http://dx.doi.org/10.23925/2176-2724.2017v29i2p342-353

Association between language development and school environment in children of early childhood education

Associação entre desenvolvimento de linguagem e ambiente escolar em crianças da educação infantil

Asociación entre desarrollo del lenguaje y ambiente escolar en niños de la educación infantil

Julie Mary Mourão Alves[*]
Amanda de Jesus Alvarenga Carvalho[*]
Stella Carolina Gonçalves Pereira[*]
Andrezza Gonzalez Escarce[*]
Lúcia Maria Horta Figueiredo Goulart[*]
Stela Maris Aguiar Lemos[*]

Abstract

Objective: To investigate the association between language development, quality of school environment, parental education, gender and age of children aged four to six years, enrolled in Municipal

***** Universidade Federal de Minas Gerais, Belo Horizonte, MG, Brazil.
Authors' contributions:
JMMA: data collection, data analysis and interpretation, drafting and final approval of the version to be published.
AJAC: study conception and design, data collection, data analysis and interpretation, drafting, revision and final approval of the version to be published.
SCGP: data collection, data analysis and interpretation.
AGE: data collection, data analysis and interpretation, drafting and final approval of the version to be published.
LLMHFG: data analysis and interpretation, drafting, revision and final approval of the version to be published.
SMAL: study conception and design, data analysis and interpretation, drafting, revision and final approval of the version to be published.

Correspondence address: Andrezza Gonzalez Escarce - andrezza.ge@gmail.com
Received: 05/12/2016
Accepted: 16/05/2017

Units of Early Childhood Education in Belo Horizonte. **Methods:** Observational analytic cross-sectional study with probabilistic sample. One hundred and sixty nine children aged four to six years enrolled in five Municipal Units of Early Childhood Education were studied. The instruments used were: structured questionnaire, Language Development Assessment protocol and Early Childhood Environment Rating Scale-Revised. A descriptive analysis of the data and association between the exposure variables and the events was performed. As statistically significant associations were considered those with p value ≤0.05%. **Results:** 47.9% of the children were male and 52.1% were female, with the predominant age of five years (62.7%). 22.5% of the children had some language development disorder. Guardians with complete secondary education and incomplete high education (42.6%) predominated. The overall average ECERS-R score indicated a quality level between minimum and good; the highest average regarding quality of the school environment was referred to the interaction subscale, which corresponds to a level between good and excellent. There was statistically significant association only between language development and the interaction subscale and age. **Conclusion:** The language development was significantly associated with age and the interaction domain of the ECERS-R scale. There was no statistical association between language outcome and the variables: school environment, language and reasoning domain of the ECERS-R scale, gender and parental education.

Keywords: Speech, Language and Hearing Sciences; Language development; Child Education.

Resumo

Objetivo: Investigar a associação entre o desenvolvimento de linguagem, a qualidade do ambiente escolar, escolaridade parental, sexo e idade de crianças na faixa etária de quatro a seis anos, matriculadas em Unidades Municipais de Educação Infantil de Belo Horizonte. **Métodos:** Trata-se de estudo observacional analítico transversal com amostra probabilística. Estudou-se 169 crianças de quatro a seis anos, matriculadas em cinco Unidades Municipais de Educação Infantil. Os instrumentos utilizados foram: questionário estruturado, protocolo de Avaliação do Desenvolvimento da Linguagem e *Early Childhood Environment Rating Scale-Revised*. Realizou-se análise descritiva dos dados e associação entre as variáveis de exposição e os eventos. Foram consideradas associações estatisticamente significativas aquelas que apresentaram valor p≤0,05%. **Resultados:** 47,9% e 52,1% das crianças pertenciam ao sexo masculino e feminino, respectivamente, com predomínio da faixa etária de cinco anos (62,7%). 22,5% das crianças apresentaram algum distúrbio no desenvolvimento da linguagem. Predominaram responsáveis com ensino médio completo e superior incompleto (42,6%). A pontuação da média global da ECERS-R indicou qualidade de nível entre mínimo e bom; a maior média quanto à qualidade do ambiente escolar refere-se à sub escala Interação, que corresponde ao nível entre bom e excelente. Houve associação com significância estatística somente entre o desenvolvimento da linguagem e a sub escala interação e idade. **Conclusão:** O desenvolvimento da linguagem apresentou associação com significância estatística com a idade e o domínio interação da escala ECERS-R. Não houve associação com significância estatística entre o resultado da linguagem e as variáveis: ambiente escolar, domínio linguagem e raciocínio da escala ECERS-R, sexo e escolaridade parental.

Palavras-chave: Fonoaudiologia; Desenvolvimento da linguagem; Educação infantil.

