

Habilidades em consciência fonológica de sujeitos após realização de terapia fonológica***

Phonological awareness abilities of individuals after speech therapy

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Abstract

Background: phonological awareness abilities of children with a history of speech-language disorders. **Aim:** to compare the phonological awareness abilities of individuals who recovered from phonological disorders after having gone through speech-language treatment with that of individuals with typical phonological development. **Method:** participants of this study were eighteen individuals, nine in the experimental group and nine in the control group. Both groups had their phonological awareness abilities evaluated through the Metalinguistic Sequential Evaluation Instrument Confias. **Results:** significant statistical differences were observed between the groups in terms of the following performances: rhyme identification, rhyme production, syllable exclusion, on all of the activities involving syllables and on the activities involving phoneme exclusion, phoneme segmentation, and phoneme transposition, on all of the activities involving phonemes and also on all of the activities involving phonological awareness. The control group presented a better performance in all of the activities. **Conclusions:** even after speech therapy the experimental group presented a worse performance in terms of the phonological awareness abilities.

Key Words: Articulation Disorders; Speech Therapy; Child Language; Language; Language Development.

Resumo

Tema: habilidades de consciência fonológicas de crianças com histórico de desordens fonoaudiológicas. **Objetivo:** comparar o desempenho das habilidades em consciência fonológica de um grupo de sujeitos com histórico de transtorno fonológico, após sua superação, através de terapia fonológica com indivíduos em desenvolvimento fonológico típico. **Método:** participaram deste estudo dezoito sujeitos, nove do grupo estudo e nove do grupo controle. Os dois grupos foram avaliados quanto às habilidades em consciência fonológica por meio do Instrumento de Avaliação Sequencial Confias. **Resultado:** os grupos apresentaram diferenças estatisticamente significativas em seus desempenhos nas atividades silábicas de identificação de rima, produção de rima, exclusão de sílabas, no total das atividades envolvendo sílabas e nas atividades fonêmicas de exclusão, segmentação e transposição de fonemas, no total das atividades fonêmicas e, também, no total das atividades de consciência fonológica. O grupo controle obteve melhor desempenho em todas as atividades. **Conclusão:** mesmo após a intervenção fonológica o grupo estudo apresentou desempenho inferior nas habilidades de consciência fonológica.

Palavras-Chave: Deficiências Fonológicas; Fonoaterapia; Linguagem Infantil; Linguagem; Desenvolvimento da Linguagem.

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Introduction

There is a high risk of children with phonological disorders to present problems in phonological awareness and, consequently, difficulties during alfabetization.^{1,2}

Phonological awareness refers to the ability to analyze spoken words and sound units that compose these words.³

The development of metaphonological knowledge is important to set the ground for developing good reading abilities. The application of activities involving this knowledge is necessary because they lead to positive outcomes for every child, especially those with difficulties in learning to read and write, and also those who present delayed language acquisition.⁴

Children who demonstrate difficulties in learning to read present impaired performance in tests involving phonological manipulation or phonological awareness.⁵

Phonological awareness is developed alongside literacy. As alphabetization becomes concrete, phonological awareness is also improved, helping the development of cognitive functions and the learning process.⁶

A study about phonological awareness identified skills of arithmetic, phonological memory, vocabulary, phonological awareness and sequencing as good predictors of performance in reading and writing.⁷

The present study aims to compare the performance on phonological awareness tasks of a group of participants with history of phonological disorder, after its overcome through phonological therapy, to a group of participants with typical phonological development.

Methods

This research is a longitudinal study part of a project conducted at a higher education institution. The study was approved by the Research Ethics Committee under number: 23081.007151/2006-35. The database of the CELF (Center for the Study of Language and Speech) was used for the development of this study.

The group that participated in the research consisted of eighteen participants, eight boys and ten girls, who were frequenting between the 4th and 8th grades of basic education in public schools, and were between 9 and 15 years old (control group) and 10 and 14 years old (study group) in 2006.

Of these participants, nine composed the study group - five girls and four boys. All participants of the study group were patients of the School Clinic

on the period from 1998 to 2002. The age range of the study group, at the beginning of phonological therapy, was between four years and eight months and six years and eight months. One of the participants had moderate-severe phonological disorder; six participants average phonological disorder; and two average-moderate phonological disorder according to the Percentage of Correct Consonants⁸ test - PCC. Of these subjects, four frequented phonological therapy that used the model of Modified Cycles⁹, three the ABAB-Withdrawal Model and Multiple Tests¹⁰ and two the Maximal Oppositions Model¹¹. None of the models used in therapy emphasized phonological awareness. The average length of therapy was twenty sessions for each subject. After completion of therapy, participants were discharged because they had overcome the speech disorders. The type of model used in the therapy was not a selection criterion for composition of the study group. Participants of the study group were evaluated when they were between four and six years old (average age of five years) after discharge from speech therapy. The age was dependent on the date of discharge of each subject and was not criterion for inclusion in the group.

