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Do vocabulary and narrative skills correlate in preschoolers with typical language development?

O vocabulário e as habilidades narrativas se correlacionam em pré-escolares com desenvolvimento típico de linguagem?

Keywords

Child Language
Language Development
Vocabulary
Narration
Preschool Children

ABSTRACT

Purpose: To characterize the performance of preschoolers with typical language development in tasks of expressive vocabulary and oral narrative and to verify possible correlations. **Methods:** The study included 39 children aged 4 to 6 years old, of both genders, with no complaints about language development. Mothers answered a questionnaire of socioeconomic classification, while the ABFW Vocabulary Test was used to evaluate the vocabulary and the book "Frog, where are you?" was used to elicit the child's oral narrative. The data collected were submitted to descriptive and inferential statistical analysis. **Results:** Regarding expressive vocabulary, the majority of preschoolers (92.3%) had the usual verbal designation (UVD) suitable for the age group, and the semantic fields with the highest UVD were "animals", "shapes and colors", "toys and musical instruments", "transportation" and those with children were "professions" and "local". The predominant type of narrative was causal, followed by intentional. There was no correlation between UVD and the use of words in the narratives, but there was a positive correlation between the total and the number of different words used in the narrative. **Conclusion:** There was no correlation between the expressive vocabulary (UVD) and the use of words in the narrative, but the preschoolers who used more words in their narratives also showed greater lexical variety in this sample.

Descritores

Linguagem Infantil
Desenvolvimento da Linguagem
Vocabulário
Narração
Pré-Escolar

RESUMO

Objetivo: Caracterizar o desempenho de pré-escolares com desenvolvimento típico de linguagem em tarefas de vocabulário expressivo e de narrativa oral e verificar possíveis correlações. **Método:** Participaram dessa pesquisa 39 crianças com idade entre 4 a 6 anos, de ambos os gêneros, sem queixas sobre o desenvolvimento de linguagem. As mães responderam um questionário de classificação socioeconômica, enquanto para avaliação do vocabulário foi utilizada a prova de Vocabulário Expressivo do ABFW e para eliciar a narrativa oral da criança foi utilizado o livro "Frog, where are you?". Os dados coletados foram submetidos à análise estatística descritiva e inferencial. **Resultados:** Com relação ao vocabulário expressivo, a maioria dos pré-escolares (92,3%) apresentou designação verbal usual (DVU) total adequada para a faixa etária e os campos semânticos com maior DVU foram "animais", "formas e cores", "brinquedos e instrumentos musicais", "meios de transporte" e os com menor foram "profissões" e "locais". O tipo de narrativa predominante foi causal, seguido pela intencional. Não houve correlação entre DVU e o uso de palavras nas narrativas, mas houve correlação positiva entre o total de palavras e o número de palavras diferentes utilizadas na narrativa. **Conclusão:** Não houve correlação entre o vocabulário expressivo (DVU) e o uso de palavras na narrativa, mas os pré-escolares que usaram mais palavras em suas narrativas também apresentaram maior variedade lexical nesta amostra.

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INTRODUCTION

Language development is related to biological, social, and environmental factors. The first three years of a child's life are a period of great neuroplasticity, considered critical for the development of motor, cognitive and social skills; in addition to being very important for language acquisition[1].

The children's first communicative contacts involve the mother, so the mother's linguistic behavior in its various dimensions ends up shaping the path of language development[2]. Thus, the way language is used by children in their initial communication process is directly related to the social relationships established with other speakers of the language[3,4]. Currently, language development is seen as an indicator of the child's well-being and influences the family's quality of life[5].

The socioeconomic and socio-cultural conditions of the family group influence all levels of child development, including aspects related to language development[6,7]. An important factor of social and cultural origin that interferes in this development process is maternal education[8]. Mothers with a higher level of education communicate with more lexical variety and more complex morphosyntactic structures, influencing the development of these aspects in their children; in addition, they seem to retain more information regarding the child's development, a factor that influences the variety of stimulation and interaction that will be established during their growth[9].

