 82 children Age Group: 9y11m29d to 10y2m29d Tools: <i>Lindamood Auditory Conceptualization Test</i> (LAC) <i>Comprehensive Test of Phonological Processing</i> –CTOPP, adapted to Brazilian Portuguese Dictation of ten high frequency words (PAF), ten low frequency words (PBF) and ten pseudowords (PP) Analysis: Spearman(r) between vocabulary, LAC and NRO, dictation and redaction tests.	The vocabulary skill was predictive of the quality of the elaboration of writing. However, phonological awareness and rapid serial naming only predict the performance related to the syntactic and grammatical structure.

Figure 2 – Summary of the research works correlating lexical with phonological developments

In the vocabulary and phonology subtheme, seven articles^{2,6,13-17} were found and four of them^{6,13,15-16} compared the performance of children with typical language development with children with speech and language disorders. The literature reminds the interaction between phonology and vocabulary, early acquisition of these subsystems and the importance of the skills acquired for the later stages of language development^{27,28}.

It is noteworthy that six articles^{2,6,13-16} that used the Test of Children's Language-ABFW presented case-control type studies. By correlating the performance between the control group (CG) and the study group (SG), it was possible to note that in some research works^{6,13,15,16}, children with language delay or speech and language disorders showed poorer performance than other children in all tests performed.

In two studies that evaluated the expressive vocabulary^{13,15} through the Test of Children's

Language-ABFW, the lexical field (shapes and colors) showed differences between the results. In one of these studies¹³, differences with statistical significance between the study and control groups were found and, in the other¹⁵ these differences were not reported by the authors.

Two articles evaluated the vocabulary according to the degree of speech disorder^{2,14}. Only in one of them² the children who presented mild speech disorder had higher performance than that of children with other degrees of speech disorder.

Noteworthy is a Japanese study that showed interdependence between speech production and lexical development as, according to the author, the child's ability to produce a particular phonological structure depends on the frequency and amount of exposure to this structure²⁹.

Only one of the articles¹⁷ included the tracking test of articulation disorders.

ESTUDY/YEAR	METHODOLOGY	MAIN RESULTS
Kaminski et al, 2011	Type of study: quantitative cross-sectional Subjects: 24 children CG: children with typical language acquisition SG: children with phonological disorders. Age Group: 5y0m3d to 7y10m29d Tools: Evaluation of the Vocabulary of the Children's Language Test-ABFW and evaluation protocol of the skill of phonological awareness PTCF. Analysis: Analysis of correlation between the performance in both tests performed using the Spearman test. The Mann-Whitney test was used to compare numerical variables between two age groups, and the Kruskal-Wallis test was used to compare numerical variables between the three age groups.	In general, children of the SG reached a poorer performance than those of the CG in the analyzed tasks. Children of the SG, aged five and seven years, presented some significantly lower results than the CG; however there were no differences between the groups of six years old children. Comparing the performance of the children with the reference values, five years old children of both groups had difficulties in the same tasks, of expressive vocabulary and phonological awareness, with varying complexity. The subjects aged six and seven years presented difficulties only in expressive vocabulary.

Figure 3 – Summary of the research works correlating lexical development with school performance

In the lexicon and school performance subtheme, three articles^{5,18,19} that analyzed the performance in vocabulary tests of children of different stages of early childhood education were found. It was observed that most of the children aged five, six and seven years showed poorer performance than the expected average for the age. It was also observed that children who attended the first stage of early childhood education had a better performance than the children of the third stage¹⁸. In one of the studies¹⁹, it was found a decrease of the descriptive

speech in the relevant test according to the increase of the age of the subjects of the study.

The literature shows that the lexical development directly influences the acquisition of writing, i.e., to write any word, from the low frequency ones to the writing of pseudowords, it is necessary to access a previous lexical⁵. There are also indications on the importance of lexical development for the child's development in all curricular areas, as it supports instruction understanding and solving of problems³⁰.

