Application of a Brazilian test of expressive vocabulary in European Portuguese children

Aplicação de uma prova brasileira de vocabulário expressivo em crianças falantes do Português Europeu

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ABSTRACT

Objective: to investigate the performance of European Portuguese children in a Brazilian test of expressive vocabulary, seeking to identify differences between age groups and gender, and to verify its applicability in this population. **Methods**: the sample consisted of 150 typical developed children, of both genders, between the ages of 5 and 6. All children attended public schools in the north area of Portugal. To assess the semantic performance, the expressive vocabulary sub-test of the language test (ABFW) was used, considering the percentage of usual verbal assignments and the classification (adequate/inadequate) according to the Brazilian reference values. **Results**: the performance of the European Portuguese children indicated that at age 6 they have a higher percentage of correct answers in expressive vocabulary. As for the gender, there were only occasional differences: the girls showed a greater dominance in the semantic fields of clothing (both ages) and furniture and utensils (at age 5), whereas the boys showed more dominance in the semantic field means of transportation (6 years). Regarding classification, there was no difference between age groups in overall performance. Only the semantic field shapes and colors had more individuals of 6 years with inadequate performance. **Conclusion**: the reference values adopted in the Brazilian population for semantic performance indicated that more than 80% of the children of each age group could have their performance classified as adequate. Such evidence suggests that this tool shows potential as an instrument of quantitative vocabulary's assessment of 5 and 6-years old children in European Portuguese.

RESUMO

Objetivo: investigar o desempenho de crianças falantes do Português Europeu em prova brasileira de vocabulário expressivo, buscando apontar se existem diferenças entre as faixas etárias e o gênero, além de verificar sua aplicabilidade nesta população. **Método:** a amostra foi constituída de 150 crianças em desenvolvimento típico, de ambos os gêneros, com idade entre 5 e 6 anos. Todas frequentavam escolas de ensino públicas na região norte de Portugal. Para avaliação do desempenho semântico, foi utilizada a prova do vocabulário expressivo do teste de linguagem infantil – ABFW, considerando a porcentagem de designações verbais usuais e a classificação (adequado / inadequado) de acordo com os valores de referência brasileiros. **Resultados:** o desempenho das crianças portuguesas indicou que aos 6 anos elas têm maior porcentagem de acertos no vocabulário expressivo. Quanto ao gênero, houve apenas diferenças pontuais: as meninas demonstraram maior domínio nos campos semânticos vestuário (em ambas as idades) e móveis e utensílios (aos 5 anos), já os meninos demonstraram maior domínio no campo semântico meios de transporte (6 anos). Com relação à classificação, não houve diferença entre as faixas etárias no desempenho geral, apenas o campo semântico formas e cores teve mais indivíduos de 6 anos com desempenho inadequado. **Conclusão:** os valores de referência adotados na população brasileira para classificação do desempenho indicaram que mais de 80% das crianças de cada faixa etária poderiam ser classificadas com desempenho adequado, o que sugere que tal prova possua potencial como instrumento de avaliação quantitativa do vocabulário em Português Europeu nesta faixa etária.

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INTRODUCTION

The verbal language is consensually the most usual means of communication in modern societies. Thus, verbal language is one of the most important tools for representing, translating and transmitting thought and understands complex rules involving sounds, words, phrases, meanings, and uses. These rules can be divided into three main components: form (phonology, morphology, syntax), content (semantics) and their use (pragmatic)[1].

Semantics is the knowledge and interpretation of the meaning of the different combinations of sounds that make up words, phrases, and expressions. At a basic level, semantics involves the entire vocabulary, encompassing the meanings transmitted by individual words, forming the lexicon of each individual[2].

The literature highlights some factors responsible for the organizational structure of the lexicon of a child, such as the age of acquisition of this lexicon[3], beyond academic level, socioeconomic status and culture as the most important[4,5].

