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Descritores

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Interference of the linguistic variant in the repair strategies used during the phonological acquisition process

Interferência da variante linguística nas estratégias de reparo utilizadas no processo de aquisição fonológica

ABSTRACT

Purpose: To investigate and compare the use of repair strategies in the acquisition of /R/ in simple onset, produced by children with typical phonological acquisition. **Methods:** Speech data containing the /R/ from 120 children with typical phonological acquisition (60 male and 60 female) from Santa Maria (RS) and Crissiumal (RS), Brazil, aged between 1 year and 6 months and 4 years were used. To analyze the repair strategies, the following dependent variables were considered: omission, semivocalization, and liquid substitution; as well as the following independent variables: gender, age, precedent and following context, grammatical class, tonicity, number of syllables, and position in the word. The VARBRUL program was used for statistical analysis. **Results:** The statistical program selected as significant for omission in Santa Maria the variables tonicity and gender, and in Crissiumal, tonicity and age. For semivocalization in Santa Maria, the program selected the variable gender, and in Crissiumal, tonicity. For lateral liquid substitution in Santa Maria the statistical program did not select any variable. However, in Crissiumal, the variables position in the word, gender, and age were selected. **Conclusion:** It was possible to observe that the repair strategies can diverge according to the dialect being used. Hence, it is important to consider the dialectal variation to make the phonological therapy more effective.

RESUMO

Objetivo: Investigar e comparar o uso de estratégias de reparo na aquisição do /R/ em *onset* simples empregadas por crianças com aquisição fonológica típica. **Métodos:** Foram utilizados dados de fala contendo o ‘r-forte’ de 120 crianças com aquisição fonológica típica, sendo 60 do gênero feminino e 60 do gênero masculino, residentes de Santa Maria (RS) e de Crissiumal (RS), com idades entre 1 ano e 6 meses e 4 anos. Para a análise das estratégias de reparo empregadas foram consideradas as variáveis dependentes omissão, substituição por j e w, e substituição por [l] e/ou [r], e as variáveis independentes gênero, idade, contexto precedente e seguinte, classe gramatical, tonicidade, número de sílabas e posição na palavra. Os dados foram codificados e submetidos à análise estatística por meio do programa VARBRUL. **Resultados:** O programa estatístico selecionou como significativos na rodada da omissão em Santa Maria tonicidade e gênero e em Crissiumal tonicidade e faixa etária. Na rodada da substituição por j e w em Santa Maria o programa selecionou gênero e em Crissiumal tonicidade. Na rodada da substituição pelo [l] em Santa Maria nenhuma variável foi selecionada e em Crissiumal as variáveis posição na palavra, gênero e faixa etária foram selecionadas. **Conclusão:** Foi possível observar que as estratégias de reparo podem divergir conforme a variante utilizada. Deve-se, portanto, considerar a variação dialetal para que a terapia fonológica seja mais eficiente.

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INTRODUCTION

In general, the typical phonological domain occurs when children are about five years old. The liquid consonants are the ones later acquired⁽¹⁾. These consonants are a complex sound class, both in the acoustic-articulatory and the phonological point of view⁽²⁾. Thus, the liquids class of Brazilian Portuguese, which are /l/, /ʎ/, /R/ e /r/, also present more repair strategies during its acquisition.

During phonological acquisition, children's initial speech productions are different from the adult pattern. However, they are also not disorientated and chaotic. The attempts of speech production, initially, present characteristics that demonstrate which strategies children are using to produce certain sounds, what are the difficulties found, and what is the level of phonological awareness. These production attempts are not asystematic and they may show the presence of a phonological subsystem and, hence, knowledge being built⁽⁴⁾. During phonological acquisition, there are some repair strategies that should disappear with development, and there are specific processes expected to each age group⁽²⁾. Regarding the types of repair strategies that occur during the acquisition of the rhotics, a study mentions that substitutions by plosive consonants, substitutions by lateral liquids, and semivocalizations may occur^(5,6).

