FAVORABLE ENVIRONMENTS FOR PRODUCING /Z/, /ʃ/ AND /ʒ/: ANALYSIS AND COMPARISON OF CHANGES OCCURRED IN THE PHONOLOGICAL SYSTEM

Ambientes favoráveis para a produção de /z/, /ʃ/ e /ʒ/: análise e comparação das mudanças ocorridas no sistema fonológico

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ABSTRACT

Purpose: to check the effects of phonological therapy using the Modified Cycles Model, and to compare the evolution of two groups of children with phonological disorder, one in which target-words with favorable phonological contexts were used in the treatment, and another one in which unfavorable and neutral contexts were used, in the acquisition of the fricatives /z/, /ʃ/ and /ʒ/. **Method**: the subjects were six children with phonological disorder aged between 4:7 and 7:8 year old, authorized to take part in the research. They were evaluated in speech-language and complementary exams in order to diagnose the phonological disorder. Half of the children were treated with words where the phonemes /z/, /ʃ/ and /ʒ/ were in favorable environments and the other half with the phonemes in unfavorable and neutral environments. There were eight sessions and, after that, a new speech evaluation was performed. The following variables were analyzed: changes in the phonological system and in the percentage of consonants correct-revised. Wilcoxon Test ($p<0.05$) was applied for analyzing the data. **Results:** the therapeutic evolution was statistically significant for all the subjects in most variables, but there was no statistically significant difference in the comparison among the groups *favorable* and *unfavorable and neutral.* **Conclusion:** the therapy showed improvements in the phonological systems for all subjects, but the use of target-words with favorable phonological environments does not determine a better therapeutic evolution.

KEYWORDS: Speech; Speech Therapy; Speech Disorders; Child

INTRODUCTION

Some children present disturbs or delays in some periods of phonological development. Such alterations occur for the absence of stability of particular sounds, distinctive features and/or syllable structures. This condition is named as phonological disorder (PD)[1].

To resolve these difficulties that some children present, different therapeutic approaches were created[2]. The most applied and known in the literature are the Cycles Phonological Remediation Approach[3,4] and Modified Cycles Approach[5]. The Modified Cycles Approach is based on the Cycles Approach and has as a basic principle the elimination of phonological process in the children's speech. This occurs from the awareness of the target sound characteristics in which each process acts. The basic procedures of therapy start from stimulation (hearing, touch and vision) and from production[3,5].

In recent study, one of the authors of the Cycles Approach states that, although the model has been developed in academic areas, many therapists have performed changes in it from needs that they meet in the clinics. They have had satisfactory results with such changes. The same author also refers that the

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scientific researches that have been developed over the last years caused the new procedures to be incorporated in the model, such as the space dedicated to activities of phonological awareness during the sessions[4,6].

Another aspect, approached in the recent Brazilian researches, is the choice of the target-words for therapy using the favorable environments to production of determined target-sound. The favorable environments consist in contexts that support the production and acquisition of treated sound[7]. Therefore, some authors[7-11] studied the relevance of such contexts in the support of correct production and phonemic acquisition in therapy.

Most of the mentioned studies, related to favorable environments, address the liquid consonants of Brazilian Portuguese (BP). Different results were obtained among the researches[7,8,10,11].

Only one of the findings refers to the fricative sounds[9], in which, initially, the author researched the phonological acquisition of the sounds /f/, /v/, /ʃ/ and /ʒ/ of the children with PD. In the second stage of the study, eight children had their therapeutic process analyzed. The purpose of this stage was verifying the value of favoring which target-words have in the therapeutic success, involving fricative phonemes. The value of favoring is caused by stress, number of syllables, word position, preceding and following phonological context. The model used was ABAB-Withdrawal and Multiple Probes[12]. The initial data, together with the data of other author about de acquisition of /s/ and /z/ was undergone Computational program VARBRUL to determine the value of favoring of the contexts analyzed and, after, analyzing them in therapy. With this research, the author concluded that although the favoring environments have a role as a facilitator, they are not crucial for the production of the fricative phonemes.

With the related studies, it can be observed the need to realize more researches involving favorable environments to production of the phonemes to obtain more conclusive results about the relevance of this variable in the effectiveness of phonological therapy.

