Variáveis extralinguísticas, sexo e idade, na consciência do próprio desvio de fala*****

Extralinguistic variables, gender and age, in the self-awareness of speech impairment

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Abstract
Background: self-awareness of speech impairment according to the following extralinguistic variables: gender and age. Aim: to examine the influence of gender and age on the self-awareness of speech impairment. Method: participants were 24 children with the diagnosis of phonological disorder, 15 boys and 9 girls, with ages ranging between 5:0 and 7:7 years. For this group the assessment of self-awareness of speech impairment was perfomed. Results: results indicated that 45.83% of the subjects presented self-awareness of speech impairment. There were no significant statistical differences between the studied extralinguistic variables and the self-awareness of speech impairment. However, a higher self-awareness of speech impairment was observed for six-year-old male children. Conclusion: children with phonological disorder can be self-aware of speech impairment; gender and age are not important factors for the development of this ability.
Key Words: Speech; Speech Disorders; Speech Perception; Age and Sex Distribution.

Resumo
Tema: a consciência do próprio desvio de fala de acordo com as variáveis extralinguísticas, sexo e idade. Objetivo: investigar a influência das variáveis sexo e idade no desempenho em consciência do próprio desvio de fala. Método: o grupo pesquisado constitui-se de 24 crianças com diagnóstico de desvio fonológico, 15 meninos e 9 meninas, na faixa etária de 5:0 a 7:7. Neste grupo, foi realizado a avaliação da consciência do próprio desvio de fala. Resultados: observou-se que 45,83% das crianças do grupo pesquisado apresentaram consciência do próprio desvio de fala estabelecida. Não houve diferenças estatisticamente significantes entre as variáveis extralinguísticas pesquisadas e a consciência do próprio desvio de fala. Contudo, notou-se maiores escores de consciência do próprio desvio de fala no desempenho das crianças representantes da faixa etária de 6 anos e do sexo masculino. Conclusão: crianças com desvio fonológico podem ter consciência do próprio desvio de fala e as variáveis extralinguísticas sexo e idade não são fatores intervenientes no desenvolvimento dessa habilidade.
Palavras-Chave: Fala; Distúrbios da Fala; Percepção da Fala; Distribuição por Idade e Sexo.

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Introduction

The awareness of the own speech impairment (CPDF) refers to the ability of some children with phonological disorder to recognize changes in their speech1. This ability has been studied by researchers who consider it of great importance to the therapy development, as well as in reducing future reading and writing problems1-2.

Considered by the authors of this study as a metalinguistic skill, the CPDF makes it clear that there are children with phonological disorders, who seem to have access to normal phonological representations. This fact can also be seen in the ability that these subjects have to solve phonological tasks involving phonological awareness1.

Linguistic or metalinguistic awareness refers to the speaker's ability to treat language as an object of reflection. To do so, skills such as segmenting and manipulating the speech in its various units (words, syllables, phonemes); separating words from their referents (establishing differences between the meanings and significance) and judging the semantics and syntactic consistency of the statements are used3.

Several researches have studied the influence of extralinguistic variable of sex in the performance of the phonological awareness skills, which is one of the components of linguistic awareness. Some of these studies have shown that sex does not determine significantly different performance in these abilities4-5, whereas others have showed a girls' superiority in certain tasks6-7.

Age is another relevant factor in the study of metalanguage. Some studies show that this variable favors the development of phonological awareness 3,5.

Therefore, this study aimed to investigate the possible influence of the extralinguistic variables of sex and age in the performance of the CPDF.

Method

The exploratory cross-sectional study included 24 children with diagnosis of phonological disorders, 15 boys and 9 girls, between 5:0 and 7:7;2 years old.

Before the assessment of CPDF to confirm the diagnosis of phonological disorder, children underwent a procedure of sample selection according to the following assessments: assessment of stomatognathic system, language and speech assessment, and hearing screening.

For the children to participate in the study, they should have parental/ responsible permission through the Consent Form; they should present diagnosis of phonological disorder; they should not have had any kind of speech therapy before; they should not have had school failure; and they should not present evident neurological, cognitive and/or psychological impairments.