In this study, it was considered that the repair strategies can be different, according to the linguistic variant in use. According to a study⁽⁷⁾, phonetic variability is part of the linguistic system, and may or may not lead to linguistic change. The linguistic variants may dispute space with each other when they represent certain phonemes; in this case, there is change in progress. However, the variation might also present continuous characteristics, without decline or increase of a linguistic form over the other. Hence, a stable variation is observed.

It seems that because of the fact that in Rio Grande do Sul, Brazil there is more than one variant to "strong-R", with different phonetic and articulatory characteristics, these features should be analyzed when evaluating cases of phonological disorders, so that therapy practices are more effective. Besides, because the variants which are used in both studied cities are not the same, it is expected that the repair strategies used by children are not the same either.

Thus, this study had the purpose to investigate and compare the use of repair strategies during the acquisition of the non-lateral liquid /R/ in simple onset position by children with typical phonological acquisition that live in Crissiumal and Santa Maria (RS), Brazil. This phoneme was selected because it presents both dialectal and individual variation in this position. The "strong-R" can be produced as velar or glottal fricative (Santa Maria) and multiple⁽³⁾ or simple vibrant (Crissiumal). As in simple onset the segments "strong-R" and "weak-R" present phonological distinctiveness⁽²⁾, the use of the simple vibrant instead of the "strong-R" may cause the loss of this distinctiveness in some dialects.

METHODS

It was used speech data from 120 children with typical

phonological acquisition, 60 from Santa Maria (RS), Brazil, and 60 from Crissiumal (RS), Brazil. These children were matched considering the variable gender, that is, there were 30 boys and 30 girls from each city, all monolingual speakers of Brazilian Portuguese. Their ages varied from 1 year and 6 months to 4 years. The age groups were divided in every two months, with a total of 15 age groups per city. In each age group, speech data from two boys and two girls were used.

The speech samples from Santa Maria and Crissiumal are part of two data bases created after research projects approved by the Research Ethics Committee of Universidade Federal de Santa Maria, under numbers 064/2004 and 23081.011800/2010-89.

In both cities, the parents or legal guardians of the subjects were informed of the purposes and procedures of the research, and agreed to their participation by signing the Free and Informed Consent.

In addition, in both cities, the subjects were submitted to speech-language and hearing screening, in order to confirm if they presented typical phonological development. Moreover, they should not present evident neurological, cognitive or psychological impairments.

To form the data bases, speech samples were transversally collected based on the instrument Child's Phonological Assessment (CPA)⁽⁸⁾. This instrument propitiates spontaneous naming of 125 words, through five thematic pictures. The CPA was applied individually to each child, and the speech data were digitally recorded. After that, the data were transcribed through broad phonetic transcription and reviewed by two experienced judges, separately.

In Crissiumal, each child was individually evaluated by the researcher. Data collection consisted of two steps. In the first step, parents and teachers were interviewed in order to identify the used variant, to represent the children's input. In the second step, speech data were collected, using the same method described for Santa Maria, that is, the CPA. A list of 30 words containing the "strong-R" in medial and initial onset was also used.

The words collected from the Santa Maria data basis (*corpus* of 259 words) and the words collected in Crissiumal (*corpus* of 388 words) containing the "strong-R" (e.g.: *rato* – mouse, *cachorro* – dog) were classified as they were produced. For this, dependent and independent, linguistic and extra-linguistic variables were considered.

As variants of the dependent variable, in Santa Maria, the following strategies were considered: omission (*carro* (car) - ['kaw]), substitution by the glides [w] and [j] (*carro* (car) - ['kaju] or ['kawu]), substitution by [r] or [l] (*carro* (car) - ['karo] or ['kalu]). In Crissiumal, the strategies considered were: omission, substitution by the glides [w] and [j] and substitution by [l]. The substitution by the non-lateral liquid [r] is not a repair strategy in Crissiumal, but rather a correct production, because the regional dialect presents this variant as a way to produce the "strong-R".