Therefore, the purpose of the present study was verifying the effects of phonological therapy, with the Modified Cycles Approach, and comparing the evolution of two groups of children, one in whose treatment target-words were used with favorable phonological contexts and another group, in which the neutral and little favorable environments, in the acquisition of fricatives consonants /z/, /ʃ/ and /ʒ/ were used. The variables were changes in phonological system (PS) and in the Percentage of Consonants correct-revised (PCC-R).

METHOD

The study corpora include six children, who gave verbal consent for their participation in the study and whose parents have previously signed the Term of Free Informed Consent. The children inclusion criteria were: present alterations only in the phonological level of language; not having acquired at least two of the three phonemes /z/, /ʃ/ and /ʒ/ (percentage equal or less than 40%[13]); being aged between 4:0 and 8:0; being a member of a monolingual family speaker of Brazilian Portuguese; not presenting hearing loss; not having neurological, emotional and/or cognitive problems; not having motor or organic problems; not having undergone speech therapy before.

After, the subjects were matched according to the following criteria: having the same severity of the disorder calculated by PCC-R[14], being of the same gender, being of the same age and presenting similarities in the PS regarding to the changed phonemes, specially the fricatives /z/, /ʃ/ and /ʒ/. The changed distinctive features (CDF) should be the same and the percentage of correct production should be similar.

Therefore, the characteristics of the pairs S1 and S2, S3 and S4, S5 and S6, regarding to the matched criteria, can be observed in the Figure 1.

Subject	PCC-R	Gender	Age	CDF /z/	CDF /ʃ/	CDF /ʒ/
S1	73,1%	Male	7:8	[+voice]	[-ant]	[+voice], [-ant]
S2	78,3%	Male	7:6	[+voice]	[-ant]	[+voice], [-ant]
S3	73,6%	Female	5:5	[+ant]	[-ant]	[-ant]
S4	78,4%	Female	4:7	------	[-ant]	[-ant]
S5	87,6%	Female	6:6	------	[-ant]	[-ant]
S6	87,5%	Female	6:5	------	[-ant]	[-ant]

Legend: CDF = Changed distinctive features. [ant] = [anterior]. –------ = not presented changes.

Figure 1 – Description of subjects

In order to confirm the PD, the following assessments were realized: interview with the parents and/or the guardians, phonological evaluation, evaluation of the stomatognathic system, of language, of vocabulary, of phonological awareness skills and of auditory processing. Complementary exams, like hearing and otorhinolaryngologic evaluation were also considered. Through the interview with the parents and through the interaction with the children, it was possible to eliminate cognitive and/or neurological factors, which might interfere in the phonological development.

The interview aimed at hearing children's history through the questions for parents about the pregnancy, childbirth, psychomotor and language development, feeding habits, physiopathology background and information about the subjects' school life.

In the evaluation of stomatognathic system, an assessment protocol based on Marchesan[15] was used and the aspects observed are: appearance, posture, tonus and mobility of the articulators (tongue, lips, cheeks, soft palate, hard palate and teeth), as well as its functions (breathing, chewing and swallowing).

The language evaluation was held by spontaneous situations, like free dialogues or games with the child. Aspects of comprehensive and expressive oral language were observed.

The phonological awareness abilities were evaluated by "*Protocolo de Tarefas de Consciência Fonológica*"[16], which evaluates the child's competence in thinking about the language sounds and its organization in word formation.

The auditory processing was evaluated by "*Avaliação Simplificada do Processamento Auditivo*"[17]. This evaluation aims at verifying if the children realize cognitive analysis of sonorant events.

The vocabulary evaluation was held through ABFW – part B (Vocabulary)[18]. The test evaluates nine semantic fields: clothing, animals, food, means of transportation, furniture and utensils, occupations, places, shapes and colors, toys and musical instruments. The child had to denominate the drawings of box test spontaneously.

The hearing and otorhinolaryngologic evaluations were held by experienced professionals in these areas. The methods were chosen by the professionals.

The collect of speech data were held through "*Avaliação Fonológica da Criança"* (AFC)[19]. The speech data were, initially, phonetically transcribed by the principal investigator and after by two judges. Consequently, there are three transcriptions for each recording. This measure guarantees the data reliability. At least two of the three transcriptions should be coincidental. When there was no agreement, the word was excluded from the sample. Such measure was applied because the correct transcribing is a vital tool for the diagnostic determining and the needed intervention[20]. Based on those data, the contrastive analysis was held. Through this evaluation, the Bernhardt[13] criteria were used to establish the children's PS: occurrence from 0 to 39% – absent or not acquired sound (NA); occurrence from 40% to 79% – partially acquired sound; occurrence equal to or greater than 80% – acquired sound.