The existence of clinical risk indicators in child development (IRDIs) is directly related to the production of initial speech, as babies with risk factors between zero and eighteen months of age produce fewer words when compared to those who do not have developmental risks during this period[10].

Among the areas of language, vocabulary is one of those that suffer the most interference from environmental, socio-interactional, cognitive, and individual factors. Between nine and twelve months of age, the child begins to acquire his first words, occurring a rapid and significant expansion of his vocabulary from the age of two, characterizing a process called "vocabulary explosion"[11]. At the beginning of this process, children acquire words of an open class more easily, due to the more common exposure to words of that category. Later, the words of closed class are acquired, making possible the first combinations of words and formation of phrases[12].

With the advancement of language development, children move from producing words to phrases and narratives. The context of family socialization directly influences the development and evolution of oral narrative skills[3]. When compared to children in families of low socioeconomic status, children of higher socioeconomic status perform better in narrative skills[13]. However, interaction with mothers, through storytelling, for example, favors the development of their storytelling capabilities[3].

The improvement of narrative skills is also related to the childhood age group. With increasing age, children are prone to elaborate more complex and extensive speeches structurally[14,15]. At the age of five, they have a greater ability to shape the narrative structures, while at the age of six they are more adept at understanding and telling complex stories, continuing the evolution of these skills significantly during school life[16,17].

Oral narrative skills can be assessed through storytelling and retelling of stories, with narration elicited by figures established in a logical sequence[18]. For its analysis, macro-structural aspects, which are related to the structure of the elements of the narrative, and microstructural aspects, referring to the syntactic and semantic contents of the production can be taken into account[17].

Various linguistic, cognitive, and social information can be assessed by analyzing the speech sample elicited through narrative tasks, such as the total number of words and the number of different words, providing quantitative and qualitative measures of production, especially when there is the possibility of use of software to optimize this process[19].

To elaborate a narrative, access to the lexicon is paramount, since it is necessary to select the pertinent words for the syntactic and grammatical structuring of the sentence, to orally represent the events of the story. In this way, broader vocabularies optimize this process, facilitating the semantic organization and integration of words for the formation of phrases and consequent narrative competence. In addition, the lexical aspects act as a link between short-term phonological memory and discursive production, especially in the retelling of stories[20,21].

Vocabulary diversity, mastery of grammatical use, and phrasal structuring are factors that provide better storytelling[13]. In a clinical context, the results obtained with these tasks can assist both in the diagnosis, since children with language disorders tend to have less lexical diversity[22], as well as in the identification of therapeutic objectives and in monitoring the evolution[19].

In addition, the comparison between aspects of narrative comprehension and oral narrative can provide clinical data for the diagnosis of language disorders, and performance in oral narrative can be a prior indicator for future academic problems, such as difficulties in the reading and writing process[16].

Thus, considering the scarcity of articles that relate to the performance of vocabulary and narrative in Brazil, this study aimed to characterize the performance of potiguares preschoolers in expressive vocabulary and oral narrative tests and to verify possible correlations.

METHODS

This study is part of a broader project approved by the institution's Research Ethics Committee (CAAE 87485518.0.0000.5292). Those responsible for the participants authorized their children to participate in the study by signing the Informed Consent Form (ICF).

Participants

Thirty-nine preschoolers belonging to the 4 to 6 years old age group, of both genders, with typical language development and enrolled in the Childhood Education Center of the Federal University of Rio Grande do Norte participated in this research. The exclusion criteria adopted were: speech-language disorder

previously diagnosed, syndromes, sensory and motor disabilities, or intellectual disability; and not being Brazilian or not having Brazilian Portuguese as their mother tongue.