To analyze the repair strategies used during the "strong-R" acquisition in simple onset position, the extra-linguistic variables gender and age were considered; the linguistic variables

precedent and following context, tonicity, number of syllables, and word position were also considered.

For an efficient analysis of the variable age, 15 age groups per city were observed every two months, as previously mentioned. Regarding the variable gender, speech analysis of 30 boys and 30 girls from each city was accomplished. This aspect was considered because it was already mentioned in other studies as a distinguishing factor in language acquisition^(9,10).

The variable tonicity was analyzed by means of the variants pre-tonic (e.g.: *ratinho* – little mouse), tonic (e.g.: *rato* – mouse) and post-tonic (e.g.: *carro* – car), because the type of onset analyzed allows for these occurrences. Within the variable number of syllables, it was possible to analyze the onsets in monosyllable (e.g.: *rio* – river), disyllable (e.g.: *rato* – mouse), trisyllable (e.g.: *carroça* – cart) and polysyllable (e.g.: *arrumando* – organizing) lexical items. Regarding the variable precedent context, the following vowels were considered: dorsal /a/ (e.g.: *arroz* – rice), dorsal labial /o/, /ɔ/ e /u/ (e.g.: *cachorro*, *forra*, *burro* – dog, pad, donkey), coronal /e/, /ɛ/ e /i/ (e.g.: *erro*, *berro*, *birra* – mistake, yell, stubbornness). The observed vowels in following context were: dorsal /a/ (e.g.: *garrafa* – bottle), dorsal labial /o/, /ɔ/ e /u/ (e.g.: *cachorro*, *roda*, *rua* – dog, wheel, street), coronal /e/, /ɛ/ e /i/ (e.g.: *rei*, *régua*, *sorriso* – king, ruler, smile). Regarding word position, the words were categorized as simple initial onset (e.g.: *relógio* – watch) and simple medial onset (e.g.: *carro* – car).

Children's productions were classified and categorized according to the variables and variants previously described. This categorization was typed in the program Microsoft Office Access 2003, which was the entrance to the statistical program.

For statistical analysis, it was used the statistical program VARBRUL. This group of programs is broadly used in sociolinguistic analyses⁽¹¹⁻¹³⁾. However, the program has been used with success, since the 1990s, analyzing language acquisition data^(9,10,14). The program VARBRUL was chosen due to the characteristics and purposes of this study, as well as because it provides frequencies and probabilities, and selects variables with statistical difference. The program makes probabilistic analysis in binary form. This means that this program, through statistical calculation, attributes relative weights to the variants of the independent variables, regarding both variants (correct and incorrect production) of the studied linguistic phenomenon, represented by the dependent variable. It is important to emphasize that the VARBRUL attributes significance values to the linguistic and extra-linguistic variables through interaction among them (gender *versus* age; tonicity *versus* number of syllables). Hence, it does not attribute p-values to the variants within a variable. For instance, the program VARBRUL does not generate a significance value when comparing the genders male and female. For these variants, relative weights are attributed, that is, probabilities with higher or lower interference of the variants in the production of /R/ in simple onset.

The relative weights or occurrence probabilities of /R/ in simple onset come from the statistic interaction containing all the variables selected by the program. Values with relative weight lower than 0.50 were considered unfavorable,

probabilistic values between 0.50 and 0.59 were considered neutral, and values equal or higher than 0.60 were considered favorable.

RESULTS

It was possible to observe differences about the repair strategies used in Santa Maria and in Crissiumal. In Santa Maria the omission was the most frequent, while in Crissiumal, the most used strategy was the substitution by lateral liquid.

