Designation processes and semantic substitutions used by European Portuguese children in a vocabulary test

Processos de designação e substituição semântica usados por crianças falantes de Português Europeu numa prova de vocabulário

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ABSTRACT

Purpose: This research study focus on the designation processes and semantic substitutions of each word on the vocabulary sub-task from the language test for children – ABFW, standardized in Brazil and adapted to European Portuguese, as well as the comparison of the results obtained in the two countries, to analyze the relevance of their extensibility to the Portuguese population. **Methods**: The test was applied to 150 children from 5 to 6 years old, of typical development. The test consists of 9 conceptual categories. Each category consists of different words, which were always assessed in the same sequential order. **Results:** The sample of this study showed a lower performance only in clothes, places and food semantic categories. All the other categories have outperformed the standard. The categories of vocabulary with higher percentage in the right designation of the words were colors and shapes, animals and toys and music instruments. The categories with a higher percentage of substitution processes, from the reference results, were: food and locations. The most recurrent substitution processes were the co-hyponym, words that designate semantic attributes, valorization of the visual stimulus, hypernym and parasynonyms **Conclusion:** Given the homogeneity of the results of this study with the results obtained with other studies in Brazil, this test reveal potentiality as an instrument for vocabulary assessment in Portugal.

Keywords: Vocabulary; Language; Designation; Substitution; Assessment

RESUMO

Objetivo: Este estudo teve por objetivo a análise e quantificação dos processos de designação e substituição semântica apresentados na prova do vocabulário do Teste de Linguagem Infantil ABFW, padronizado no Brasil e adaptado para Português Europeu (PE), assim como a comparação dos resultados obtidos nos dois países, de forma a analisar a pertinência da sua extensibilidade à população portuguesa. **Métodos:** A prova foi aplicada a 150 crianças de 5 e 6 anos de idade, de desenvolvimento típico, na Região Norte de Portugal. A prova é constituída por nove categorias conceituais e cada categoria formada por diferentes vocábulos, que foram avaliados sempre pela mesma ordem sequencial. **Resultados:** A amostra mostrou desempenho inferior, em relação à norma, apenas nas categorias semânticas vestuário, locais e alimentos. Todas as outras categorias revelaram desempenho superior. As categorias do vocabulário que apresentaram maior percentagem de respostas corretas foram: animais, formas e cores e brinquedos e instrumentos musicais. As categorias que apresentaram percentagem superior de processos de substituição, em relação à norma, foram alimentos e locais. Os processos de substituição mais utilizados foram: substituição por co-hipônimo, vocábulos que designam atributos semânticos, valorização do estímulo visual, hiperônimos e parassinônimos. **Conclusão:** Dada a homogeneidade dos resultados deste estudo com os resultados obtidos em outros estudos no Brasil, esta prova revela potencialidades como instrumento de avaliação do vocabulário em Portugal.

Palavras-chave: Vocabulário; Linguagem; Designação; Substituição; Avaliação

INTRODUCTION

It is consensual that language is indispensable in the life of human beings who, by existing as social beings, need to communicate and maintain contact with others. There are several definitions of language, but in general, it could be defined as the process used by groups of individuals, in which a set of sounds, words, gestures and symbols are assigned meaning to communicate with each other[1,2]. In this way, speakers / listeners of a language learn the rules of a language system in order to communicate. Understanding how this process occurs helps determine whether a child has normal development, according to parameters appropriate to his/her age group, or if there is an abnormal pattern of language development[3].

Vocabulary acquisition becomes one of the most notorious milestones in language development[4,5], as well as in the identification and diagnosis of a more important language disorder such as specific language impairment[6,7], since it is the one with the greatest evolution at earlier ages[8,9].