After, PD's severity was calculated from PCC-R[14], which divides them into mild disorder (MD), when the PCC-R is from 86 to 100%, mild moderate disorder (MMD), PCC-R between 66 and 85%, moderate-severe disorder (MSD), PCC-R between 51 and 65%, and severe disorder (SD) when PCC-R is equal to or less than 50%.

After the end of the evaluations, the members of each children's pair, which would receive the treatment with phonological favorable contexts, were randomly selected. The remaining children were treated with the target-words, whose phonological contexts were little favorable or neutral.

To select target-words of the therapy, their phonological weight was calculated according to Blanco-Dutra[9] assumptions. The author assigned weights to the favoring absolute values. The weight varied from 0 to 3, according to the phoneme position in the word, stress, preceding and succeeding context and number of syllables of the word. It needs to add the weight of each context. The result of the addition indicates whether the word is very favorable (weight 15), favorable (weight from 14 to 10), neutral (weight 9), little favorable (weight from 8 to 3) or unfavorable (weight equal to or less than 2). Half of the children were treated with favorable words and the other half were treated with little favorable and/or neutral words. It is emphasized that the chosen target-sounds were the same to each pair members. The only difference between the children was the context in that the target-sound was inserted.

Thus, the target-sounds and the target-words were determined according to Figure 2.

Subject	Linguistic Environment	Target-sounds	Target-words (Brazilian Portuguese)
S1	Favorable	/z/ - MO /ʃ/ - MO	Azedo, azeite, azul, asa, doze, casinha. Bicho, cachorro, peixe, caixa, roxo, abacaxi.
S2	Little favorable and neutral	/z/ - MO /ʃ/ - IO	Casamento, Monza, casa, mesa, onze, pesadelo. Chocalho, charuto, chaminé, chocolate, chinês, xampu.
S3	Favorable	/ʃ/ - MO /ʒ/ - MO	Bicho, cachorro, peixe, caixa, roxo, abacaxi. Beijo, queijo, anjo, canja, laranja, pijama
S4	Little favorable and neutral	/ʃ/ - IO /ʒ/ - MO	Chaminé, chocolate, chinês, xampu, chapéu, chocalho. Abajur, caju, anjinho, injeção, ajuda, agenda.
S5	Favorable	/ʃ/ - MO /ʒ/ - MO	Bicho, cachorro, peixe, caixa, roxo, abacaxi. Anjo, loja, queijo, canja, pijama, beijo.
S6	Little favorable and neutral	/ʃ/ - IO /ʒ/ - MO	Chocalho, charuto, chaminé, chocolate, chinês, xadrez. Abajur, caju, ajuda, agenda, anjinho, injeção.

Legend: IO= Initial Onset; MO= Medial Onset

Figure 2 – Linguistic environment drawn, target-sounds and target-words chosen for each subject

The environments considered very favorable and unfavorable weren't tested, because words with either so high (15) or so low (2 or less) score weren't found. This assumption has been predicted by Blanco-Dutra[9]. It's emphasized that the use of words with phonological environments little favorable and neutral couldn't impair the children's treatment, since all children would be treated. In addition, until then the therapy researches did not consider the phonological contexts in the treatment of PD so carefully.

The treatment was carried out using the Modified Cycles Approach[5]. In order to adequate the model to the needs of this research, some modification was made. Only one or two phonological processes and two target-sounds were chosen for the treatment. Two cycles were performed with each child, being one of them in isolated word level and the other in the sentence level. However, when the children did not reach the percentage of hits equal to or greater than 50% to certain target-sound, the sound was repeated in isolated word level in the second cycle. Each target-sound was stimulated during two sessions per cycle, totalizing eight sessions for each client in the final of data collect.

The sessions lasted 50 minutes and were carried out twice a week. In the final of each cycle a follow-up to verify the treated sounds production in different words was performed. In the beginning and at the end of each session, the auditory bombardment was realized. This measurement consisted in the reading of words with the selected target-sound for the child. The parents were active agents in the therapeutic process, helping at home with the target-words activities and reading of auditory bombardment for the child.

After the end of two cycles, new AFC was carried out to verify the changes that occurred in the children's PS.