Resumen

Objetivo: Investigar la asociación entre el desarrollo del lenguaje, la calidad del entorno escolar, la educación de padres, el sexo y la edad de niños de cuatro a seis años, matriculados en Unidades Municipales de Educación Infantil de Belo Horizonte. **Métodos:** Estudio observacional analítico transversal con una muestra probabilística. Se estudió 169 niños de cuatro a seis años, inscritos en cinco Unidades Municipales de Educación Infantil. Los instrumentos utilizados fueron: cuestionario estructurado, protocolo de Evaluación del Desarrollo del Lenguaje y *Early Childhooh Environment Rating Scale-Revised.* Se realizo análisis descriptivo de los datos y asociación entre las variables de exposición y eventos. Se consideró asociación estadísticamente significativa aquella con valor p ≤ 0,05%. **Resultados:** 47,9% y 52,1% de los niños pertenecían al sexo masculino y femenino, respectivamente, con edad predominante de cinco años

(62,7%). 22,5% de los niños tenía alguna alteración en el desarrollo del lenguaje. Fue predominante la educación secundaria completa y superior incompleta (42,6%). La puntuación media global de la ECERS-R indico calidad de nivel entre mínimo y bueno, el promedio más alto en la calidad del entorno escolar se refiere a la sub escala Interacción, que corresponde al nivel entre bueno y excelente. Hubo asociación estadísticamente significativa solamente entre el desarrollo del lenguaje y la sub escala de la interacción y edad. **Conclusión:** El desarrollo del lenguaje presentó asociación con significación estadística para la edad y el dominio interacción de la escala ECERS-R. No hubo asociación con significación estadística entre el resultado del lenguaje y las variables: entorno escolar, dominio lenguaje y razonamiento de la escala ECERS-R, género y educación de los padres.

Palabras claves: Fonoaudiología; Desarrollo del Lenguaje; Educación del niño.

Introduction

The acquisition and development of language skills depend on the brain structures[1], genetic inheritance, metabolic functioning and nutritional status[2], but they are also influenced by environmental factors present in the environments in which the children are inserted, such as family and school[3]. The literature[4] also points out the impact of malnutrition, which can often be a consequence of precarious socioeconomic conditions and may influence the mental and cognitive development due to the decrease of the interaction of the child with the environment.

Several authors[5-10] correlate other variables to global and language development, among them, parental education and individual characteristics, such as gender and age. Regarding parental education, there are studies that point out that the higher the parental education, the lower is the chance of children with speech and language disorders. Regarding gender, there are studies that show a higher prevalence of language disorders in males[7,8] and in younger children[7-10].

The school is one of the environments that promote physical, emotional, intellectual and social development, affecting the life of the child. The quality of services and opportunities provided to children has received attention, as they play an important role in the development of language[11]. The literature points out that children who do not have access to didactic-pedagogical projects of quality present more behavioral problems, less language skills and lower academic levels in the future[12].

Currently, Early Childhood Education is considered the first stage of Basic Education. Thus, children are enrolled earlier, remaining for a longer period in early childhood institutions. This way, it is important to have an environment rich in resources, which provides the interaction between child-child and child-educator, in order to encourage the stimulation required for the development and language of the children. The study on the quality of the services and educational environment has become a matter of public interest due to their influence on the development of the children[13,14]. The expansion of the early childhood education is not always followed by adequate quality due to the variety of the institutional characteristics of the unit[13, 15,16].

The literature highlights the importance of the quality of the child's environment and its contribution during the school journey, due to the long-lasting effects of intervention in the preschool[14]. The evaluation of the school environment is important as it enables the school speech therapist, in partnership with the educator, to analyze, elaborate and/or plan favorable and effective conditions and strategies to contribute to the development of the children in a way appropriate to their cognitive and social needs[16-18]. In this way, the school becomes an ideal space for the actuation of the speech therapist.

It is worth mentioning that the evaluation through scales can be a useful tool to point out the failures and the need for changes in the institutions of early childhood education[16,19], as many institutions do not present basic conditions of functioning[13,14,19]. In addition, the study on early childhood education should take into account the aspects of the family environment, due to its relation to the success of the children in the school[14].

The purpose of the present study is to investigate the association between language development, quality of school environment, parental education, gender and age of children aged four to six years, enrolled in Municipal Units of Early Childhood Education in Belo Horizonte.

Method

This is an observational analytic cross-sectional study with probabilistic sample, carried out in five Municipal Units of Early Childhood Education (UMEI) of the Northern Region of the city of Belo Horizonte, State of Minas Gerais, from October 2013 to November 2014.

This study was approved by the Research Ethics Committee of the Federal University of Minas Gerais, CAAE opinion No.: 19409413.5.0000.5149. All guardians of the children who participated in the study signed the Free and Cleared Term of Consent.

The study included children aged four to six years and eleven months, enrolled in five UMEIs in a period of at least one year and without associated disorders. The exclusion criteria included children that have failed or did not perform otoacoustic emission tests, children with cognitive or neurological disorders, behavior disorders and children who are or have been in speech therapy.