Participants were located from their addresses and telephone numbers registered at the CELF (Center for the Study of Language and Speech) archives of the school clinic. The inclusion criteria for composing the study group were: diagnosis of phonological disorder in the period at SAF (speech service); Speech Therapy; Completion of Speech Therapy; and signature of the Free and Informed Consent by parents or guardians.

Participants with no history of phonological disorder or other speech, language or organic disorder were selected to compose the control group. This selection was made from parent questionnaire, informal assessment (observation) of the participant's speech, and also from information obtained with teachers from schools which each subject attended. Participants of the control group were between nine and fifteen years old.

In order to pair participants of control and study group, the educational level was considered. That is, for each participant of the study group, another participant with the same degree of education, same social class and same gender was selected.

The assessment of phonological awareness was performed using the Instrument of Sequential Assessment (CONFIAS)¹², consisting of nine tasks at syllable level and seven tasks at phoneme level. Syllabic tasks are:

1. Syllabic synthesis (S1).
2. Syllabic segmentation (S2).
3. Identification of initial syllable (S3).
4. Identification of rhyme (S4).
5. Production of word with a given syllable (S5).
6. Identification of medial syllable (S6).
7. Production of rhyme (S7).
8. Syllable exclusion (S8).
9. Syllabic transposition (S9).

Phonemic tasks are:

1. Production of word that begins with a given sound (P1).
2. Identification of initial phoneme (P2) - beginning of syllable, beginning of word).
3. Identification of final phoneme (P3 - end of syllable, end of word).
4. Phonemic exclusion (P4).
5. Phonemic synthesis (P5).
6. Phonemic segmentation (P6).
7. Phonemic transposition (P7).

Each correct response equals one point. The total number of correct responses equals to seventy possible points (syllabic tasks = 40 points and phonemic tasks = 30 points). The assessment was performed during a single session and responses were transcribed simultaneously to data collection. The assessment instrument was applied following the protocol order.

For the calculation of the CONFIAS test means, the sum of total points of syllabic tasks, total points of the phonemic tasks and overall performance of each subject in the test (syllabic + syllabic phonemic tasks) was calculated. Following, the mean of group performance was calculated by adding the individual performances in each of the tasks to the overall performance of each participant and dividing the result by the number of participants.

Data were analyzed statistically through the Kruskal-Wallis test. The analysis was conducted in order to observe the presence of significant differences between the performance of the two

groups in syllabic and phonemic activities and in all activities of phonological awareness. The significance level adopted was of 5% ($p < 0.05$).

Results

It was possible to observe through performance analysis that both groups performed at or above expected on phonological awareness tasks - according to scores obtained in the validation of the CONFIAS test. According to these scores, on the hypothesis of alphabetical writing, the mean accuracy on syllabic tasks was 35.8, 20.6 on phonemic tasks, and 56.4 on the overall tasks mean. In this research, the study group presented an accuracy mean of 35.7 on syllabic tasks, 24.2 on phonemic tasks, and 59.9 on the overall tasks mean. The control group, in turn, presented an accuracy mean on syllabic tasks of 39.3, 28.6 on phonemic tasks, and 67.9 on the overall mean. Values above than the ones expected by the test can be explained by the fact that participants of the present study had average age and educational level higher than children who composed the sample of the CONFIAS validation study - children were between five and seven years old and were students from kindergarten to first grade.

Table 1 displays the mean scores, standard deviation and p-values of study and control groups.

SG: study group. CG: control group. PA: phonological awareness N: number of participants who compose the study group. S: syllabic activities that compose the PA test. P: phonological activities that compose the PA test. SD: standard deviation. S1: synthesis. S2: segmentation. S3: identification of initial syllable. S4: identification of rhyme. S5: production of word with a given syllable. S6: identification of media syllable. S7: rhyme production. S8: exclusion. S9: transposition. P1: production of word that begins with a given sound. P2: identification of initial phoneme. P3: identification of final phoneme. P4: exclusion. P5: synthesis. P6: segmentation. P7: transposition. $P < 0,05$ (statistically significant values in bold).

TABLE 1. Mean scores, standard deviation and p-values of SG and CG - Kruskal-Wallis test.