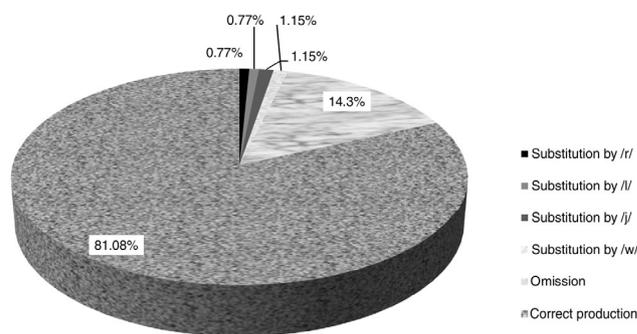


Figure 1. Occurrence of repair strategies in Santa Maria

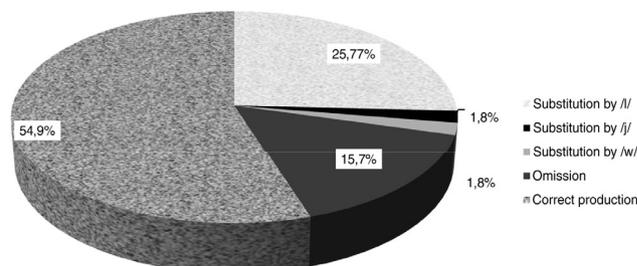


Figure 2. Occurrence of repair strategies in Crissiumal

For the strategy omission, in Santa Maria, the statistical program selected the variables tonicity (tonic syllable) and gender (male). In Crissiumal the selected variables were tonicity (pre-tonic) and age group. In Crissiumal, the highest relative weights, which are favorable for omission and the highest frequencies, appear in alternating age groups (Table 1), while in Santa Maria the highest frequencies are in intermediate age groups (Table 2).

For the strategy substitution by [j] and [w], in Santa Maria, the statistical program selected the male gender as favorable. In Crissiumal, the mentioned gender was not selected, but the male gender presented the highest frequency.

In Crissiumal, still regarding substitution by [l] and [w], the variable tonicity was selected, and the variant post-tonic (e.g.: *carro* – car) was favorable for this repair strategy, what agrees with the highest frequency observed in Santa Maria for tonicity. However, if it is considered the total number of words, this strategy did not appear in many subjects in both cities.

About the strategy substitution by [l], in Santa Maria there were only two cases of use. That is the reason why the statistical program did not select any variable for this strategy. Nevertheless, in Crissiumal, this was the most used repair

strategy. In Crissiumal, the statistical program selected, for the variable substitution by [l], word position, gender and age group. In relation to the variables word position and gender, no variable was favorable for this substitution, with no probability values equal or higher than 0.60. Even so, the words in medial onset and the male gender presented the highest frequencies

and relative weights. About age group, the groups which were considered as favorable for substitution by [l] were in alternating groups.

Regarding the extra-linguistic variables which were not selected (Table 2) in Crissiumal, the female gender presented the highest frequency of omission, although the frequencies of