Vocabulary is essential for language development and it is shown to be extremely relevant both for mastery of other language skills[2,6] and for identifying changes in typical language development[7,8]. Even in children with specific changes in language development, their initial vocabulary was able to predict the therapeutic prognosis[9].

Children between 4 and 6 years old who speak Brazilian Portuguese extend their vocabulary according to their age. This is associated with the development of morphological skills and language comprehension[10]. In this way, it is fundamental that the evaluation of children's language contemplates this area from early ages, which allows the detection of possible changes and allows adequate intervention to attenuate or even eliminate these difficulties.

However, when it comes to language evaluation, it is vital to consider the language being evaluated, especially the vocabulary, which is a sensitive measure to cultural variations[11]. A recent study indicates that the initial lexical development of Portuguese-speaking children is similar to English speakers, although it is still possible to note differences in the first few words, which reinforces the need for adequate instruments to the language[12].

However, there are still very few instruments of language evaluation in children for the Portuguese population that analyze the different dimensions of language, particularly at the semantic level. Thus, in this exploratory study, the expressive vocabulary test of the children's language test - ABFW[13] was used, developed in Brazil and adapted to European Portuguese (EP). This evidence is pointed out as a good measure to evaluate the lexicon of children in the typical development and it is also sensitive in detecting language disorders, besides being widely used in studies with specific language disorder[14].

This study aimed to investigate the performance of Portuguese-speaking children in the expressive vocabulary test of the ABFW children's language test, verifying whether there would be a difference between the 5 and 6-years old groups and between the genders. Finally, it was tried to verify if the reference values adopted in the Brazilian population to classify the performance as adequate would be usable in Portugal.

METHODS

The study was developed in partnership between researchers from Brazil and Portugal. The data collection was done by researchers from the University of Minho, Portugal, according to the ethical criteria in force in the country's institution. The project was approved by the University's Scientific Council, as data confidentiality and anonymity criteria were guaranteed, as well as the data collected were restricted to academic purposes.

Participants

For the selection of the individuals, the sampling was done for convenience totalizing 150 children between 5 and 6 years old. The children were divided into two numerically equal groups according to age group. In the 5-year old group, 57.3% of the individuals were females, while in the 6-year old group there were 48% of females.

All children attended public education institutions and attended pre-school or the first year of primary education in the northern region of Portugal. All participants were identified by educators/teachers as having typical development.

Materials and procedures

Initially, there was an authorization obtained for the execution of the study under the direction of the schools. Then, meetings were held with the teachers and educators of the selected children to clarify the research question and the form of data collection as well as request that they act as intermediaries with the parents and guardians of the children. Thus, the requests for authorization were given to the parents and explained the objectives and procedures of the study and also ensured the anonymity and confidentiality of the information obtained.

To respond to the objective of the research, the expressive vocabulary of the children's language test - ABFW[13] was used. The test is composed of nine semantic fields that must always be evaluated in the same sequential order: clothing, animals, food, transportation, furniture and household items, professions, places, shapes and colors, toys and musical instruments. Each conceptual field consists of several words that make up the total of 118 words. This analysis allows the verification of the degree of semantic development of children in typical language development and children with changes in language development.

The target word of 26 items was adapted for its appropriate use to the European context, but the used figure was maintained. Following the order of the test, the items with adaptations were sandal, owl, chick, dog, car, rocket, truck, bus, train, sandwich, pasta, popcorn, banana, lamp, refrigerator, toilet, washbasin, farmer, policeman, brown, guitar, seesaw, slide and rocking chair.

The application of the test occurred in the school environment and individualized. The children took 10 to 20 minutes to complete the evaluation.

The responses were recorded in audio and later recorded in the response protocol. For each figure presented, the response was categorized as a usual verbal designation (UVD) when the child used the usual word; not designation (ND) when the child

did not respond or answered "I do not know"; or substitution process (SP) when the child used another designation for the word. In this case, the classification of the substitution typology used by the child was performed, however, in this article, we focus only on data obtained with UVD.