After the end of the speech screening, a data collection, which aimed to make the children hear and judge the phonological changes in their own speech, was performed to assess the CPDF. The assessment of this procedure was based on the instructions available in the paper that proposes the test1.

Initially, 10 words with production impairment were selected from a speech sample of each child. The speech data were collected by means of the Powerpack digital recorder - Digital Voice Recorder DRV-800III in a quiet environment. After that, they were stored in a computer through the Digital Voice Recorder V2.0 program. Thus, the recordings were edited by using of the program GoldWave Audio digital editor and recorded on an mp3 or in the computer. Once the recordings were stored, they were edited and presented to each child via headphones.

An individual instrument was made according to the phonological system of each child. Figures corresponding to the edited words from the speech sample of each child were selected to be shown during the test application.

After about one week, the words were presented to the child out of the context in order to make it difficult for him/her to realize that they were the same words as he/she

had produced. To do so, it was explained to the children that they would hear words spoken by another child and that he/she should judge whether they had been produced correctly or incorrectly.

A figure corresponding to each of the ten selected words was shown. Then, the child had to listen to it and judge it in order to say whether the word had been produced correctly or incorrectly. Following the authors´ instructions, the children were asked this question: "is the child speaking the word correctly?"

The ten selected words from a sample of speech were judged twice by each children, and the children really had no clue the words were produced by themselves to avoid (according to the authors) the interference of emotional factors in the test.

The CPDF test is valued and correct judgments are worth 1 (one) and incorrect judgments are worth 0 (zero). The maximum points that can be obtained are 20 (twenty). After considering the total number

of points each child obtained, an overall average of the group was made.

For the individual analysis of the children, it was set that the CPDF would occur with percentages equal to or greater than 50% of success in the judgments.

Results below 50% of correct answers indicated that the child would not have the established CPDF yet.

This study was approved by the Ethics Committee in Research of the Higher Education Institution (Registered under number: 0103.0.243.000-07). It was developed at the Clinical School of the Institution, as well as in a state school in the same city. It obtained the permission of the institutional authorities through the

signature of the Institutional Consent.

Data from this study underwent statistical analysis through the use of the statistical program Statistica 7.0. In addition, test t was used to compare the two independent groups. The significance level was set at 0.05 ($p < 0.05$).

During the comparison between ages and CPDF performance, two 7-year-old children were excluded from the statistical analysis, because they represented a small number of subjects in the group. Thus, the sample of children, who undertook statistical analysis through the comparison between age and CPDF, was composed by 22 children. The sample of kids, who underwent statistical analysis in the comparison between sex and CPDF, was composed of 24 children.

Results

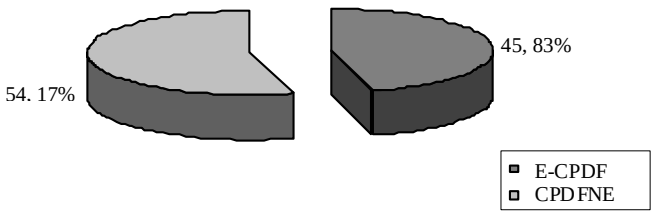
Figure 1 shows the performance of all the children from the study group, as having established or not the CPDF, based on the percentage of 50%. It could be noted that 45.83% of the children had established CPDF, being eight of them boys and three girls. Seven boys and six girls composed the group, which presented non established CPDF, i. e, 54.17% of the participants.

Regarding age, the established CPDF group consisted of three children age ranging from five to six years old; six children were six years old; and two were seven years old. For the non established CPDF, the group was formed by six children who were five years old, and seven children who were six years old.

As regards the comparison between extralinguistic gender and performance (average of right answers) in the CPDF test (Table 1), there was no significant difference between boys and girls. However, qualitatively it was observed that males had a mean score higher than females.

Table 2 shows the comparison between age and performance (average of right answers) in the CPDF test. The comparative study between these two variables showed no statistically significant difference, even though qualitatively, it was noted a higher average of right answers for the six-year-old children.

FIGURE 1. Presentation of the overall sample of the research according to the establishment or not of the awareness of the own speech impairment.