The sample size was calculated considering the prevalence study[9] and the association between outcome and independent variables. For the sample calculation, it was considered a prevalence of 20%[9] and as base the universe of 466 eligible children enrolled in 2013 in the five UMEIs and within the specified age groups. Based on the inclusion and exclusion criteria, the final sample consisted of 169 children. This study considered 5% sample error and 95% confidence interval.

It should be highlighted that all children were submitted to the Transient Evoked Otoacoustic Emissions (TEOAEs) with stimuli in non-linear clicks at 80 dBNPS, using the AuDX I equipment, Bio-logic brand, in a room provided by the school, and with noise control. The results of the TEOAEs were considered when the reproducibility was greater than or equal to 70%, signal-to-noise ratio greater than or equal to 6 dB, and probe stability greater than or equal to 95%.

The procedures for data collection included structured questionnaire, Early Childhood Environment Rating Scale-Revised (ECERS-R) and the Language Development Assessment (LDA) protocol.

The structured questionnaire was prepared by the researchers and applied to the parents or guardians of the children. By means of this, the following thematic axes were investigated: sociodemographic profile, related to the age group, gender, length of stay in school and education level of the head of the family; and health profile related to speech-language assessment and/or intervention, history of hearing loss, cognitive, neurological, and behavioral disorders.

The LDA protocol[20] is used to evaluate children in the age group of one to six years. It is an instrument that covers the acquisition and development of the content and structure of the language related to the semantics and to the combination of morphology and syntax, respectively. Thus, it allows to evaluate the basic skills for the processing of the receptive and expressive language and to identify language development disorders. The LDA was applied by a speech therapist and by four speech therapy students, individually, with an average duration of 30 minutes, in a quiet room provided by the UMEI during the school hours.

The ECERS-R scale was the instrument used to assess the quality of the preschool environment in rooms with children in the age group of 30 and 60 months. It consists of a total of 43 items that are organized into seven subscales, namely: space and furnishings, personal care routines, language/reasoning, activities, interactions, program structure, parents and staff. In this research, it was decided to evaluate the language/reasoning and interaction subscales. In the language/reasoning subscale, the disposition of books and images; encouragement for children to communicate; use of language for reasoning skills and the informal use of language were evaluated. The interaction was evaluated through the supervision of global motor activities; general supervision of children; discipline; personal-children interaction and interactions among children. The evaluation of each classroom was performed once by the speech therapist during approximately four hours. The translation of the original scale used was made by a group of researchers of the University of Porto, Portugal[21], as there is no Brazilian version.

The analyses of the instruments were performed as proposed in the literature[20,21]. For the analysis of the Language Development Assessment protocol, the gross score of each language scale (comprehensive and expressive) was calculated. The comparison between the scale scores makes it possible to determine if the observed deficiencies are primarily receptive (comprehensive), expressive or global[20].

In the ECERS-R scale, it was decided to analyze the overall score and the score of the language/ reasoning and interaction subscales. The score of this instrument is made for each item on a 7-point scale, where 1 means an inadequate situation, 3 refers to a situation with minimum conditions, 5 indicates good conditions and 7 refers to the presence of excellent conditions[21].

A descriptive analysis of the variables was performed through the absolute and relative frequency distribution of the categorical variables, and through measures of central tendency and dispersion of the continuous variables. The normality of the continuous variables was evaluated using the Shapiro-Wilks test. As the normality assumption was rejected, a nonparametric procedure was adopted.

The association between the exposure variables studied and the events was evaluated through the Mann-Whitney test for the continuous variables and Fisher's exact test for the categorical variables. As statistically significant associations were considered those with p value ≤0.05. The data were previously typed into a database and checked. The analyses were performed in the R software, version 3.1.3.

Results

Table 1 shows the characteristics of the children and their guardians. Of the 169 children evaluated, 81 (47.9%) were male and 88 (52.1%) were female, with the predominant age of five years (62.7%).

Among the guardians interviewed, it was verified that the proportion of mothers was higher, totaling 79.2%. The others were fathers, grandparents and others, with 11.2%, 6.5% and 1.1%, respectively. Among the interviewed individuals, those with complete secondary education and incomplete high education predominated (42.6%), and those with incomplete primary education (1° to 5° year) and illiterate totaled 10.1%. Regarding the evaluation of language development, 77.5% of the children presented normal language development.