After recording the responses, the sum of the UVD was calculated and its percentage was calculated in each semantic field and in the total. Finally, the performance of each individual in each semantic field and in the total was compared to the reference values adopted in the Brazilian population and classified as adequate, when it was equal or higher than the reference value, or below that expected when it was lower than the value of the reference.

Data analysis

The data obtained were statistically treated in the SPSS software version 21. Since the distribution of the data was normal, the descriptive analysis of the percentage of the UVD considered the mean and its standard deviation, while, for the classification of performance, the gross value and their frequency distribution were used. Inferential analysis was performed by the independent t-test when comparing groups and genders, and the Fisher exact test was used to compare the frequency distribution between groups and genders. The level of significance was 5%.

RESULTS

The performance of the 6-years old group had a mean of higher UVD in total and in the semantic fields of animals, food, transportation, professions, places and toys and musical instruments (Table 1).

There was no statistical difference between the genders in the total UVD in any group (Figure 1). In the 5-years old group, girls had higher mean in the semantic fields of clothing and furniture and utensils (Table 2) and in the 6-years old group, girls also had higher mean in the field semantic of clothing, but boys had higher mean in the field semantic of means of transport (Table 3).

The groups did not differ in the performance classification in the total UVD and only the semantic field of shapes and colors had a higher frequency of 6-year-old children with performance below the expected level (Table 4).
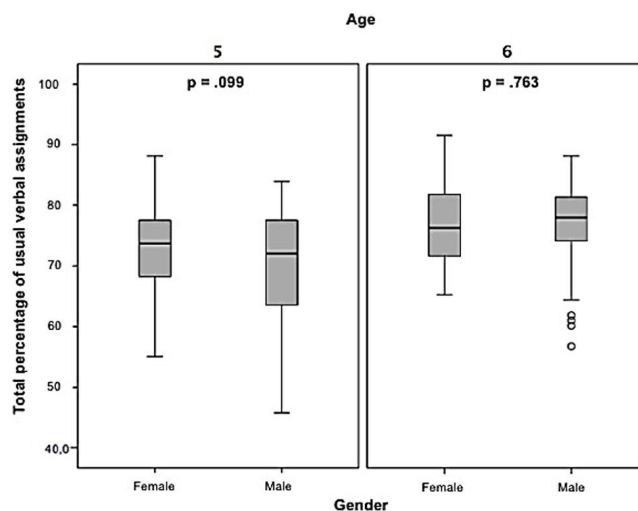
Captions: UVD = usual verbal designation; p = significance value
Figure 1. Boxplot of the average percentage of UVD in each genre by age group

Table 1. Comparison of the mean percentage of UVD between the groups

Semantic field	Age group	Mean	SD	p
Total	5 years old	71.8	8.60	<0.001*
	6 years old	76.8	7.29	
Clothing	5 years old	68.4	17.40	0.153
	6 years old	72.1	14.27	
Animals	5 years old	83.6	11.67	0.024*
	6 years old	87.6	9.76	
Food	5 years old	73.7	11.28	0.040*
	6 years old	77.5	11.27	
Means of transportation	5 years old	76.5	11.29	0.038*
	6 years old	80.7	13.45	
Furniture and utensils	5 years old	73.8	10.63	0.220
	6 years old	75.7	8.59	
Professions	5 years old	58.5	19.01	0.042*
	6 years old	64.7	17.50	
Places	5 years old	38.7	16.93	<0.001*
	6 years old	55.8	15.25	
Shapes and colors	5 years old	87.5	11.98	0.506
	6 years old	88.8	12.52	
Toys and musical instruments	5 years old	80.8	13.83	0.004*
	6 years old	86.4	9.26	

*statistical difference (p≤0.05) – T- test
Captions: SD = standard deviation; p = significance value