Legend: E-CPDF: awareness of the own speech impairment was established; CPDFNE: awareness of the own speech impairment was not established. Descriptive analysis of the studied group.

TABLE 1. Comparison between gender and performance in the assessment of the awareness of the own speech impairment.

		CPDF	*p value*
	n	*Average of correct answers*	
Male	15	47, 29	0, 4687
Female	9	37, 38	

Legend: CPDF: awareness of the own speech impairment; n: number of subjects. Statistical test used: Test t and p value <0.05.

TABLE 2. Comparison between age and performance in the assessment of the awareness of the own speech impairment.

		CPDF	*p value*
	n	*Average of correct answers*	
5 years old	9	38, 92	0, 6983
6 years old	13	44, 62	

Legend: CPDF: awareness of the own speech impairment, n: number of subjects. Statistical test used: Test t and p value <0.05.

Discussion

As it can be seen, children with phonological disorder may have CPDF, i.e., they may have awareness of the phonological changes in their own speech productions, for in the studied group this ability appears to be established for 45.83% of the children.

It is important to say that this group was composed mostly by boys and six-year-old children.

These results agree with previous studies that showed children who do not have the same phonological pattern of their linguistic community may be able to reflect on the sounds of their language1-2.

Regarding to gender, there was no significant difference between boys and girls for the CPDF. On the other hand, the averages of correct answers showed that boys scored higher when compared to girls. It can be inferred, thus, that males are more skilled to reflect and make judgments about the language system of their community.

This fact opposes researches that investigated the gender variable and showed a female superiority in solving tasks related to language and speech skills8.

These results can be explained by the anatomy and physiology of the central nervous system, since differences were observed between the sexes by neuroimaging studies, where women used both brain hemispheres to process language. Unlike the females, the males seemed to use specific areas of the dominant9 hemisphere to perform the same task. Moreover, there are other evidences as the fact that the areas of Broca and Wernicke's, which are all speech related, were bigger in the women10.

The phonological awareness, which is also a kind of widely studied linguistic awareness, was significantly nonchalant between boys and girls in studies, which considered gender. On the other hand, the authors have observed that girls tend to have better performance on assessments involving phonological awareness6-7.

When researches on normal phonological acquisition related to gender are considered, it is noted that boys are more likely to produce correct phonemes than girls11. Furthermore, studies have shown that boys produce significantly more language than girls12, which suggests that they may be more insightful to solve certain tasks related to language skills, as the CPDF.

Regarding the age variable, although no statistically significant result related to the establishment of the CPDF was obtained, the averages showed that six-year-old children had better performance than five-year-old children.

The performance in phonological awareness skills is related to chronological, and hence, cognitive maturity, which matches the results about the CPDF, obtained in this study. An improvement in the phonological awareness skills as the age increases was observed in children age ranging from four to eight years old with typical speech development3.

The lexical acquisition in children with phonological disorder is also related to increased age. Some studies have shown an improved performance in vocabulary tests with age increasing13-14. One might think that older children may be better prepared for judging the correct production of linguistic structures, because they know a greater number of words.

Regarding the CPDF, the distinct performance of children makes the speech professionals aware of the needs of a complete diagnosis, capable of giving support to a good treatment planning. Thus, in order to potentiate the treatment a serious awareness work of the normal phonological system may be accomplished, since this

need has already been pointed out in many studies, which verified the difficulty the population with phonological disorders, as well as with other articulation and/or language disorders, has reasoning about the sounds of their language15-20.

Due to the obtained results and the poor literature about this matter, it is suggested that further research be developed in order to contribute to both better therapy and prognosis, especially in cases of phonological disorders.

Conclusion

The results showed that children with phonological disorders may be aware of the phonological changes in their speech. This awareness depends neither on gender nor on age, since there was no significant difference between the studied groups.

However, it was noted that boys and six-year-old children with phonological disorder had better average of right answers in the CPDF than the girls and five-year-old children, respectively. Although these differences were not really significant, they may contribute to therapy planning in order to optimize the phonological treatment.