Table 1. Characteristics of the children and their guardians

Variables	Categories	N	%
Gender of the child	Female	88	52,1
	Male	81	47,9
	Total	169	100,0
Age of the child (years)	Four years	41	24,3
	Five years	106	62,7
	Six years	22	13,0
	Total	169	100,0
Education level of the head of the family	Illiterate/ Primary education 1 Incomplete	17	10,1
	Primary education 1 Complete1 / Primary education 2 Incomplete	34	20,1
	Primary education 2 Complete2 / Secondary education Incomplete	40	23,7
	Secondary education Complete/ High education Incomplete	72	42,6
	High education Complete	6	3,6
Language development	Normal	131	77,5
	Mild disorder	7	4,1
	Moderate disorder	10	5,9
	Severe disorder	21	12,4

Legend: Primary education 1 - 1st to 5th year; Primary education 2 - 6th to 9th year

In Table 2, it was observed that the gross scores of receptive and expressive language presented close median and average values. Regarding the variables and global classification of the school environment according to ECERS-R, the highest average regarding quality of the school environment was related to the Interaction subscale (5.5) and corresponds to a level between good and excellent. The subscale of lowest average is Language and Reasoning (3,4), being between the minimum and the good level. On the other hand, the overall average ECERS-R score indicated a quality level between minimum and good.

Table 2. Descriptive measures of language assessment and school environment

Variables	Median	Amplitude	Average	Standard Deviation
LDA				
Gross score of the receptive language	35,0	15,5- 40,0	33,6	4,2
Gross score of the expressive language	37,0	15,5- 40,0	35,3	5,7
Standard score of the global language	99,0	11,0-123,0	93,8	18,1
ECERS-R Scale				
Language and Reasoning	3,2	3,0- 5,5	3,4	0,57
Interaction	5,8	4,2- 6,2	5,5	0,54
Global Average Score	3,5	3,1- 3,8	3,5	0,16

***** Quality score of the school environment between 1 and 7: (1) inadequate, (3) minimum, (5) good and (7) excellent

In Table 3 it was verified that, in the univariate analysis, no associations with statistical significance were found between the results of the assessment of the language development and the variables gender (p=0.58) and education level of the head of the family (p=0.56).

Table 3. Univariate analysis of the association between the result of the LDA and characteristics of children and their guardians

Variables	Language Development		p-Value
	Normal N(%)	Altered N(%)	
Gender			
Female	70(79,5)	18(20,5)	0,58*
Male	61(75,3)	20(24,7)	
Education level of the head of the family			
Illiterate / Primary education 1 incomplete	12(70,6)	5(29,4)	0,56*
Primary education 1 complete/Primary education 2 incomplete	24(70,6)	10(29,4)	
Primary education 2 complete/average incomplete	32(80,0)	8(20,0)	
Secondary education complete/ high education Incomplete	57(79,2)	15(20,8)	
High education complete	6(100,0)	0(0,0)	

*Fisher's Exact Test
Legend: Primary education 1 - 1st to 5th year; Primary education 2 - 6th to 9th year

It was verified that there was no statistically significant association between language development and ECERS-R global score (p = 0.16) and the language and reasoning variable (p = 0.72). Regarding the interaction (p = 0.01) and age (p = 0.0004) variables, it was observed that there is a statistically significant association (Table 4).

Table 4. Univariate analysis of the association between the result of the LDA and ECERS-R scale

Variables	Language Development		p-Value
	Normal N	Altered N	
Interaction Domain			
Median	5,8	5,8	
Average	5,5	5,3	0,01
Standard Deviation	0,50	0,63	
Language and Reasoning Domain			
Median	3,2	3,2	
Average	3,4	3,3	0,72
Standard Deviation	0,5	0,5	
ECERS-R global score			
Median	3,6	3,5	
Average	3,5	3,5	0,16
Standard Deviation	0,16	0,15	
Age			
Median	5,5	4,9	0,0004
Average	5,4	5,0	
Standard Deviation	0,5	0,6	

*Mann-Whitney Test.

It was observed that the overall ECERS-R score is higher in the normal group compared to the altered group, but there was no statistically significant association (p= 0.163), indicating that the variability is the same between the groups (Figure 1).

Despite the few distinct values, Figure 2 shows that the maximum and median values are the same. It was also verified that the minimum value in the altered group is lower than in the normal group and this statistical difference was detected by the Mann-Whitney test (p = 0.0169). Figure 3 shows that the distribution of children in the normal group is different from the children in the altered group, and it must be said that in the normal group the children are older (p<0.001), and that the variability is quite similar between the groups.

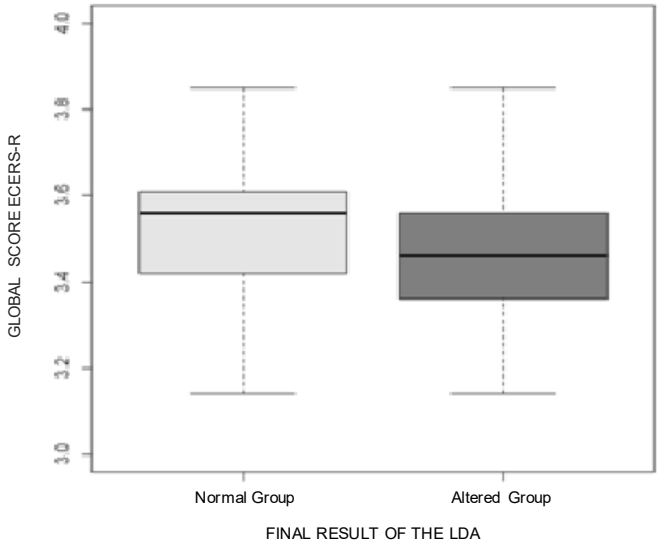

Figure 1. Distribution of the ECERS-R global score according to the final result of the LDA in 2 categories