The children that participated of this study were treated through a research project linked to a higher education institution and approved by the Ethics and Research Committee under number 052/04.

For data analysis, the program SAS *(Statistical Analysis System)* – version 8.02 was used with the Wilcoxon test to related samples, with significance level of 5% ($p < 0,05$).

RESULTS

Table 1 shows characteristics of the subjects' PS pre and post treatment.

Table 1 – Subject's General Phonological System pre and post treatment

Subject	Linguistic Context	Number of acquired phonemes in GPS		P value
		IA	FA	
S1	Favorable	12	14	
S2	Little favorable and neutral	11	13	
S3	Favorable	11	13	
S4	Little favorable and neutral	15	18	p = 0,031
S5	Favorable	16	19	
S6	Little favorable and neutral	16	18	
Mean		13,5	15,8	

Legend: GPS = General Phonological System; IA = Initial Assessment; FA = Final Assessment.
Statistical Test used: *Wilcoxon test*, significance level: 5% (p< 0,05).

In the comparison between the acquired phonemes in PS pre and post treatment, it was observed in table 1 that the therapeutic evolution was statistically significant in the comparison between the means.

Table 2, shows the children's PCC-R pre and post treatment.

Table 2 – Subjects' percentage of consonants correct-revised of pre and post treatment

Subject	Linguistic Context	PD severity	PCC-R pre treatment	PCC-R post treatment	P value
S1	Favorable	MMD	73,1	84,3	
S2	Little favorable and neutral	MMD	78,3	88,1	
S3	Favorable	MMD	73,6	82,4	
S4	Little favorable and neutral	MMD	78,4	84,6	p = 0,031
S5	Favorable	MD	87,6	95,3	
S6	Little favorable and neutral	MD	87,5	95,6	
Mean			79,7	88,4	

Legend: PCC-R = Percentage os consonants correct-revised; PD = Phonological Disorder; MMD = Mild moderate disorder; MD = Mild disorder.
Statistical Test used: *Wilcoxon test*, significance level: 5% (p< 0,05).

The children's PCC-R also revealed statistical significance between pre and post treatment in the means comparison, as noted in table 2.

Table 3 shows the percentage of correct production of the sound /z/ in initial onset (IO) and medial onset (MO) position pre and post treatment for all subjects.

Table 3 – Subjects' percentage of correct production of the sound /z/ in IO and MO positions pre and post treatment

Subjects	Linguistic Context	% Correct production /z/ IO		% Correct production /z/ IO	
		IA	FA	IA	FA
S1	Favorable	0	100	20	60
S2	Little favorable and neutral	0	100	0	60
S3	Favorable	100	100	75	100
S4	Little favorable and neutral	100	100	100	100
S5	Favorable	100	100	100	100
S6	Little favorable and neutral	100	100	87,5	100
Mean		66,7	100	63,75	86,67
***P* value**		$p = 0,500$		$p = 0,125$	

Legend: IA = Initial assessment; FA = Final Assessment; IO = initial *onset*; MO = medial *onset*.
Statistical Test used: *Wilcoxon test*, significance level: 5% (p< 0,05).

In table 3 it was observed that only two subjects had changes in the production of /z/ and, therefore the comparison results between the means did not evidence statistical significance between pre and post treatment.

Table 4 shows the correct production percentage of the sound /ʃ/ in IO and MO positions and the percentage means pre and post treatment for all subjects.

Table 4 – Subjects' percentage of correct production of the sound /ʃ/ in IO and MO positions pre and post treatment

Subject	Linguistic Context	% correct production /ʃ/ IO		% correct production /ʃ/ MO	
		IA	FA	IA	FA
S1	Favorable	0	100	0	80
S2	Little favorable and neutral	40	100	0	85,7
S3	Favorable	60	100	40	57,1
S4	Little favorable and neutral	50	100	20	83,3
S5	Favorable	0	100	50	100
S6	Little favorable and neutral	66,7	100	33,3	100
Mean		36,1	100	23,8	84,4
***P* value**		$p = 0,031$		$p = 0,031$	

Legend: IA = Initial assessment; FA = Final Assessment; IO = initial *onset*; MO = medial *onset*.
Statistical Test used: *Wilcoxon test*, significance level: 5% (p< 0,05).

In the comparison between the means of /ʃ/ correct production, statistical significance of therapeutic evolution was noted in the two positions that the sound can fill in the word.