The group was composed of 48.7%[19] boys and the average age was 65.7 ± 8.49 months. However, the distribution by age group was not uniform, as it was a convenience sample: 25.6%[10] participants were in the 4 years old age group (mean 54.6 ± 2.17); 33.3%[13] were in the 5 years old age group (mean 63.7 ± 3.54) and 41%[16] were in the 6 years old age group (mean 74.3 ± 2.18). Regarding family variables, it was possible to note that most mothers finished higher education or finished a master's degree (38.5% each), had a more frequent income range between R$ 2401 to R$ 4800 (28.2%), and the economic classification B2 was the most frequent (38.5%), as shown in Table 1.

When considering the items that preschoolers have, we noticed that computer (23.1%) and dictionary (35.9%) were the least frequent, while games and books (100% each) were the most frequent . The educational games and books they own are more related to knowledge of numbers (97.4%) and the alphabet (94.9%) and songs (71.8%). Family habits of shared reading, visiting parks, and shared meals are frequent in this sample, as shown in Table 2.

Table 1. Frequency distribution of family variables

Variable	Description	n	%
Maternal schooling	Finished elementary school I	1	2.6
	Finished high school	4	10.3
	Finished higher technical course	1	2.6
	Finished higher education	15	38.5
	Full Master	15	38.5
	Full PhD	1	2.6
Income bracket	1201-2400	6	15.4
	2401-4800	11	28.2
	4801-6000	9	23.1
	6001-10000	6	15.4
	>10000	6	15.4
Brazil Criterion	A1	3	7.7
	B1	9	23.1
	B2	15	38.5
	C1	10	25.6
	C2	2	5.1

Table 2. Frequency distribution of family practices

Variable	Description	n	%
Items the child owns	Instruments	26	66.7
	Board games	30	76.9
	Dictionary	14	35.9
	Books	39	100.0
	Computer	9	23.1
	DVDs	27	69.2
	Games	39	100.0
	Assembling toys	38	97.4
Family habits	Child reading	35	89.7
	Park once a week	30	76.9
	Family meal at least 4 days a week	36	92.3
Games or books that help to learn	Colors	36	92.3
	Animals	36	92.3
	Numbers	38	97.4
	Alphabet	37	94.9
	Writing	33	84.6
	Drawing	35	89.7
	Songs	28	71.8

Materials and procedure

Initially, parents who agreed to participate in the study answered a brief questionnaire about child development and family practices and the socioeconomic classification questionnaire of *Associação Brasileira de Empresas de Pesquisa* (ABEP) [23].

The language assessment battery for the broader study includes a video recording of vocabulary, phonology, fluency, speech, and phonological short-term memory tasks, but to answer the objectives of this research, only the vocabulary and narrative data were considered. Data collection was performed individually at the early childhood education institution in a single session with an average duration of 30 minutes.

For the evaluation of vocabulary, the expressive vocabulary test of the ABFW test[24] was used, which consists of asking the child to name 118 pictures that are presented sequentially and are divided into nine semantic fields: clothing, animals, food, means of transportation, furniture and utensils, professions, locations, shapes and colors, toys and musical instruments. To answer the objectives of this study, only responses classified as usual verbal designation (UVD) were considered, both in each of the semantic fields, as well as the total in the test. The performance transcript was performed separately by two different researchers and when a divergence was found between the analyses, a third researcher held a conference, thus guaranteeing the accuracy of the data obtained.

To elicit the narrative, the book "Frog, where are you?"[25] was used, which consists of 25 scenes in black and white, without writing and arranged in a logical sequence. The participant was asked to explore the pages and then tell a story based on the book in hand. The speech samples were analyzed and classified taking into account the total number of words, the number of different words, and the type of narrative.

The type of discourse was classified as: descriptive, when a sequential relationship between the scenes was not established, covering the productions in which the figures were described in isolation; causal, when causality between scenes was established and additive conjunctions with a causal value were used to demonstrate that one event occurred as a result of another, or intentional, when mental states or feelings of the characters were expressed and the speeches of a character were expressed by speech. If more than one type of speech occurred in the same narrative, the classification was made according to the predominant type[26].