Table 1. Selected variables in Santa Maria and in Crissiumal

Variables	Variants	City				
		Santa Maria	Santa Maria	Crissiumal	Crissiumal	
		F (%)	P	F (%)	P	
Tonicity	Pre-tonic	5/38 (13)	0.42	33/78 (42)	0.87	
	Tonic	30/105 (29)	0.68	23/164 (14)	0.51	
	Post-tonic	2/38 (5)	0.15	5/99 (5)	0.17	
Gender	Male	27/104 (26)	0.64			
	Female	10/77 (13)	0.32			
Omission	1:6 – 1:7;30			0 (0)		
	1:8-1:9;30			5/9 (56)	0.89	
	1:10-11;30			0 (0)		
	2:0-2:1;30			1/8 (13)	0.46	
	2:2-2:3;30			4/18 (22)	0.77	
	2:4-2:5;30			4/21 (19)	0.67	
	2:6-2:7;30			5/35 (14)	0.57	
	Age group	2:8-2:9;30			5/41 (12)	0.44
		2:10 – 2:11;30			0 (0)	
		3:0-3:1;30			19/42 (45)	0.92
		3:2-3:3;30			1/35 (3)	0.18
		3:4-3:5;30			10/12 (83)	0.98
		3:6-3:7;30			3/50 (6)	0.29
		3:8-3:9;30			3/26 (12)	0.38
		3:10-3:11;30			1/44 (2)	0.11
Substitution by glides [j] and [w]	Pre-tonic			1/33 (3)	0.39	
	Tonic			1/67 (1)	0.24	
	Post-tonic			12/49 24%	0.87	
Gender	Male	5/36 (14)	0.76			
	Female	1/48 (2)	0.30			
Word position	Initial onset			42/171 (25)	0.42	
	Medial onset			58/165 (35)	0.58	
Gender	Male			49/156 (31)	0.58	
	Female			51/180 (28)	0.43	
Substitution by the lateral liquid [l]	1:6 – 1:7;30			0 (0)		
	1:8-1:9;30			0 (0)		
	1:10-11;30			5/8 (63)	0.84	
	2:0-2:1;30			5/8 (63)	0.80	
	2:2-2:3;30			5/17 (29)	0.48	
	2:4-2:5;30			8/20 (40)	0.69	
	2:6-2:7;30			2/34 (6)	0.12	
	Age group	2:8-2:9;30			14/39 (36)	0.63
		2:10-2:11;30			7/39 (18)	0.39
		3:0-3:1;30			12/42 (29)	0.52
		3:2-3:3;30			7/35 (20)	0.38
		3:4 – 3:5;30			0 (0)	
		3:6 – 3:7;30			28/50 (56)	0.80
		3:8-3:9;30			0 (0)	
		3:10-3:11;30			7/44 (16)	0.62

Statistical program VARBRUL (p<0.05)

Note: F = frequency; P= probability

Table 2. Extra-linguistic variables not selected by the statistical program in Santa Maria and Crissiumal

Variables	Variants	Cities	
		Santa Maria	Crissiumal
		Frequency (%)	Frequency (%)
Omission	Gender	Male	29/178 (16)
		Female	32/163 (20)
		1:6 – 1:7;30	0 (0)
		1:8 – 1:9;30	0 (0)
		1:10-11;30	1/18 (6)
		2:0-2:1;30	3/24 (13)
		2:2-2:3;30	3/25 (12)
		2:4-2:5;30	10/21 (48)
		2:6-2:7;30	9/22 (41)
	Age group	2:8-2:9;30	3/23 (13)
		2:10-2:11;30	5/16 (31)
		3:0 – 3:1;30	0 (0)
		3:2-3:3;30	2/10 (20)
		3:4-3:5;30	1/22 (5)
		3:6 – 3:7;30	0 (0)
	3:8 – 3:9;30	0 (0)	
	3:10 – 3:11;30	0 (0)	
Substitution by glides [j] and [w]	Gender	Male	11/86 (13)
		Female	3/63 (5)
		1:6 – 1:8;30	0 (0)
		1:8 – 1:9;30	0 (0)
		1:10-11;30	0 (0)
		2:0 – 2:2;30	0 (0)
		2:2-2:3;30	1/21 (5)
		2:4-2:5;30	0 (0)
		2:6-2:7;30	2/21 (10)
	Age group	2:8-2:9;30	2/24 (8)
		2:10 – 2:11;30	0 (0)
		3:0 – 3:1;30	0 (0)
		3:2 – 3:3;30	0 (0)
		3:4-3:5;30	0 (0)
		3:6-3:7;30	1/18 (6)
	3:8-3:9;30	0 (0)	
	3:10-3:11;30	0 (0)	
Substitution by liquids [r] and/or [l]	Gender	Male	3/28 (11)
		Female	1/25 (4)
		1:6 – 1:7;30	0 (0)
		1:8 – 1:9;30	0 (0)
		1:10-11;30	1/8 (13)
		2:0-2:1,30	1/15 (7)
		2:2-2:3;30	1/18 (6)
		2:4 – 2:5;30	0 (0)
		2:6 – 2:7;30	0 (0)
	Age group	2:8 – 2:9;30	0 (0)
		2:10 – 2:11;30	0 (0)
		3:0 – 3:1;30	0 (0)
		3:2 – 3:3;30	0 (0)
		3:4 – 3:5;30	0 (0)
		3:6-3:7;30	1/12 (8)
	3:8 – 3:9;30	0 (0)	
	3:10 – 3:11;30	0 (0)	