Table 5 shows the correct production percentage of the sound /ʒ/ in IO and MO positions and the percentage means pre and post treatment for all subjects.

Table 5 – Subjects' percentage of correct production of the sound /ʒ/ in IO and MO positions pre and post treatment

Subject	Linguistic context	% correct production /ʒ/ IO		% correct production /ʒ/ MO	
		IA	FA	IA	FA
S1	Favorable	0	66,7	0	66,7
S2	Little favorable and neutral	16,7	0	0	100
S3	Favorable	28,6	100	33,3	100
S4	Little favorable and neutral	33,3	75	50	100
S5	Favorable	60	100	0	100
S6	Little favorable and neutral	80	100	25	100
Mean		36,4	73,6	18,1	94,5
P value		*p* = 0,063		*p* = 0,031	

Legend: IA = Initial assessment; FA = Final Assessment; IO = initial *onset*; MO = medial *onset*.
Statistical Test used: *Wilcoxon test*, significance level: 5% (p< 0,05).

In the comparison between the means of /ʃ/ correct production, statistical significance of therapeutic evolution was noted only in the MO position.

Table 6 shows the comparison between the means of increase (between pre and post treatment) of the variables: number of acquired phonemes, PCC-R increase, and increase of correct production percentage of the phonemes /z/, /ʃ/ and /ʒ/ in IO and MO positions, between the groups favorable and, little favorable and neutral.

Table 6 – Therapeutic evolution: differences between the groups favorable versus little favorable and neutral

Variável	Grupo	Média	Diferença entre os grupos	Valor de *p*
Nº de fonemas adquiridos no SF	Favorável	2,33	0	0,99
	Pouco favorável e neutro	2,33		
% aumento do PCC-R	Favorável	9,23	1,2	0,50
	Pouco favorável e neutro	8,03		
% de aumento das produções corretas /z/ OI	Favorável	33,33	0	1,00
	Pouco favorável e neutro	33,33		
% de aumento das produções corretas /z/ OM	Favorável	21,67	2,5	0,99
	Pouco favorável e neutro	24,17		
% de aumento das produções corretas /ʃ/ OI	Favorável	80,00	32,23	0,50
	Pouco favorável e neutro	47,77		
% de aumento das produções corretas /ʃ/ OM	Favorável	49,03	22,87	0,25
	Pouco favorável e neutro	71,90		
% de aumento das produções corretas /ʒ/ OI	Favorável	59,37	44,37	0,25
	Pouco favorável e neutro	15,00		
% de aumento das produções corretas /ʒ/ OM	Favorável	77,80	2,8	0,99
	Pouco favorável e neutro	75,00		

Legend: IO = initial onset, MO = medial onset. Statistical Test used: *Wilcoxon test*, significance level: 5% (p< 0,05).

In the comparison between the groups favorable versus little favorable and neutral, no difference statistically significant was noted for the studied variables.

DISCUSSION

In table 1, it can be noted that the number of acquired phonemes in the subjects' general phonological system (GPS) after therapy was between two and three, while another research, that applied the same therapeutic approach[2], shows that the number of acquired phonemes after therapy ranged from one to six. This difference can be explained by the fact that in the previous study, probably the variation among the severities of PD was greater than in this study, in which the subjects presented only MD and MMD. Furthermore, in this study, only two sounds were treated in each child, being smaller the number of sessions applied. Even so, for many studies, including this one, the therapeutic evolution with the Modified Cycles Approach, using as variable the number of sounds acquired, showed statistical significance[2,21].

Through the comparison of PCC-R (Table 2) pre and post treatment, it's also observed the effectiveness of therapy, since there was statistical significance between the means of the total sample. In another research[21], significant increase of PCC-R was observed only in the children that presented MD, and was not observed in the children that presented MMD and MSD.

In relation to the percentage of correct production to the sound /z/ (Table 3), the two subjects that presented changes in the production of this phoneme, increased from 0% to 100% of accuracy in the IO production, but the evolution was substantially lower to the production of MO, even when the two children were treated with /z/ in this position. This result disagrees with a study with typical phonological acquisition data, which determines the acquisition order of syllabic structures of complex onset and coda regarding to position in the word: MO, final coda, IO and medial coda[22]. Comparing these results to those of a subject of a study comparing approaches[23], who was treated by Modified Cycles Approach and presented changes in the /z/ production, it can be observed that the evolution of the subjects of this study was more positive, since the subject mentioned in the example above increased from 40% to 66.67% of hits for /z/ in GPS. However, it's important to note that this subject presented MSD and the sound /z/ was not one of the therapy targets.