Data analysis

We used the SPSS version 21 software for the statistical treatment of the data. The data distribution did not respect normality, so for the descriptive analysis of the numerical variables, we used the median, and the interquartile range, while for the categorical variables, we used the frequency distribution. Inferential analysis was performed using Friedman's ANOVA and peer comparisons using Dunn's test in semantic fields. Spearman's correlation coefficient investigated the relationship between the UVD and the use of words in the narratives. The level of significance adopted was 5%.

RESULTS

The comparison with the reference data indicated that 92.3% of preschoolers had an adequate performance for the age group in the expressive vocabulary test. No comparison was made in the different age groups, as the sample number in each group was different. The analysis of the percentage of UVD in each semantic field indicated that there was a difference between them ($p<0.001$). The pairwise comparisons indicated that the semantic fields that most differed from the others are local and professions, but that they do not differ between themselves ($p=1.000$) and clothing ($p=0.166$ and $p=0.137$, respectively). These fields are exactly those with the lowest median UVD, with clothing (70.0) and furniture and utensils (75.0) the closest.

The clothing field, in turn, differed from means of transportation ($p=0.001$), toys ($p<0.001$), shapes and colors ($p<0.001$), and animals ($p<0.001$); while furniture and utensils differed from animals ($p<0.001$) and in shapes and colors ($p=0.003$); and food differed only from animals ($p=0.002$), with a lower median, as shown in Table 3.

The most frequent type of narrative was causal (43.6%), followed by intentional (35.9%). The analysis of the number of words used in each narrative indicated that the median of total words per narrative was 170, with an interquartile range of 127.0 to 226.0, while the median of different words was 68 with an interquartile range of 56.0 to 81.0.

Finally, there was no correlation between UVD and the total words (rho=0.206 p=0.207) and the different words in the narrative (rho=0.132 p=0.422), but there was a positive correlation between the total words and the number of words different in the narrative (rho=0.882 p<0.001), as can be seen in Figures 1 and 2.

Table 3. Descriptive statistics of performance in vocabulary by semantic and general field.

Semantic field	Median	Interquartile range	
Clothing	70.0	60.0	80.0
Animals	93.3	86.7	100.0
Foods	80.0	73.3	86.7
Means of transportation	81.8	72.7	90.9
Furniture and utensils	75.0	70.8	79.2
Professions	50.0	50.0	60.0
Locations	58.3	33.3	58.3
Shapes and colors	90.0	80.0	100.0
Toys and musical instruments	81.8	81.8	90.9
Total	76.3	69.5	80.5

Caption: Clothing ≠ means of transportation**, toys***, shapes and colors***, animals***; Food ≠ animals*; Furniture and utensils ≠ animals***, shapes and colors *; Professions ≠ furniture and utensils***, food ***, means of transportation ***, toys***, shapes and colors***, animals***; Locations ≠ furniture and utensils***, food***, means of transportation ***, toys***, shapes and colors***, animals***. * p<0.05, ** p=0.001, *** p<0.001