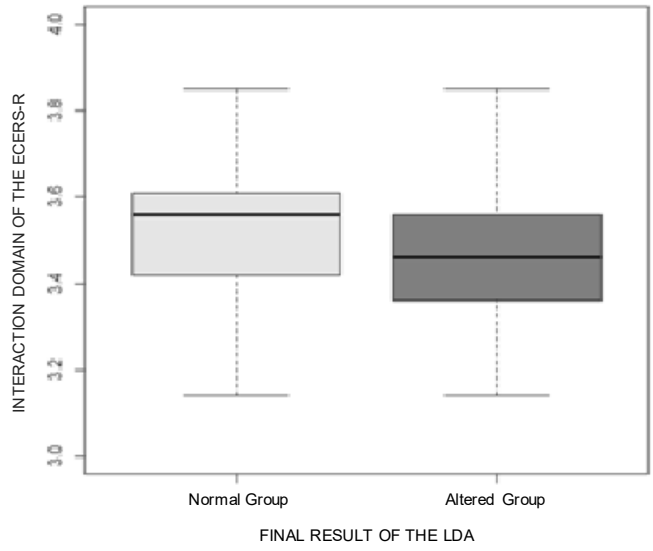

Figure 2. Distribution of the interaction domain of the ECERS-R scale according to the final result of the LDA in 2 categories

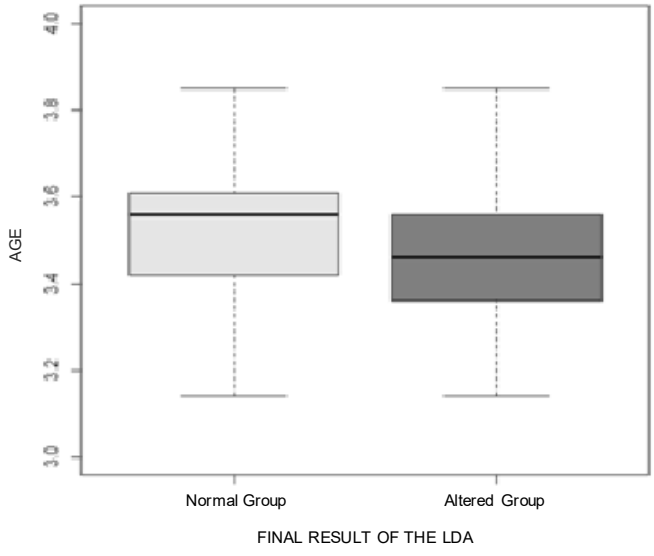

Figure 3. Distribution of the age according to the final result of the LDA in 2 categories

DISCUSSION

In the present study, the language development and factors associated with oral language disorders related to the quality of the school environment, parental education, gender and age were studied. One hundred and sixty nine children were evaluated, from whch 77.5% presented normal language development and 22.5% had some disorder.

Regarding parental education, no statistically significant association was found between language disorder and the studied variable, which corroborates previous studies[2,8,10,22]. It is noteworthy that, in the present study, heads of families were mostly the mother or father of the child. A study carried out with children from São Paulo of four to seven years old, from a municipal school of early childhood education, found no interference of the education

level of the mother in the receptive language of the children[10]. Another study, also carried out with children from São Paulo, aged six months to six years, assisted at the Anemia Outpatient Clinic of the School Health Center and of the municipal day care center, found no difference between language disorders and education level of the mother[2], corroborating the study conducted with pre-school children aged four to six years, from the city of Cuiabá, that found no statistically significant association between the variables language development and education level of the mother[8]. A study conducted with children aged 6 to 10 years, from public schools in Belo Horizonte, found no statistically significant association between language impairment and education level of the mother[22]. On the other hand, three studies indicate that the higher the parental education, the greater the knowledge about the development of children's language[5,6], the better the organization of the environment and the greater the opportunity for stimulation[23] presenting this way a statistically significant association between language development and parental education. Some authors[5,6] have concluded that parental education is related to problems in the development of the children and speech-language disorders, and that poor living conditions contribute to environments that are not very stimulating for the development of the children. The divergences between the findings of the present study and the consulted sources can be explained due to the age difference of the studied samples, aged between six months and three years and six months[5], and five to eleven years old[6], of children from São Paulo enrolled in the Family Health Program and of public schools of Canoas, State of Rio Grande do Sul, respectively. The present study evaluated children in the age group of four to six years old, from five public UMEIs of the State of Minas Gerais.