Regarding to the sound /ʃ/ (Table 4), there was statistically significant evolution of its production, both in IO and MO. However, an advantage for the IO position was observed, even with half of the subjects being treated with target sounds in MO. The Blanco-Dutra's[9] research showed that the /ʃ/ production is favored in MO position.

On the other hand, the sound /ʒ/ (Table 5), showed statistically significant evolution only in the MO production. Four of the six research subjects were treated with /ʒ/, being the sound in MO position in all words, as Blanco-Dutra[9] recommends as more favorable to the production. Overall, the increase of correct production of /ʒ/ was very similar to the therapeutic evolution presented by another subject of the aforementioned research about approaches comparison[23]. The subject presented changes in the /ʒ/ production, MMD and had been treated by Modified Cycles Approach, his percentage of correct production of /ʒ/ increased from 17,39% to 100%[23].

Although this aspect is not the purpose of this research, in the comparison of the means between pre and post treatment for the three analyzed phonemes, it could be observed that a generalization to other position in the word occurred [24-26] (Tables 3, 4 and 5), specially to /z/ and /ʃ/. In other words, the subjects increased the number of correct production of the sounds, either in the position in which they were treated or in the other position that the target sound could occupy in the word.

Nevertheless, when the group treated by favorable environments was compared with the group treated by little favorable and neutral environments (Table 6), no statistical significance to the variables was observed. So, it's possible to say that the results are similar to another research that used the ABAB-Withdrawal and Multiple Probes Approach[12], in which the author asserts that the favorable environments have a facilitator role, but not decisive to the correct production of fricative sounds[9].

Comparing this research to other studies, that treated of liquid sounds, it can be observed that two studies[7,10], indicated the favorable environments as relevant to acquisition of the sound /r/, both regarding to general aspects of PS and regarding to the obtained generalization. On the other hand, another study, which compared the gestural and generative approaches, using the favorable environments, concluded that the favorable linguistic context isn't applicable to the children with PD[11]. All cited studies used ABAB-Withdrawal and Multiple Probes Approach[12]. International researches about this theme weren't found.

So, it can be observed that the choice of therapeutic approach is more relevant in the suppression of phonological changes, evidenced by statistically significant evolution of all subjects in the analyzed variables, when compared with the target choice, since in phonological therapy; the sounds are used as a means and not as an end to the therapeutic evolution[6].

RESUMO

Objetivo: verificar os efeitos da terapia fonológica, utilizando o modelo de Ciclos Modificado, e comparar a evolução de dois grupos de crianças com desvio fonológico, um em cujo tratamento foram utilizadas palavras-alvo com contextos fonológicos favoráveis e outro em que foram utilizados os contextos pouco favoráveis e neutros, na aquisição das fricativas /z/, /ʃ/ e /ʒ/. **Método:** os sujeitos foram seis crianças com desvio fonológico e idades entre 4:7 e 7:8, devidamente autorizados a participarem da pesquisa. Os mesmos foram avaliados por meio de exames fonoaudiológicos e complementares para diagnosticar o desvio fonológico. Metade das crianças foi tratada com palavras em que os fonemas /z/, /ʃ/ e /ʒ/ encontravam-se em ambientes favoráveis e a outra metade com ambientes pouco favoráveis e neutros. Foram realizadas oito sessões e, após estas, nova avaliação de fala foi realizada. Foram analisadas as seguintes variáveis: mudanças ocorridas no sistema fonológico e no percentual de consoantes corretas-revisado. Para a análise dos dados aplicou-se o *Teste de Wilcoxon* ($p<0,05$). **Resultados:** a evolução terapêutica foi estatisticamente significante para todos os sujeitos na maioria das variáveis, porém na comparação entre os grupos favorável e pouco favorável e neutro não foi observada diferença estatisticamente significante. **Conclusão**: a terapia resultou em evolução nos sistemas fonológicos de todos os sujeitos, porém a utilização de palavras-alvo com ambientes fonológicos favoráveis não determina melhor evolução terapêutica.

DESCRITORES: Fala; Fonoterapia; Distúrbios da Fala; Criança

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