References

1. Menezes G, Lamprecht RR. A consciência fonológica na relação fala-escrita em crianças com Desvio Fonológico Evolutivo (DFE). Letras de Hoje. 2001;36:743-9.

2. Dias RF, Mota HB, Mezzomo CL. A consciência fonológica e a consciência do próprio desvio de fala nas diferentes gravidades do desvio fonológico. Rev CEFAC. 2009;11(4):561-70.

3. Cielo CA. Habilidades em consciência Fonológica em crianças de 4 a 8 anos de idade. Pro Fono. 2002;14(3):301-12.

4. Wallach L, Wallach MA, Dozier MG. Poor Children learning to read do not have trouble with auditory discrimination but do have trouble with phoneme recognition. J Educ Psychol. 1994;69(1):36-9.

5. Souza APR, Pagliarin KC, Ceron MI, Deuschle VP, Keske-Soares MK. Desempenho por tarefa em consciência fonológica: gênero, idade e gravidade do desvio fonológico. Rev CEFAC. 2009;1(4):571-8.

6. Andreazza-Balestrin C, Cielo CA, Lazzarotto C. Relação entre desempenho em consciência fonológica e a variável sexo: um estudo com crianças pré-escolares. Rev Soc Bras Fonoaudiol. 2008;13(2):154-60.

7. Moura SRS, Mezzomo CL, Cielo CA. Estimulação em consciência fonêmica e seus efeitos em relação à variável. Pro Fono. 2009;21(1):51-6.

8. Mezzomo CL, Mota HB, Dias RF, Giacchini V. Fatores relevantes para a coda lexical e morfológica no português brasileiro. Rev CEFAC, ahead of print , Epub 26 Fev 2010.

9. Vallet RE. Fatores neuropsicológicos críticos. In: Vallet RE. Dislexia: uma abordagem neuropsicológica para a educação de crianças com graves desordens de leitura. São Paulo: Manole; 1990. p. 11-7.

10. Knaus TA, Bollich AM, Corey DM, Lemen LC, Foundas AL. Sex-linked differences in the anatomy of the perisylvian language cortex: a volumetric MRI study of gray matter volumes. Neuropsychology. 2004;18(4):738-47.

11. Athayde ML, Baesso JS, Dias RF, Giacchini V, Mezzomo CL. O papel das variáveis extralinguísticas idade e sexo no desenvolvimento da coda silábica. Rev Soc Bras Fonoaudiol. 2009;14(3):293-9.

12. Forrest K, Weismer G, Elbert M, Dinnsen D. Spectral Analysis of Target-appropriate /t/ and /k/ Produced by Phonologically disordered and Normally Articulating Children. Clin Linguist Phon. 1994;8(4):267-81.

13. Basilio CS, Puccini RF, Silva E, Pedromônico MRM. Living conditions and receptive vocabulary of children aged two to five years. Rev Saude Publica. 2005;39(5):725-30.

14. Athayde ML, Carvalho Q, Mota HB. Vocabulário expressivo de crianças com diferentes níveis de gravidade de desvio fonológico. Rev. CEFAC. 2009;11(2):161-8.

15. Laing SP, Espeland W. low intensity phonological awareness training in a preschool classroom for children with communication impairments. J Comunn Disord. 2005;(38):65-82.

16. Rvachew S, Grawburg M. Correlates of phonological awareness in preschoolers with speech sound disorders. J Speech Lang Hear Res. 2006;49(1):74-87.

17. Kirk C, Gillon GT. Longitudinal effects of phonological awareness intervention on morphological awareness in children with speech impairment. Lang Speech Hear Serv Sch. 2007;38(4): 342-52.

18. Mann VA; Foy JG. Speech development patterns and phonological awareness in preschool children. Ann Dyslexia. 2007;57(1):51-74.

19. Rvachew S, Chiang P, Evans N. Characteristics of speech errors produced by children whit and without delayed phonological awareness skills. Lang Speech Hear Serv Sch. 2007;38(1):60-71.

20. Schuele CM, Boudreau D. Phonological Awareness Intervention: Beyond the Basics. Lang Speech Hear Serv Sch. 2008;39(1):3-20.