ESTUDY/YEAR	METHODOLOGY	MAIN RESULTS
Quintas et al, 2010	Type of study: Quantitative cross-sectional of exploratory descriptive character Subjects: 18 children Age Group: 5y to 7y11m29d Tools: Evaluation of the Vocabulary of the Test of Children's Language-ABFW, Simplified Evaluation of the auditory processing and Binaural Fusion testing (FB): Alternate Disyllabic Dichotic - Staggered Spondaic Word (SSW) of the central auditory test: application manual 16 and the Frequency Standard Test - Pitch Pattern Sequence (PPS) with pure tone of Musiek. Analysis: The statistical analysis was performed with SAS software (Statistical Analysis System) version 8.02, with Pearson correlation analysis.	Considering the UVD, the overall average obtained was 61%, regarding ND, the average was 3.66% and regarding the substitution process the average was 33.33%. When relating the performance in the vocabulary tasks and hearing tests it is observed a positive correlation between the UVD and the result of the processing tests, i.e., the better the performance in the hearing process, the better its usual verbal designation. This correlation was made between the successes of processing and the percentage of UVD. Regarding the ND class, the worse the subjects present in processing tests, there higher was the number of no designations in these conceptual fields. Regarding the substitution process, the worse the performance in the tests presented, the greater the number of substitution processes present.

Figure 4 – Summary of the research works correlating lexical development with phonological awareness

In the vocabulary and phonological awareness subtheme, only one study²⁰ comparing the performance of the children of the control group children with the ones of the study group, found that children who had speech disorders had poorer performance than those with typical language acquisition. No statistically significant differences were found at the age of six years. It was also observed that only five

years old subjects, of both groups, had difficulties in the tests of phonological awareness.

Before the data found there is a need for further research on the contribution of phonological development for the expansion of the lexicon besides the importance of the use of variables such as age and literacy.

ESTUDY/YEAR	PLACE	PREVALENCE OF ALTERATIONS
Lopes et al, 2006	São Paulo - SP	67% obtained a positive correlation between expressive and receptive vocabulary;
Mota et al, 2009	Santa Maria - RS	98.75% presented the "co-hyponym" substitution process; 41.57% presented substitution processes; 82.92% of the children of the sample presented the conceptual field "Local" as the highest number of alterations; The moderate average degree of phonological disorder showed 38.52% of semantic fields changed; the mild degree 31.67%, the severe degree 31.48% and the moderate-severe degree 25.93%.
Brancalioni et al, 2011	Santa Maria - RS	75% of children in the Group with normal phonological development presented two or less No Designations (ND) occurrences;
Araújo et al, 2010	São Paulo - SP	61% of preschool children presented poorer performance than expected for the age according to the PPVT (Peabody Picture Vocabulary Test); 19.4% of children in the first stage showed lower performance than expected for age; 49.4% of the children of the second stage showed lower performance than expected for the age; 75.7% of children of the third stage presented lower performance than expected for the age.

Figure 5 – Summary of studies correlating lexical development with auditory processing

Oral language difficulties, especially those related to vocabulary and phonology, may be related to auditory processing disorders, since hearing is the most important sense for the language acquisition²¹.

Taking these facts into account, when analyzing the vocabulary and auditory processing subtheme,

a study²¹ correlating the performance of the subjects of the study in the expressive vocabulary test with the results of the auditory processing tests found a positive correlation between them, i.e., the better the performance in the auditory processing test the better the performance in the vocabulary test.

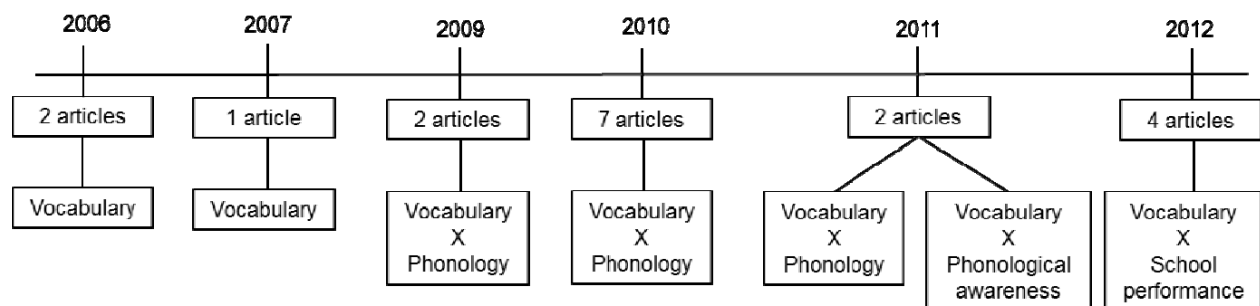


Figure 6 – Chronology of studies according to the most discussed topics in each year