VARIABLES	SG (N= 9)		CG (N= 9)		P
	MEAN	SD	MEAN	SD	
S1	9.5	0.0	9.5	0.0	1.00
S2	9.5	0.0	9.5	0.0	1.00
S3	8.0	7.3	11.0	7.3	0.0652
S4	7.5	8.2	11.5	8.2	0.0289
S5	9.5	0.0	9.5	0.0	1.00
S6	9.0	4.5	10.0	4.5	0.3173
S7	7.0	10.8	11.9	10.8	0.0431
S8	6.5	9.4	12.5	9.4	0.0042
S9	9.0	4.5	10.0	4.5	0.3173
TOTAL S	5.8	11.0	13.1	11.0	0.0028
P1	9.0	4.5	10.0	4.5	0.3173
P2	9.0	4.5	10.0	4.5	0.3173
P3	8.1	9.4	10.8	9.4	0.2052
P4	7.3	9.4	11.6	9.4	0.0395
P5	8.6	9.8	10.3	9.8	0.4448
P6	7.1	10.7	11.8	10.7	0.0456
P7	7.3	9.4	11.6	9.4	0.0439
TOTAL P	6.1	11.2	12.8	11.2	0.0066
TOTAL P+S	5.7	11.2	13.2	11.2	0.0094

Discussion

Findings of the present study confirm the results of previous research which compared the phonological awareness skills in a group of participants with phonological disorders to a control group. Participants without phonological disorder showed good performance in phonological awareness skills, unlike the group of participants with phonological disorder¹³. Other studies also demonstrate that children with phonological disorders present lower performance on metalinguistic tasks than children who develop language without any disorder.^{13,14,15,20}

In the present study, the group with phonological disorders presented performance inferior than the one of the group without disorders, both on primary such as on more complex phonological awareness skills.

A follow-up study with sixteen and seventeen years old participants who had speech and language difficulties during pre-school, revealed that subjects who had speech difficulties that were overcome around 5 years of age showed better performance in language skills than the group with persistent speech and language difficulties¹⁶.

Reading and writing tests were applied on children with speech and language difficulties. These children were observed during the periods which they frequented kindergarten and preschool. Children with speech and language difficulties presented lower performance on reading tests than the control group. Language abilities, in kindergarten, showed to be related to reading skills and phonological difficulties and were considered good predictors of writing abilities¹⁷.

The relationship between the abilities of phonological awareness and writing performance in children with history of phonological disorders was investigated after completion of speech therapy. Authors¹⁸ found that participants who presented poor performance on phonemic tasks also showed poor performance on phonological awareness tasks. The results of this study confirmed the relationship between oral language and later development of language skills, because, in the future, these deficits may negatively influence the acquisition and development of writing.

The use of three different therapy models for the treatment of children in the present study might not have influenced the results because none of the models used emphasized phonological awareness.

Speech alterations, during preschool age, may cause difficulties in developing reading. Children with such alterations must be identified and incorporated into programs of phonological awareness intervention, in such a way that these probable difficulties can be minimized¹⁹.

Disorders on the phonological level of language can bring consequences for other language areas besides learning disabilities. In a study²⁰, phonological disorders directly influenced the acquisition of reading and writing, and also, the educational performance of participants of the study. Another study shows that, in the early stages of literacy, it is very important to work on phonological processing because of the fact that poor readers present difficulties in that area²¹.

A recent study - in which authors implemented a program of activities that encouraged the abilities of phonological awareness based on the theory of hierarchy of distinctive features - showed that the improvement in the abilities of phonological awareness favored the development of the phonological system²². According to authors, this improvement increased attention to speech sounds besides perception of traces involved in speech.

The result of a study aiming to verify the effectiveness of intervention in phonological awareness on children with speech and language disorders demonstrated that this intervention improves speech production and reading development²³.

According to another study - which assessed phonological awareness of a group of first graders - even children at the alphabetization process presented a great difficulty in carrying out tasks involving phonemic manipulation. For the author, the result of the study shows the importance of creating programs that stimulate the phonological awareness skills - an important factor for the development of reading and writing - during preschool²⁴.

Children with phonological disorders usually have deficits in phonological awareness skills. The early detection and treatment of these deficits is extremely important²⁵.

Conclusion

The results of the present study showed that, even after phonological intervention, participants with a history of phonological disorder presented lower performance in phonological awareness tasks than participants with normal development did. These results can be explained by the history of phonological disorders. Even after therapeutic treatment, phonological disorder caused detriment to other language skills. Difficulties on phonological awareness result from the phonological processing alterations caused by the phonological disorder. It can be concluded that the proper development of the phonological system is the basis for a further development of other linguistic abilities. This fact emphasizes the importance of a phonological therapy with emphasis on phonological processing.

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