As is well known, in a typical developmental child, the first lexical items appear approximately at the age of 1 year[10,11]. At this initial stage, words are acquired slowly (between one and three new words per week). At around 15 months of age, the child may have a vocabulary of up to ten words, but may already be able to comprehend up to 20 words[3]. At around 20 months of age, there is a very marked expansion, and the child's vocabulary can reach up to 50 words. The speed of word acquisition increases more and more, with up to eight new words per week. At the age of 2 years, the child's vocabulary can have between 200 and 500 words and he/she can understand many more words, in addition to these[3,12]. The pre-school period is one of the periods of greatest lexical growth. At the age of 3 years, children can have an expressive vocabulary between 900 and 1000 words. At 4 years, the child's vocabulary reaches 1500 words, being able to express himself better, with average length per utterance of 4.71 words[3,13]. By the age of 5, the child can exceed 2000 words in his expressive vocabulary[3]. At this age, his phrases are longer, showing greater complexity of expression, notably increasing the number of words per utterance[13]. At the age of 6 years, his / her comprehension vocabulary can vary between 20000 and 24000 words and he/she is able to have an expressive vocabulary that can vary between 2600 and 7000 words[2,3,12]. At the age of 5/6 years, the lexical vocabulary of a child is already very similar to the lexical vocabulary of an adult, although the vocabulary continues to develop until adulthood, according to experience, environments (home, school) and contexts[14-17]. The impact of acquiring and developing vocabulary as a necessary tool for the success of academic areas (reading, writing, etc)[1-3] is highlighted.

Studies on this subject have shown that, the acquisition of words referring to objects, actions and events more easily perceived comes first. Only then, more generic words related to classes, categories and certain types of objects and more complex actions are acquired[4,18]. There is also another factor that seems to influence the lexical organizational structure, the frequency of words, that is, the frequency with which words are used in the child's surroundings, in experiences and words to which they are daily exposed. The most frequently used words are recognized by children more quickly and more objectively than words used infrequently, with low frequency, which suggests that higher word frequency facilitates conceptual processing[19-22].

As the child's lexicon expands, the need for better organization among words increases, and thus new relationships and semantic connections are formed, allowing the child to perceive and enunciate increasingly complex words and develop grammatical notions[2,22,23].

Children with language problems demonstrate more difficulties than other children in acquiring new relationships and semantic connections and do so more slowly[22]. They manifest these difficulties often associated with hesitations, disfluencies, reformulations and processes of word substitution[16,17,24,25]. In addition, these children often use a large number of words without a clear reference (e.g., thing, this, that, here, there)[2]. A child with semantic-related disorders is able to learn words from certain classes, mainly related to objects, but later shows problems in learning words from more abstract or figurative classes[2,16,18]. As already mentioned, as the child's vocabulary increases, he/she is able to increasingly restrict the terms and their meanings, going from general to specific, but a child with language disorders always uses the same general terms over time[2,26].

In Portugal, the scarcity of instruments that assess language and, specifically, some language components that allow perceiving all these processes of its development still is notorious. In Brazil, to assess language and the processes inherent to its acquisition, the ABFW Children's Language Test (ABFW) is frequently used (ABFW - Test of Children's Language in Areas of Phonology, Vocabulary, Fluency and Pragmatics)[16], both in the field of research and in the clinical field, evaluating children with typical development, but also children with specific language disorders, with phonological disorders and deafness[16,17,27]. The instrument analyzes in different language categories the methods used by children for vocabulary designation and typology of substitution processes used in the attempt to name the word (figure) presented.

This test was previously adapted for European Portuguese (EP) and reveals potential as an instrument for assessing vocabulary namely in the early identification of language difficulties in 5-6 year-old Portuguese-speaking children[27]. However, it is important to compare the results of the two populations, especially regarding the semantic designation and substitution processes that children use, which may reinforce the pertinence of their applicability and standardization for the Portuguese population.

Therefore, the aim of this study was to assess a group of children aged 5-6 years in the vocabulary area in Portugal, analyzing and quantifying the semantic designation and substitution processes used in the 118 words presented in the vocabulary test (Part B) of the ABFW Children's Language Test[16], and compare it with results obtained in Brazil.

METHODS

This study was authorized by the Scientific Council of the University of Minho, after all aspects of data confidentiality and anonymity were ensured.

Participants

For this study, the method of non-probabilistic sampling, convenience sampling, geographic criteria and ease of access was used. A group of 150 children, of whom 75 aged between 5 years and 5 years and 11 months, and the other 75 aged between 6 years and 6 years and 11 months, that is, children who attended the pre-school education and the 1st year of the 1st cycle of basic education in the northern region of Portugal.