According to the alterations addressed in the articles of this study, two of them¹⁴⁻¹⁵ reported the occurrence of No Designations of words, being that the most found process was the substitution by co-hyponym. One of the studies¹⁰ verified 67% of positive correlation between expressive and receptive vocabulary of the subjects of the sample.

There is a timeline with the issues most addressed by the studies in the past five years. The themes varied over the years but there is a greater number of articles addressing the lexical development related to the speech development and a smaller number of studies that shows the correlation between lexical development and auditory processing. The importance of studies that discuss the influences of the lexical development in the school performance is also highlighted.

■ CONCLUSION

The scientific productions of the review show the relevance of the lexical development for the phonological acquisition and subsequently to the acquisition of written language. Regarding phonology, the articles that were found show the importance of the appropriate lexical development for the effective phonological acquisition.

This literature review showed the importance of the scientific research on the relationship between the analyzed topics and the school performance, since there are few studies that relate them and, according to the findings, there are positive interrelationships that contribute to the school performance of the children.

RESUMO

O desenvolvimento lexical está diretamente relacionado com a capacidade de compreender e produzir vários tipos de significados. Quando se deseja representar um objeto, um atributo ou qualquer outro tipo de informação, o léxico mental é acessado. Para que este desenvolvimento seja adequado faz-se necessário o processo de aprendizagem de palavras e que ocorra a associação entre elas. Esse estudo tem como objetivo analisar e compilar achados acerca das relações entre desenvolvimento lexical, desvio fonológico, consciência fonológica, desempenho escolar e processamento auditivo por meio de revisão de literatura. As produções científicas encontradas apontam a relevância do desenvolvimento lexical para a aquisição fonológica e posteriormente para a aquisição da linguagem escrita. Quanto à fonologia, os artigos encontrados expõem a importância do adequado desenvolvimento lexical para que a aquisição fonológica se dê efetivamente.

DESCRITORES: Fonoaudiologia; Linguagem; Vocabulário; Desenvolvimento de Linguagem