Although a greater proportion of parents with complete secondary education and incomplete high education was found (Table 1), there was no statistically significant differences ($p = 0.56$) among the variables. However, it is possible that the parents of the present study favor a good family and emotional support.

In the present study, there was a statistically significant association between the language development and age variables, corroborating other studies[7,8,10,24]. A national study conducted with children from São Paulo aged four to seven years, of a municipal school of early childhood education, revealed an improvement of the vocabulary with age. Therefore, better are the results in language tests[10]. A study with children aged five to seven years showed that there is influence of age on the performance in language skills, such as vocabulary, due to the influence of literacy[24].

However, the present study differs from the cross-sectional study conducted with 30 children from zero to four years old from three day-care centers in the city of São Paulo, which showed that children from three years old had worse results in oral language, possibly due to the decrease in the adult/child ratio over the years[25]. Another source consulted, which studied the prevalence of language disorders in children aged one to eleven years, assisted at the health center of the city of São Paulo, explained that the greater frequency of difficulties in children aged three to eight years, mainly from four to five years, would be due to neurophysiological immaturity for the acquisition and domain of language and also due to the social factors related to the stimulation necessary for the development of linguistic standards[26]. Thus, it is perceived that the development of language is influenced by the environment as the child is exposed to learning and maturational aspects.

The prevalence of oral language disorders in the age group of four to five years suggests that this is a good phase for the identification and prevention of communication disorders[9]. In the present study, it was found that older children present a higher percentage of normal language development. Thus, with increasing age, the percentage of children with disorders decreases. This result may explain why it is common that guardians of children or the doctor wait until they are four or five years old to take to or refer the child to a speech-language assessment[7]. However, it is worth remembering that there is an important percentage of children who do not present adequacy of linguistic aspects with increasing age. Therefore, programs to promote health and to prevent language disorders, aimed at early childhood education, should be encouraged.

The literature data differ in relation to the influence of gender in the development of language. There is evidence that indicates a higher prevalence of language disorders in boys[7,8]. This relationship is explained from the point of view of the speed of neurological maturation and genetics[7]. In the present study, we did not find statistically signifi-

cant differences between language disorders and gender, which corroborates other studies[2,9,10,22,25]. The disagreement between the results of the present research and other studies can be attributed to the difference of the studied region or sampling type, as they are of preschoolers of the public school of the State of Mato Grosso[8] and patients from São Paulo, of the Speech Therapy Clinic[7]. The fact that there is agreement between the present study and the data from another study in Minas Gerais[22] conducted with children aged six to ten years from public schools in Belo Horizonte can be explained by the regional similarity of the sample studied.

Regarding the variables of the school environment, an observational analytic cross-sectional study with seventy children aged one to three years, enrolled in a public and private day care center in Belo Horizonte[27], evaluated the communication development and the school environment through the communicative profile protocol and the ITERS-R (Infant and Toddlers Environment Rating Scale - Revised) Scale, respectively. It was observed that the total quality score of the school environment of the public day-care center indicated a minimum to good level (4.28), a result similar to the one found in the present study, which evidenced minimum quality level (Table 2). The same study verified statistically significant association between receptive language and public day care, no statistically significant association between receptive language and private day care and between expressive language and public and private day care environment[27]. In the present study, there was no statistically significant association between the LDA score and the overall ECERS-R score. One of the explanations is the similarity of the physical and educational structures of the UMEI, as they are part of an educational program created by the municipal government. However, as the author points out[4], the positive influence of this environment on children's language, which depends on the quality of social interaction and the number of children per educator, is unquestionable.

The ECERS-R interaction subscale refers to the way the adult-child interaction occurs and how the educator promotes interaction among children. There are researches that point out that this is the subscale with the best scores[16,28]. This indicates that there is investment in interpersonal relationships between teacher and child and better opportunities provided for children to express themselves[28]. The children construct their knowledge in the interaction with the environment in which they are inserted. For that, it is necessary to have a mediator to assist in their learning[17]. The study conducted with children from Minas Gerais, of 1 to 3 years, enrolled in a public and private day care center, which evaluated their environment through the ITERS-R Scale, showed better results in the interaction subscales (5.0), indicating a level between good and excellent[27]. This result is similar to the one found in the present study (Table 2) as it is a public institution located in Belo Horizonte. However, the consulted literature[27] did not perform an analysis of association between the variables of the communicative profile and the domains of the ITERS-R scale. In this study, an statistically significant association between language development and interaction domain was verified, and it was observed that the bonds created in the classroom can make easier to the teacher to pay more attention to the individual characteristics of each child, making a difference for the Interaction of the children with what is proposed to them in the classroom. However, although interaction domain is essential for language development, it does not mean that language interactions will be provided to children.