Statistical program VARBRUL (p<0.05)

both genders were very close. In Santa Maria, as previously mentioned, the male gender presented the highest frequency of omission, with difference when compared with the female gender. The variable age group was not selected in Santa Maria for omission, but, as mentioned, the highest frequencies appeared in intermediate groups.

Considering the substitution by [j] and [w], the statistical program did not select the variable gender in Crissiumal, but the highest frequencies were found for the male gender, what agrees with the findings from Santa Maria. Regarding the same variable, the variant age group was selected neither in Santa Maria nor in Crissiumal. Nevertheless, in Santa Maria the highest frequencies were found in intermediate groups and in Crissiumal the highest frequencies were found in alternating groups.

The variables gender and age group were not selected in Santa Maria for substitution by the liquids [r] and [l], which were amalgamated in this city because of the reduced number of occurrences. However, the male gender presented the highest frequency and the children from the initial age groups used this strategy more often.

In Crissiumal, only the substitution by [l] was considered by the statistical program. It happened because, as previously quoted, the /R/ in simple onset produced as simple vibrant is considered as correct production in this city. In addition, and the variables gender and age were selected by the statistical program (Table 1).

In relation to the linguistic variables which were not selected (Table 2) in Santa Maria, it was observed that the frequencies of omission of the used variants occurred more often in the precedent context with coronal vowel (e.g.: *erro* – error), while in Crissiumal the null context appeared more often. About following context, it was observed the highest frequencies in the coronal variant for both cities.

Still about omission, as Santa Maria as Crissiumal presented similar frequencies regarding number of syllables, with the highest frequencies for trisyllables (e.g.: *cachorro* – dog). Only in monosyllable words (e.g.: *rio* – river), in Santa Maria, there was no case of omission. The children who live in Santa Maria omitted /R/ with similar frequencies as in initial onset (e.g.: *rato* – mouse), as in medial onset (e.g.: *carro* – car), which presents mildly higher frequency. In Crissiumal, there were more cases of omission in words with /R/ in initial onset.

The substitutions by the glides [j] and [w], as previously stated, appeared in a few cases, in both cities. However, in Crissiumal the labial/dorsal vowel (e.g.: *cachorro* – dog) was the most frequent in precedent context. In Santa Maria, the mentioned substitution did not occur for this variant. In following context, in Santa Maria, the labial/dorsal vowel (e.g.: *carro* – car) was the most frequent one. In Crissiumal, there was no substitution by the glides [j] and [w] in following context. As in Crissiumal, as in Santa Maria the glides [j] and [w] appeared more frequently in post-tonic syllables (e.g.: *carro* – car) and they did not appear in monosyllable words (e.g.: *rio* – river). Words with /R/ in medial onset (e.g.: *carro* – car) were the ones with the highest frequencies in both cities.