Table 2. Comparison of the mean percentage of UVD between genders in the 5 years old group

Semantic field	Genre	Mean	SD	p
Clothing	Female	75.1	13.52	<0.001*
	Male	59.4	18.13	
Animals	Female	83.1	11.11	0.698
	Male	84.2	12.53	
Food	Female	75.8	9.65	0.058
	Male	70.8	12.76	
Means of transportation	Female	75.3	11.10	0.281
	Male	78.1	11.51	
Furniture and utensils	Female	75.9	9.34	0.047*
	Male	71.0	11.71	
Professions	Female	60.2	19.82	0.373
	Male	56.3	17.92	
Places	Female	39.7	16.35	0.532
	Male	37.2	17.83	
Shapes and colors	Female	87.2	12.60	0.831
	Male	87.8	11.28	
Toys and musical instruments	Female	81.8	14.44	0.485
	Male	79.5	13.06	

*statistical difference (p≤0.05) – T- test
Captions: SD = standard deviation; p = significance value

Table 3. Comparison of mean DVU between genders in the 6-year group

Semantic field	Genre	Mean	DP	p
Clothing	Female	77.2	12.10	0.002*
	Male	67.4	14.64	
Animals	Female	85.7	10.83	0.123
	Male	89.2	8.46	
Food	Female	77.6	10.71	0.953
	Male	77.4	11.91	
Means of transportation	Female	77.5	13.66	0.047*
	Male	83.7	12.72	
Furniture and utensils	Female	76.7	7.87	0.330
	Male	74.8	9.22	
Professions	Female	66.9	18.33	0.282
	Male	62.6	16.66	
Places	Female	55.1	16.09	0.711
	Male	56.4	14.62	
Shapes and colors	Female	89.2	14.02	0.809
	Male	88.5	11.13	
Toys and musical instruments	Female	86.4	9.35	0.957
	Male	86.5	9.30	

*statistical difference (p≤0.05) – T- test
Captions: SD = standard deviation; p = significance value

In the investigation of the internal consistency of the items that constitute the vocabulary test, the Cronbach Alpha presented a value of .859, that is, the test presents good levels of internal consistency[15], demonstrating that the items that constitute the instrument are homogeneous, and there is no item that can improve the internal consistency of the test when removed.

Table 4. Comparison of the frequency distribution of the performance classification of the individuals between the groups

Semantic field	Age group	Classification of performance				Total	p
		Adequate		Below expected			
		n	%	n	%		
Total	5 years old	65	86.7	10	13.3	75	0.505
	6 years old	61	81.3	14	18.7	75	
Clothing	5 years old	47	62.7	28	37.3	75	0.100
	6 years old	36	48.0	39	52.0	75	
Animals	5 years old	72	96.0	3	4.0	75	1.000
	6 years old	72	96.0	3	4.0	75	
Food	5 years old	32	42.7	43	57.3	75	0.313
	6 years old	25	33.3	50	66.7	75	
Means of transportation	5 years old	65	86.7	10	13.3	75	1.000
	6 years old	66	88.0	9	12.0	75	
Furniture and utensils	5 years old	65	86.7	10	13.3	75	0.428
	6 years old	69	92.0	6	8.0	75	
Professions	5 years old	67	89.3	8	10.7	75	0.802
	6 years old	65	86.7	10	13.3	75	
Places	5 years old	6	8.0	69	92.0	75	0.303
	6 years old	11	14.7	64	85.3	75	
Shapes and colors	5 years old	69	92.0	6	8.0	75	0.013*
	6 years old	57	76.0	18	24.0	75	
Toys and musical instruments	5 years old	69	92.0	6	8.0	75	0.494
	6 years old	72	96.0	3	4.0	75	

*statistical difference (p≤0.05) – Fisher exact test
Captions: n = number of individuals; p = significance value

DISCUSSION

The main objective of this study was to investigate the performance of Portuguese - speaking children in an expressive vocabulary test, aiming to identify differences between the studied age groups and the gender.