In this study, no statistically significant association between the result of LDA and the language and reasoning subscale was found. In the consulted literature[27] it was observed that the oral language and comprehension subscale of the ITERS-R scale is similar to the subscale of the present study, reason why it was decided to describe it. The mentioned study[27] found that in the public day-care the oral language and comprehension subscale presented a good result (4.3) indicating a level between minimum and good and has proved that there is a greater concern of the coordination of the institutions with the physical part of the child related to feeding and hygiene; but the care related to the global child development is of individual interest of the educators[27].

In the present study, it was verified that the language and reasoning domain was the one with lowest average, being also between the minimum and good level. The possible explanations for this may be due to the quality of the activities that are developed with the children, the low use of educational materials made available by the municipality, such as books, games, toys, puppets, pencils, papers and others, and to the need to expand communicative

strategies and use of language and reasoning. The consulted study showed that there is influence of the environment, such as the availability of toys, on the communicative performance of the children[27].

The institutions of early childhood education are important for the development of children, so it is necessary to adapt the structures that make up the environment, such as the physical part, activities, routine, materials available, interactions developed and the program of the institution[28]. The evaluation of these environments and of the educational programs assists and provides subsidies to the pedagogical team on their performance and impact on children's action and establishes parameters for the development of educational programs[29].It is verified that the ECERS-R scale can be useful for the monitoring of pedagogical actions, such as for research in early childhood education, since surveys carried out with the scale show results with evidence of validity and precision[16].

It was observed that the physical environment in which the child lives, whether in the family or school context, when organized and with possibilities for interaction, becomes a resilience factor in face of physical or psychological adversities. There are authors[3,30] who point out that factors related to culture, socioeconomic level and family structure are determinant for the care provided to children. Therefore, the conduction of studies of association only with school environment and demographic characteristics are not enough. It is necessary to involve the family and to study the socioeconomic level of the sample of interest.

In addition, the fact that an statistically significant association between the result of the LDA and the variables such as school environment, gender and parental education was not found in the studied sample, does not necessarily imply that the variables are not related to each other. Thus, studies with more robust methodological designs are necessary for the expansion of the findings on the subject.

Although the results found are important as they show the association between language and school environment and consider sociodemographic factors, such as parental education, this study presented some limitations as it did not consider other environments, such as family, and all the data of the school environment, and as it evaluated the UMEI with the same teaching structures and methodologies. It would be interesting if future studies make a comparison between public and private schools and between municipalities.

Conclusion

This study showed the importance of knowing and considering other factors that can influence the language development and also the shortage of research that relate language development and school environment. Therefore, it is important to conduct more studies in the area in order to characterize the environment of children's education and its impacts on language and contribute to future health promotion policies in the school environment.

References

1. Morgado MLS. Educação Infantil: o desenvolvimento da linguagem oral em crianças de 1 a 3 anos e o trabalho do professor [trabalho de conclusão de curso]. Lins (SP): Centro Universitário Católico Salesiano Auxilium; 2013.

2. Mendes JCP, Pandolfi MM, Carabetta Júnior C, Novo NF, Colombo-Souza P. Factors associated to language disorders in preschool children. Rev Soc Bras Fonoaudiol. 2012; 17(2): 177-81.

3. Scopel RR, Souza VC, Lemos SMA. Family and school environment influences on language acquisition and development: literature review. Rev CEFAC. 2012; 14(4): 732-41.

4. Murta AMG, Lessa AC, Santos AS, Murta NMG, Cambraia RP. Cognição, motricidade, autocuidados, linguagem e socialização no desenvolvimento de crianças em creche. Rev Bras Crescimento Desenvolv Hum. 2011; 21(2): 220-9.

5. Maria-Menegel MRS; Linhares MBM. Fatores de risco para problemas de desenvolvimento infantil. Rev Latino-Am Enfermagem. 2007; 15(spe).

6. Goulart BN, Chiari BM. Prevalência de desordens de fala em escolares e fatores associados. Rev Saude Publica. 2007; 41(5): 726-31.

7. Hage SRV, Faiad LNV. Perfil de pacientes com alteração de linguagem atendidos na clínica de diagnóstico dos distúrbios da comunicação. Rev CEFAC. 2005; 7(4): 433-40.

8. Souza SC, Leone C, Takano, AO, Moratelli HB. Desenvolvimento de pré-escolares na educação infantil em Cuiabá, Mato Grosso, Brasil. Cad Saude Publica. 2008; 24(8): 1917-26.

9. Campos FR, Rabelo ATV, Friche CP, Silva BSV, Friche AAL, Alves CRL, Goulart LMHF. Oral language disorders in children from 4 to 6 years old in Belo Horizonte. Revista CEFAC. 2014; 16(4): 1151-60.

10. Araújo MVM, Marteleto MRF, Schoen-Ferreira TH. Avaliação do vocabulário receptivo de crianças pré-escolares. Estud Psicol. 2010; 27(2): 169-76.