■ REFERENCES

1. Gândara JP, Befi-Lopes DM. Tendências da aquisição lexical em crianças em desenvolvimento normal e crianças com Alterações específicas no desenvolvimento da linguagem. *Rev. soc. bras. fonoaudiol.* [periódico na Internet]. 2010 [citado 2013 Out 25]; 15 (2): 297-304. Disponível em: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1516-80342010000200024&lng=pt.
2. Athayde ML, Carvalho Q, Mota HB, Vocabulário expressivo de crianças com diferentes níveis de gravidade de desvio fonológico, *Rev. CEFAC* [serial on the Internet]. 2009 [citado 2013 Out 25]; 11(Suppl 2): 161-8. Disponível em: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1516-18462009000600005&lng=en
3. Limongi SCO, Oliveira EF, lenne LM, Andrade RV, Carvalho AMA. Utilização de substantivos e verbos por crianças com síndrome de Down em duas situações diferentes. *CoDAS* [periódico na Internet]. 2013 [citado 2013 Out 25]; 25(3):262-7. Disponível em: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S2317-17822013000300012&lng=pt.
4. Hage SRV, Pereira MB. Desempenho de crianças com desenvolvimento típico de linguagem em prova de vocabulário expressivo, *Rev. CEFAC* [serial on the Internet]. 2006 Dec [cited 2013 Oct 25]; 8(4):419-28. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1516-18462006000400003&lng=en
5. Santos, MTM, Befi-Lopes, DM, Vocabulário, consciência fonológica e nomeação rápida: contribuições para a ortografia e elaboração escrita, *J. Soc. Bras. Fonoaudiol.* [serial on the Internet]. 2012 [cited 2013 Oct 25]; 24(3):269-75. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S2179-64912012000300013&lng=en. <http://dx.doi.org/10.1590/S2179-64912012000300013>
6. Befi-Lopes DM, Pereira ACS, Bento ACP. Representação fonológica em crianças com Distúrbio Específico de Linguagem (DEL). *Pró-Fono R. Atual. Cient.* [serial on the Internet]. 2010 [cited 2013 Oct 25]; 22 (3): 305-10. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0104-56872010000300025&lng=en
7. Scherer S, Souza APR. Types e Tokens na aquisição típica de linguagem por sujeitos de 18 a 32 meses falantes do português brasileiro. *Rev. CEFAC* [serial on the Internet]. 2011[cited 2013 Oct 25]; 13 (5): 838-46. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1516-18462011000500008&lng=en
8. Befi-Lopes DM, Silva CPF, Bento ACP. Representação semântica e nomeação em crianças com distúrbio específico de linguagem. *Pró-Fono R. Atual. Cient.* [serial on the Internet]. 2010 [cited 2013 Oct 25]; 22(2):113-8. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0104-56872010000200008&lng=en.
9. Befi Lopes DM, Nuñez CO, Cáceres AM. Correlação entre vocabulário expressivo e extensão média do enunciado em crianças com alteração específica de linguagem. *Rev CEFAC* [serial on the Internet]. 2013 [cited 2013 Oct 25]; 15(1):51-7. Available from: <http://www.scielo.br/pdf/rcefac/2012nahead/92-11.pdf>
10. Befi-Lopes DM, Gândara JP, Felisbino FS, Categorização semântica e aquisição lexical: Desempenho de crianças com alteração do desenvolvimento da linguagem. *Rev CEFAC*; 2006;8(2):155-61.
11. Befi-Lopes DM, Nuñez CO, Cáceres AM, Correlação entre vocabulário expressivo e extensão média do enunciado em crianças com alteração específica de linguagem. *Rev CEFAC* [serial on the Internet]. 2013 [cited 2013 Oct 25]; 15(1):51-7. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1516-18462013000100006&lng=en.
12. Ferreira AT, Lamônica DAC. Comparação do léxico de crianças com Síndrome de Down e com desenvolvimento típico de mesma idade mental. *Rev CEFAC* [serial on the Internet]. 2012 [cited 2013 Oct 25]; 14(5):786-91. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1516-18462012000500003&lng=en.
13. Athayde ML, Mota HB, Mezzomo CL. Vocabulário expressivo de crianças com desenvolvimento fonológico normal e desviante . *Pró-Fono R. Atual. Cient.* [serial on the Internet]. 2010 [cited 2013 Oct 25]; 22(2):145-50. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0104-56872010000200013&lng=en.
14. Mota HB, Kaminski TI, Nepomuceno MRF, Athayde ML. Alterações no vocabulário expressivo de crianças com desvio fonológico. *Rev. soc. bras. fonoaudiol.* [serial on the Internet]. 2009 [cited 2013 Oct 25]; 14(1):41-7. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1516-80342009000100009&lng=en
15. Brancalioni AR, Marini C, Cavalheiro LG, Keske-Soares M. Desempenho em prova de vocabulário de crianças com desvio fonológico e com desenvolvimento fonológico normal. *Rev CEFAC* [serial on the Internet]. 2011 June [cited 2013 Oct 25]; 13(3):428-36. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1516-18462011000300005&lng=en.
16. Costa RCC, Ávila CRB, Competência lexical e metafonológica em pré-escolares com