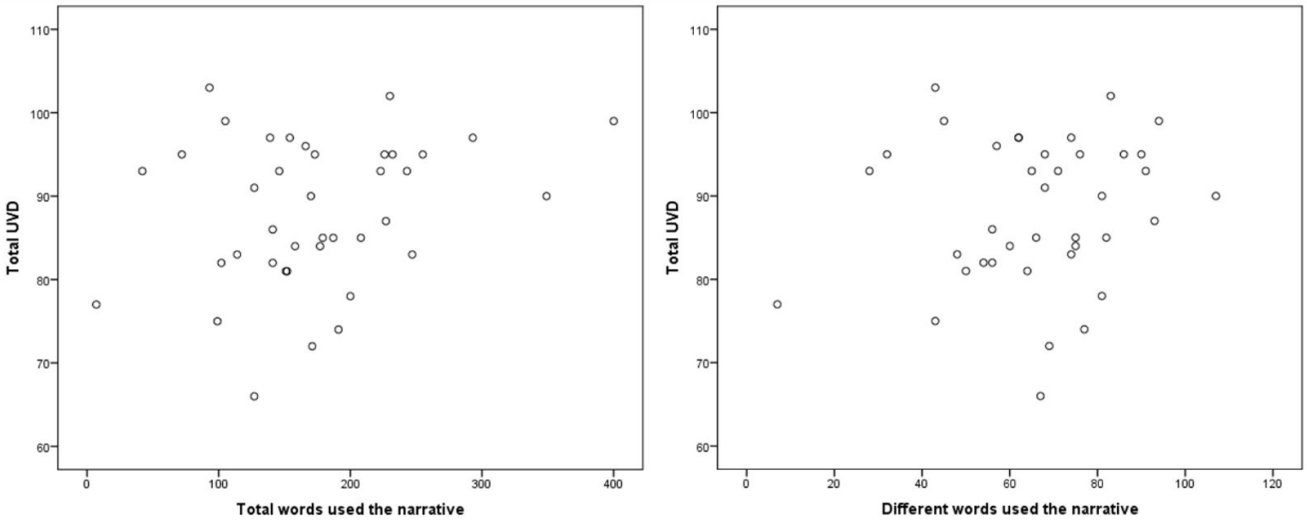

Figure 1. Scatter plot of the total UVD in the vocabulary and the use of words in the narratives

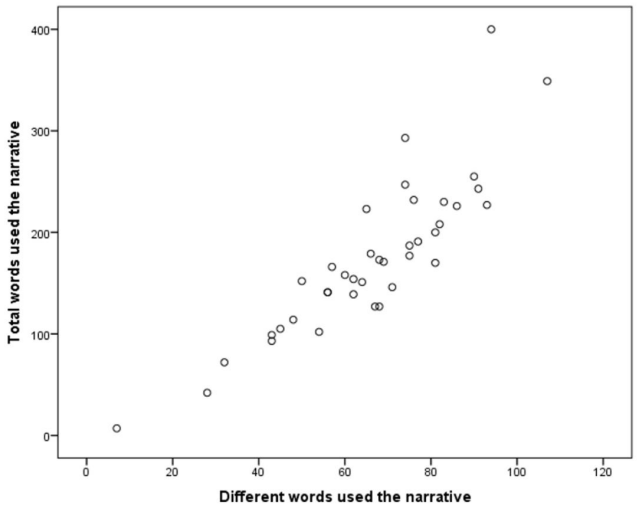

Figure 2. Scatter plot of total words and different words in the narratives

DISCUSSION

This study sought to characterize the performance of preschoolers in tests of expressive vocabulary and oral narrative, in addition to investigating the existence of a correlation between them.

The general performance of preschoolers in the expressive vocabulary test is suitable for the age group. When comparing the percentage of UVD between the semantic fields, we noted that "animals", "toys and musical instruments" and "shapes and colors" had the highest percentages, while "professions", "locations" and "clothing" had the lowest. Thus, it is asked whether the results found should be considered as altered, or as a result of cultural and geographical variations related to words belonging to these semantic classes, as observed in other studies[27-29].

This finding agrees with previous studies in which children presented a greater and lesser number of usual verbal designations for the same semantic fields found, the field "clothing" not always being included among those with the lowest percentage of correct answers[4,28,29]. Furthermore, it is worth noting that this observed pattern meets the reference values established in the ABFW protocol[24] for the age groups surveyed, following the process of the natural development of the acquisition of words.