11. Harms T, Clifford RM, Cryer D. Early Childhood Environment Rating Scale. revised Edition. 3th New York: Teachers College Press; 1998.

12. Fernandes RIRS. Avaliar a qualidade em educação pré-escolar: um estudo integrador [dissertação]. Porto (Distrito do Porto): Faculdade de Psicologia e de Ciências da Educação Universidade do Porto; 2009.

13. Campos MM, Esposito YL,Bhering E, Gimenes N, Abuchaim B. A qualidade da educação infantil: um estudo em seis capitais Brasileiras. Cad Pesq. 2011; 41(142): 20-54.

14. Taggart B, Sylva K, Melhuish E, Sammons P, Siraj-Blatchfors I. O poder da pré-escola: evidências de um estudo longitudinal na Inglaterra. Cad Pesq. 2011; 41(142): 68-99.

15. Barros RP, Carvalho M, Franco S, Mendonça R, Rosalém A. Uma avaliação do impacto da qualidade da creche no desenvolvimento infantil. Pesqui Planej Econ [periódico na Internet]. 2011 Ago [acesso em 11 Dez 2014]; 41(2): [aprox.3p]. Disponível em: http://repositorio.ipea.gov.br/bitstream/11058/3367/12/PPE_v41_n02_Avaliacao.pdf

16. Carvalho AM, Pereira AS. Qualidade em Ambientes de um Programa de Educação Infantil Pública. Psic Teor e Pesq. 2008; 24(3): 269-77.

17. Silva TZ. Avaliação na Educação Infantil: um breve olhar na avaliação da aprendizagem. Rev Thema. 2012; 9(2): 1-14.

18. Maranhão PCS, Pinto SMPC, Pedruzzi CM. Speech therapy and infantile education: a necessary partnership. Revista CEFAC. 2009; 11(1): 59-66.

19. Souza TN, Carvalho MC. Avaliação para promoção da qualidade em educação infantil. Contrapontos. 2004; 4(1): 125-40.

20. Menezes, MLN. A Construção de um Instrumento para Avaliação do Desenvolvimento da Linguagem: Idealização, estudo piloto para padronização e validação [tese de doutorado]. Rio de Janeiro (RJ): Instituto Fernandes Figueira/FIOCRUZ; 2003.

21. Harms T, Clifford RM, Cryer D (1993). Early Childhood Environment Rating Scale. IM Pinto, & T. Leal (Tradutores). Escala de Avaliação do Ambiente em Educação de Infância. Livpsic/Legis Editora. Porto, Portugal: Universidade do Porto; 2008.

22. Friche CP. Fatores associados às alterações de linguagem oral em escolares de 6 a 10 anos de idade em Belo Horizonte [dissertação]. Belo Horizonte (MG): Universidade Federal de Minas Gerais; 2011.

23. Andrade SA, Santos DN, Bastos AC, Pedromônico MRM, Almeida-Filho N, Barreto ML. Ambiente familiar e desenvolvimento cognitivo infantil: uma abordagem epidemiológica. Rev Saude Publica. 2005; 39(4): 606-11.

24. Kaminski TI, Mota HB, Cielo CA. Phonological awareness and expressive vocabulary in children with normal language acquisition and with phonological disorders. Rev CEFAC. 2011; 13(5): 813-24.

25. Rezende MA, Beteli VC, Santos JLF. Evaluation of language and personal social abilities by the Denver Test II in institutions of infantile education. Acta Paul Enferm. 2005; 18(1): 56-63.

26. Andrade CRF. Prevalência das desordens idiopáticas da fala e da linguagem em crianças de um a onze anos de idade. Rev Saude Publica. 1997; 31(5): 495-501.

27. Dourado JS, Carvalho SAS, Lemos SMA. Development of communication of children aged between one and three years old and their relationship with the family and school environments. Rev CEFAC. 2015; 17(1): 88-99

28. Harms T, Clifford RM, Cryer D. ECERS-R. Escala de avaliação do ambiente em educação de infância - Edição Revista [periódico na internet]. 2013 [acesso em 15 de fevereiro 2015]. Disponível em: https://repositorio-aberto.up.pt/bitstream/10216/70979/2/91681.pdf.

29. Saluja G, Early DM, Clifford RM. Demographic Characteristics of Early Childhood Teachers and Structural Elements of Early Care and Education in the United States. ECRP [periodico na internet]. 2002;4(1). [aprox. 4 pag]. [acesso em 28 Mar 2015]. Disponível em: http://ecrp.uiuc.edu/v4n1/saluja.html

30. Martins MFD, Costa JSD, Saforcada ET, Cunha MDC. Quality of the environment and associated factors: a pediatric study in Pelotas, Rio Grande do Sul, Brazil. Cad Saude Publica. 2004; 20(3): 710-8.