- transtorno fonológico. *Pró-Fono R. Atual. Cient.* [serial on the Internet]. 2010 [cited 2013 Oct 25]; 22(3):189-94. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0104-56872010000300006&lng=en.
17. Rossi-Barbosa LAR, Caldeira AP, Honorato-Marques R, Silva RF. Prevalência de transtornos fonológicos em crianças do primeiro ano do ensino fundamental. *Rev. soc. bras. fonoaudiol.* [serial on the Internet]. 2011 [cited 2013 Oct 25]; 16(3):330-6. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1516-80342011000300015&lng=en.
18. Araújo MVM, Marteleto MRF, Schoen-Ferreira TH. Avaliação do vocabulário receptivo de crianças pré-escolares. *Estud. psicol.* [serial on the Internet]. 2013 [cited 2013 Oct 25]; 27(2):169-76. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0103-166X2010000200004&lng=en&tlng=pt. 10.1590/S0103-166X2010000200004 .
19. Bento ACP, Befi-Lopes DM. Organização e narração de histórias por escolares em desenvolvimento típico de linguagem. *Pró-Fono R. Atual. Cient.* [serial on the Internet]. 2010 Dec [cited 2013 Oct 25] ; 22(4): 503-8. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0104-56872010000400024&lng=en.
20. Kaminski TI, Mota HB, Cielo CA; Consciência Fonológica e vocabulário expressivo em crianças com aquisição típica da linguagem e com desvio fonológico. *Rev. CEFAC* [periódico na Internet]. 2011 [citado 2013 Out 25]; 13(5):813-30. Disponível em: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1516-18462011000500005&lng=pt.
21. Quintas VG, Mezzomo CL, Keske-Soares M, Dias RF. Vocabulário expressivo e processamento auditivo em crianças com aquisição de fala desviante. *Pró-Fono R. Atual. Cient.* [serial on the Internet]. 2010 [cited 2013 Oct 25]; 22(3):263-8. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0104-56872010000300018&lng=en.
22. Braga R, Melo M. Como fazer uma Revisão Baseada na Evidência. *Rev Port Clin Geral* [periódico na Internet] 2009 [citado 2013 Out 25] 25(6):660-6. Disponível em: <http://www.rpmgf.pt/ojs/index.php?journal=rpmgf&page=article&op=view&path%5B%5D=10691&path%5B%5D=10427>
23. Jerger S, Damian MF, Mills C, Bartlett J, Tye-Murray N, Abdi, H. Effect of perceptual load on semantic access by speech in children. *J Speech Lang Hear Res.* 2013 56(2):388- 400.
24. Henrichs, J, Rescorla L, Donkersloot C, Schenk JJ, Raat H, Jaddoe VWV. Early vocabulary delay and behavioral/emotional problems in early childhood: the generation R study. *J Speech Lang Hear Res.* 2013;56(2):553-66.
25. Zammit M, Schafer G. Maternal label and gesture use affects acquisition of specific object names J. *Child Lang.* [periódico na Internet]. 2011 [citado 2013 Out 25]; 38(1):201-21. Disponível em: <http://centaur.reading.ac.uk/5735/3/zammit.schafer.2010.Maternal.label.and.gesture.pdf>
26. Ahonen T, Aroa T, Marja-Leena L, Sira M, Asko T. Developmental trajectories of early communication skills. *J Speech Lang Hear Res.* 2012 55(4):1083 - 96.
27. Limissuri RCA, Befi-Lopes BM. Fonologia e vocabulário na percepção de educadoras sobre comunicação de pré-escolares R. bras. Est. pedag. 2009;90(225):433-48.
28. Kaminski TI, Mota HB, Cielo CA. Vocabulário expressivo e consciência fonológica: correlações destas variáveis em crianças com desvio fonológico. *Rev. soc. bras. fonoaudiol.* [periódico na Internet]. 2011 [citado 2013 Out 25]; 16(2):174-81. Disponível em: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1516-80342011000200011&lng=pt.
29. Ota M. Lexical frequency effects on phonological development: The case of word production in Japanese. In: Vihman M, Keren-Portnoy T, editors. *The emergence of phonology: Whole word approaches, cross-linguistic evidence.* Cambridge: Cambridge University Press, 2013; p. 415-38.
30. Morales FM. Eficacia de un programa de entrenamiento en el vocabulario en niños *Revista de Investigación en Logopedia* [periódico na Internet] 2013. [citado 2013 Out 25]; 3(1):1-17. Disponível em: <http://revistalogopedia.uclm.es/ojs/index.php/revista/article/view/81>

Received on: November 07, 2013

Accepted on: June 16, 2014

Mailing address:

Stela Maris Aguiar Lemos-
Av. Prof. Alfredo Balena, 190, sala 251
Belo Horizonte - MG - Brasil
CEP: 30130-100
E-mail: lemos.stela@gmail.com