Teachers identified the children of this study as being of typical development, monolingual, having Portuguese as their mother tongue. Children were assessed at the beginning of the school year by regular school teachers using informal screening scales / inventories to track children with and without suspected developmental disorders. These inventories consist of a list of items / behaviors that describe skills at the level of comprehension and production language, which can be quoted in two parameters (have acquired, have not acquired)[10].

In order to continue the project, the Free and Informed Consent Form (TCLE) was sent to parents for signature, explaining the objectives and procedures of the study, and also ensuring the anonymity and confidentiality of the information acquired.

Instrument

The vocabulary test (Part B) of the ABFW Children's Language Test[16] was used as an instrument. It consists of nine lexical areas, which should always be assessed in the same sequential order. Each lexical area is composed of different words / figures / items.

In order to make it suitable for the Portuguese context, 26 words have been adapted, keeping the original image (words in parentheses indicate original in European Portuguese): sandal (sapatilha), owl (mocho), chick (pintainho), dog (cão), police car (carro de polícia), rocket (foguetão), truck (camião), bus (autocarro), train (comboio), sandwich (sandes), pasta (massa), popcorn (pipocas), pineapple (ananás), lampshade (candeeiro), refrigerator (frigorífico), latrine (sanita), sink (lavatório), cup (chávena), barber (cabeleireiro), farmer (agricultor), police officer (polícia), brown (castanho), guitar (viola), tetter-totter (balancé), slides (escorrega) and swing (baloiço)[27].

In this way, ten words are part of the conceptual field of clothing, namely: boot; coat; dress; cap; pants; pajamas; shirt; sneaker; shoe; bag/suitcase. Fifteen words are part of the conceptual field of animals: bird; owl; cat; chick; cow; dog; duck; chicken; horse; pig; cock; bear; elephant; lion; bunny. There are 11 words in the conceptual field of the means of transport: boat; ship; police car; car; helicopter; airplane; rocket; truck; bike; bus; train. There are 15 words in the conceptual field of food: cheese; egg; beef; salad; sandwich; soup; pasta; lettuce; popcorn; apple; banana; carrot; onion; pineapple; watermelon. The following 24 words are part of the conceptual field of furniture and utensils: bed; chair; dresser; iron; ironing board; lamp; refrigerator; sofa; stove; table; telephone; latrine; washbasin; cup; fork; glass; knife; frying pan; pan; dish; spoon; comb; toothpaste; towel. Ten words are part of the conceptual field of professions: hairdresser; dentist; doctor; farmer; firefighter; postman; nurse; police; teacher; clown. The following 12 words are part of the conceptual field of place: mountain; church; classroom; street / road; building; city; statue; stadium; store; garden; forest; river. The following 10 words are part of the conceptual field of colors and shapes: black; blue; red; green; yellow; brown; square; circle; triangle; rectangle. And finally, eleven words are part of the conceptual field of musical instruments and toys: house; drum; viola; rope; piano; robot; tetter-totter; roller skate; slides; swing; whistle.

The 118 words / figures that are part of the test were presented to the children in an album of 12 cm × 21 cm in size, provided by the authors of the instrument.

Procedures

In order to carry out this study, authorizations from the respective educational institutions, as well as from parents of all children, were previously obtained. The requests for authorization explained the aims and procedures of the study and also ensured anonymity and confidentiality of all information obtained, respecting the requirements of the Ethics Commission of the University of Minho.

After obtaining the necessary authorizations, the days for the performance of tests were scheduled.

On the scheduled day, all kindergartens and schools provided a quiet and reserved space for the application of the instrument. Tests were individually applied on a regular basis, and each child took ten to twenty minutes to complete. The test was applied to all children submitted to the evaluation, always in the same way. The nine conceptual fields were always assessed in the same sequential order, such as the display of figures. In each of figures, ten seconds were waited for the child to answer. In cases where the children did not respond, the following picture was shown.

The children's responses were recorded in an audio file and later transcribed into an individual record sheet of responses.