It is worth mentioning that the semantic categories in which the highest percentage of UVD, "animals", "toys and musical instruments" and "shapes and colors" were obtained, are directly related to educational items, books, and toys to which participants have access, according to the distribution of family practices. Therefore, the presence of these items in the stimuli seems to favor their acquisition. This finding agrees with findings that more positive family environments in aspects of a variety of experiences, such as, for example, exposure to musical instruments, visits to places such as museums, theater, or family travel; and style of interaction, for example, parents' reaction to her feelings, the habit of following rules, stimulation of social interaction, are associated with a better lexical performance of the subjects[9].

To have more clarifying data, we believe that the analysis of substitution processes carried out by preschoolers will enable the qualitative investigation of this scenario and the understanding of their level of knowledge. In addition, an investigation can be carried out with distribution by age group, or accompanying students throughout early childhood, for more accurate characterization.

In the analysis of the narratives, there was a predominance of the type of causal discourse when compared to the other

categories. This reinforces that with the increase in the age group, there is a reduction in the descriptive discourse and an increase in the intentional discourse, which is the most recurrent from eight and nine years old[14,30]. Since the preschoolers in the present study are in the age group between four and six years old, the characteristic elements of the causal discourse are within the expectation for their age.

Concerning the objective of investigating the relationship between performance in vocabulary and narrative tasks, the findings obtained did not indicate a correlation. Nevertheless, it was observed that when using more words in a narrative, preschoolers also had greater lexical diversity. A recent study found a similar relationship after support for the construction of history (tutelage), indicating that the positive effect of tutelage was influenced by the linguistic potential of the subjects [14].

The analysis of the class of words used in the narratives, observing the prevalence of adjectives, adverbs, nouns, verbs, interjections, articles, conjunctions, numerals, prepositions, pronouns, can complement this information. It is interesting to determine the predominance of the words that compose the discourse, characterizing it qualitatively.

The good general performance obtained by preschoolers in both tests can be explained by socio-cultural issues, such as a good socioeconomic status (SES) and a facilitating environment[4,7,27,29]. In general, the participants of this study are inserted in a stimulating family context, with reading and socializing habits, with accessibility to toys and educational instruments, an important scenario for the development of the child's communicative and language aspects[6,27].

In addition, the school context in which they are inserted also influences aspects of language development since they are directly related to factors of socialization, interaction, and exposure to sociolinguistic resources[4,29]. In a previous study, preschoolers in public schools had a good performance in the vocabulary test than children enrolled in private schools, as they are inserted in a public institution considered as a reference in the region[4]. The subjects of this research are enrolled in a public institution, but because it is a model school linked to the University, it offers quality education, which positively influences the data obtained.

Regarding the limitations of the study, we can mention that the sample size is still small because it is a population with typical development. However, these results are from the first phase of the study. Because the collection was carried out in a single school, we did not obtain variation in the socio-economic aspects of the population, making comparisons between different levels unfeasible. Therefore, for the continuity of the study, we considered expanding the sample to include different schools and greater variability in maternal education, so that we can investigate the influence of socioeconomic status on language development.

In general, this study presents contributions for comparing and characterizing aspects of two different fields of language, vocabulary, and narrative; in addition to contributing to characterize the linguistic aspects of children with typical development outside the south and southeast regions, for which we already have more research. This information is essential, as it is relevant to take into account cultural and regional variations in the assessment process, as these factors can interfere with children's performance, especially when related to the lexical aspects of language.

We also highlight the importance of performance analysis of vocabulary and narrative, and the correlation between them, for providing clinical data in the process of assessing and diagnosing language disorders, in addition to predicting possible academic difficulties.

CONCLUSION

Most preschoolers with typical language development in this study achieved adequate performance in the expressive vocabulary test and predominantly causal oral narrative. There was no correlation between vocabulary and the use of words in the narrative. However, there was a positive correlation between total words and lexical diversity, indicating that those who use more words in their narratives also have greater lexical variety.

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Authors contributions

MSLS was responsible for the collection, analysis, and tabulation of the data, and the preparation of the article. AMCA designed and guided the study and was responsible for the statistical analysis and final review of the article.