The results show a progressive and proportional performance to the age, that is, the age group of 6 years old had a mean of performance superior to the age group of the 5 years old group. This fact agrees with Brazilian studies, showing that the mean number of UVDs increases gradually as the age, that is, older children present better vocabulary performance[4,10].

However, it is interesting to note that for the categories clothing, furniture and utensils, and shapes and colors, such difference between the age groups was not statistically significant. It is possible that this result comes from the familiarity of such semantic fields from previous age groups, that is, children in the final years of early childhood should already have reasonable mastery over the items of these semantic fields.

Regarding the influence of gender on vocabulary performance, boys and girls had similar overall performance. Only punctual differences were found: girls demonstrated greater dominance in the field of semantic of clothing at both ages; girls at 5 demonstrated greater mastery in the semantic field of furniture and utensils; boys aged 6 years old demonstrated greater mastery in the semantic field of means of transport.

The absence of gender differences in terms of vocabulary had already been pointed out in previous studies[11,16,17]. Punctual differences probably come from the familiarity of children with such semantic fields, which involves cultural issues. If the playful universe typical of each genre is considered, the items of clothing, furniture, and domestic utensils are more present in the girls' games, while the means of transportation are more present in the boy´s games. Thus, this fact justified the development of children's vocabulary is dependent on the experiences they are exposed [1,4,5,7].

Finally, we verified if the reference values adopted in the Brazilian population to classify the performance as adequate would be able to be used in Portugal. The results indicate that more than 80% of the individuals of each age group had a performance classified as adequate, suggesting that such evidence may be able to identify restrictions in the vocabulary of Portuguese-speaking children.

However, it is important to note that the semantic fields of clothing, food, and places had a high percentage of children performing below-expected. Also, the semantic field of shapes and colors presented a statistical difference between the age groups, with more individuals aged 6 years old performing below the expected than 5 years old children. These semantic fields were pointed out by a Brazilian survey with children between 6 and 7 years old in the northeastern region of Brazil as being those with a worse performance index than expected[11]. This fact points out the need for more in-depth research regarding reference values in different regions, since variations in spoken Portuguese in each region (in Brazil and Portugal) can affect children's performance in specific semantic fields.

Therefore, the vocabulary test showed good internal consistency and it was able to point out the lexical performance of the children evaluated, which had already been confirmed in Brazilian studies with populations in typical and altered language development[4,8-11,18-21]. In this way, its use seems to have the potential to quantify the vocabulary of children in early childhood (5 and 6 years old) who are speakers of European Portuguese, which may contribute to the area of language, given the scarcity of tests that allow the evaluation of children with this age group in Portugal.

The study limitation was the absence of the analysis of the substitution processes carried out by the children and the restriction of the analyzed age groups. However, because this is the first study that results from the partnership between researchers in Brazil and Portugal, these limitations should be solved in the future, since studies are already being carried out in Portugal to analyze these issues.

In general, this study presents contributions to clinical and educational practice, as it points out the need to use culturally adapted instruments that evaluate the development of language, more specific vocabulary, in the preschool stage. Although it is not an instrument already validated for European Portuguese, the instrument used here demonstrates the feasibility of quantifying the vocabulary of children in late childhood. It also has the potential to identify children who need to be referred for a more detailed language assessment and who can benefit from early intervention programs, helping to minimize the possible consequences of such changes and to ensure more effective communication to children and quality to their families.

CONCLUSION

The overall performance of European Portuguese speaking children in the expressive vocabulary test was better in the 6-years old group, but there was no statistical difference between the genders. Some semantic fields seem to be more influenced by cultural and geographical variations. The reference values adopted in the Brazilian population for performance classification indicated that more than 80% of the children of each age group were adequate, suggesting that such evidence has the potential as an instrument for assessing vocabulary in Portugal.

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Author contributions