In cases where the child used the usual term, the term DVU was designated (usual word designation). In cases where the child did not respond, or answered "I do not know", the term ND (no designation) was marked. Finally, in cases where the child used a different designation for the word in question, the term SP (substitution process) was marked and the typology of the replaced word was inserted. The typology of these words was attributed according to the substitution processes presented by the test authors: modification of the grammatical category; substitution by hyperonym; substitution by co-hyponym (near or distant); substitution by hyponym; substitution by synonyms; creation of neologism by morpho-semantic-syntactic analogy; substitution by terms that designate semantic attributes; substitution by cultural paraphrases; substitution by function designation; substitution by co-hyponym attribute; use of visual stimulus; use of onomatopoeia;

Data were statistically analyzed using SPSS software, version 21. For the comparison of results obtained with ABFW reference values, the t-Test was used. Significance p values lower than 0.05 were adopted.

RESULTS

In the sample of this study, performance was lower than expected in conceptual categories clothes, foods and places. All other conceptual categories presented DVU percentage

higher than expected. Statistical analysis revealed significant difference among all conceptual categories in terms of obtained and expected values (Table 1).

The semantic fields that showed the highest percentage of correct answers were: shapes and colors, animals, toys and musical instruments and means of transport (Table 1).

In relation to the use of SP, the categories that registered percentage significantly higher than expected were: places and foods (Table 1). All other fields revealed percentage very similar and even lower than expected. Statistically significant differences among the various conceptual categories were confirmed with respect to obtained and expected values (Table 1).

Regarding ND, categories of animals, means of transport, professions, shapes and colors and toys and musical instruments expressed percentage lower than expected, while the clothing category obtained percentage higher than expected. In the remaining conceptual fields, there were no statistically significant differences in relation to ND (Table 1).

The typologies of substitution processes most significantly used were, respectively, substitution by co-hyponym, substitution by terms that designate their semantic attributes, valorization of the visual stimulus, substitution by hyperonym, substitution by parassinonym or equivalent, substitution by function designation, modification of the grammatical category and substitution by hyponym (Table 2).

Table 1. General percentage table of the usual word designation, substitution and non-designation processes in the different categories, for the expected performance and for the achieved performance

Categories	DVU			PS			ND		
	% A	%E	p	%A	%E	p	%A	%E	p
Clothes	70	80	<0.001*	27.5	20	<0.001*	2.4	0	<0.001*
Animals	85.5	70	<0.001*	12.0	10	0.008*	2.47	20	<0.001*
Means of transport	78.6	70	<0.001*	19.55	25	<0.001*	1.81	5	<0.001*
Foods	75.7	90	<0.001*	18.73	5	<0.001*	5.6	5	0.207
Furniture and utensils	74.8	65	<0.001*	20.04	30	<0.001*	5.17	5	0.778
Professions	61.7	45	<0.001*	33.9	30	0.007*	4.4	25	<0.001*
Places	47.2	70	<0.001*	48.17	25	<0.001*	4.58	5	0.319
Shapes and colors	88	85	0.002*	9.1	10	<0.001*	2.8	5	<0.001*
Toys and musical instruments	83.6	70	<0.001*	11.82	20	<0.001*	4.54	10	<0.001*

*Statistical difference (p ≤ 0.05) - t test
Subtitle: % A = achieved percentage; % E = expected percentage; DVU = usual word designation; PS = substitution processes; ND = non-designation; p = significance value

Table 2. Use frequency of different typologies of substitution processes

SP Typology	Use frequency
Modification of the grammar category	186
Substitution by hyperonym	345
Substitution by co-hyponym	1873
Substitution by hyponym	116
Creation of neologism by morpho-semantic-syntactic analogy	10
Creation of phonetically expressive dictionary	0
Substitution by parassinonym or equivalent	286
Substitution by terms that designate their semantic attributes	429
Substitution and / or complementation of verbal semiotics by nonverbal	0
Substitution and / or complementation of verbal semiotics by indicative gesture	0
Substitution by cultural paraphrases	24
Substitution by the function designation	207
Substitution by co-hyponym attribute	4
Substitution by affective paraphrases	0
Valorization of the visual stimulus	392
Use of onomatopoeia	11
Unintelligible segment	0

Subtitle: SP = substitution processes

DISCUSSION

The lexical fields that presented the worst performance in this study coincided with those found in previous studies: clothes[27], places[17,27-29] and foods[17,27].

The categories that obtained better performance, that is, those that showed to be more consolidated differed, to a certain extent, from the reference results of the ABFW test, for the same age groups, since the categories that presented greater percentage of designation of the usual word, referentially, were clothing, foods, places and shapes and colors[16,27]. The conceptual field shapes and colors was the only one that was among the categories that presented better results, both in this study and in the reference study.

In another study carried out in Brazil, with 6 and 7-year-old children, the categories that presented better performance were: animals, means of transport, shapes and colors, furniture and utensils[17]. Another Brazilian study with 5-year-old children showed that the categories that presented better performance in children of typical development were: animals, food, means of transport and furniture and utensils[28]. There is also another study carried out with the ABFW test with 5-year-old children in which the categories with the best performance were: animals, means of transport, furniture and utensils and clothing[29]. In all of these studies, the categories of animals and means of transport appear as the most acquired by children, as was verified in this research.

With regard to substitution processes, the results of this study were largely in line with the reference results, in which categories that showed the greatest use of substitution processes were: furniture and utensils, professions, places and means of transport[16]. Also in other studies, categories that presented the highest percentage of substitution processes were: places and professions[17,28]. These results suggest that the words that make up these categories are used less frequently because the words most frequently used are recognized by children more quickly and objectively than those that are used a few times, which indicates that the higher word frequency facilitates the conceptual processing[19-22]. In addition, there are studies indicating that the familiarity and frequency of objects / concepts in children's daily life are important, since this allows the activation of lexical access through memory in the short and long term[29]. It could be deduced from these references that these conceptual fields should be better worked and more approached, both in schools and in the family environment.

As for the typology of these substitution processes, those most used by children were, respectively: substitution by co-hyponym (the child substitutes the words in the same category that are more familiar to them); substitution by words that designate their semantic attributes (the child identifies image qualities); valuation of visual stimulus (the child names an element that stands out in the figure); substitution by hyperonym (the child substitutes a word by a more generic one); substitution by synonyms (the child uses another word that has similar meaning); substitution by function designation (the child describes the function of the word with more familiar vocabulary)[17]. These results are in agreement with other studies conducted in Brazil, which obtained exactly the same order of use in relation to substitution typologies[17,30].

With regard to ND, the percentages observed were always lower in all studies, and there were no significant percentage differences among the different categories, indicating that children almost always chose to use a substitution process to designate a word instead of not designating it[17,29].

The results of this research presented many similarities both with reference results, mainly regarding the overall performance of DVU and categories that present greater percentage of substitution processes, as well as with other studies carried out in Brazil that used the ABFW vocabulary test in relation to categories with better performance and the percentage obtained from ND.

These data reinforce the conclusions of a previous study, which refers to this instrument as indicative of the potential to assess the vocabulary of children in Portugal. The study compared the performance among the different age groups in Portugal and Brazil, and also analyzed the internal validity of the test using the Cronbach Alpha coefficient and was considered very good (.859). Reliability data indicate that the test proved to be consistent, contributing to clinical and educational practice, also in that country[27].

The differences found may have occurred due to a different sociolinguistic reality[17,27,28,30], which points to the need to use culturally adapted tools, as well as the need to value other social variables, such as the cultural level of the family, academic qualifications of parents / caregivers and socioeconomic status, among other variables[17,27-30].

This study had some limitations, among them: the convenience sample, the restriction of the assessed age groups and the absence of analysis of the previously mentioned variables. However, these restrictions may lead to future research, with strong scientific contribution to the field of language, culminating with the use of the test at national level.

CONCLUSION

Since the results obtained in this study revealed high performance in all the conceptual categories of the ABFW vocabulary test, except for places, presenting many similarities with other studies carried out in Brazil, namely with regard to better understood vocabulary categories, this instrument may be used with the Portuguese population for specific age groups, with appropriate cultural and linguistic adaptations.

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