Regarding the substitution by the liquids [l] and [r], in Santa

Maria, there were no significant results, because of the reduced number of occurrences. Nevertheless, the words with labial/dorsal vowel in precedent context (e.g.: *cachorro* – dog) and in following context (e.g.: *cachorro* – dog) presented the highest frequencies, although they were not selected by the statistic program. In Crissiumal, it was possible to observe a higher number of occurrences of all vowels, as in precedent context as in following context, except the precedent context with coronal vowel (e.g.: *erro* – error). The highest frequency in precedent context was completed by the dorsal vowel (e.g.: *arroz* – rice) and, in following context, by the labial/dorsal vowel (e.g.: *carro* – car). In relation to tonicity, in Santa Maria, the tonic syllables (e.g.: *rádio* – radio) presented the highest frequency and in Crissiumal, the post-tonic syllables (e.g.: *carro* – car) presented the highest frequency. As in Santa Maria as in Crissiumal, the polysyllable words (e.g.: *arrumando* – organizing) presented the highest frequencies of substitution by the liquids [r] and/or [l], but they appeared in only a few cases in both cities. In Santa Maria, even not selected, the words with /R/ in medial onset (e.g.: *correndo* – running) appeared more frequently, as well as in Crissiumal, as earlier mentioned.

DISCUSSION

After the obtained results, it was observed that the repair strategies used by the children from Santa Maria were, respectively, omission, substitution by the glides [j] and [w] and substitution by the liquids [l] and [r]. In Crissiumal, the used repair strategies presented the following sequence of frequency: substitution by the lateral liquid [l], omission and substitution by the glides [j] and [w]. The findings agree with a study in which the semivocalization of liquid and the substitution of liquid also occurred in different stages of the liquid consonants acquisition⁽¹⁵⁾. There is another research which perceived that strategies such as segment omission and substitutions are used by children during the phonological acquisition^(16,17).

In Santa Maria, the selected variables for omission were tonicity and gender. It indicated that the tonic syllable and the male gender are favorable for omission. A study stated that, about the “strong-R” production, the syllable which was the most affected in cases of omission was the strong syllables of the metrical foot (*rato* (mouse))⁽¹⁸⁾.

In Crissiumal, when analyzing omission, the statistical program selected the variables tonicity (pre-tonic) and age group. A study that used a sample of 36 subjects with typical phonological development and 12 subjects with phonological disorders, in order to describe and to analyze the repair strategies used in simple onset, selected the pre-tonic variant (relative weight 0.62) as favorable for omission⁽¹⁹⁾. About age group, it was observed that the omission occurred in random groups in Crissiumal, what indicated the phenomenon called “U”-shape curve. This phenomenon, when drawn in a graphic representing percentages and ages, appears as a developmental curve in shape of “U”⁽⁵⁾. It means that the acquisition is non-linear.

In the substitution by [j] and [w] in Santa Maria, the selected variable was gender. In Crissiumal, the selected variable in this

Table 3. Linguistic variables not selected by the statistical program in Santa Maria and Crissiumal

	Variables	Variants	Santa Maria	Crissiumal
			Frequency (%)	Frequency (%)
Omission	Precedent context	Empty context	14/71 (20)	46/174 (26)
		Dorsal vowel	20/98 (20)	10/105 (10)
		Coronal vowel	3/12 (25)	1/6 (17)
		Labial/dorsal vowel	0 (0)	4/56 (7)
	Following context	Dorsal vowel	1/11 (9)	20/84 (24)
		Coronal vowel	15/60 (25)	22/89 (25)
		Labial/dorsal vowel	21/110 (19)	19/168 (11)
	Number of syllables	Monosyllable	0 (0)	2/13 (15)
		Disyllable	14/91 (15)	20/178 (11)
		Trisyllable	21/74 (28)	38/141 (27)
		Polysyllable	2/16 (13)	1/9 (11)
	Word position	Initial onset	14/73 (19)	47/181 (26)
Medial onset		23/108 (21)	14/160 (9)	
Substitution by glides j and w	Precedent context	Empty context	0 (0)	1/71 (1)
		Dorsal vowel	0 (0)	7/52 (13)
		Coronal vowel	0 (0)	0 (0)
		Labial/dorsal vowel	0 (0)	6/26 (23)
	Following context	Empty context	0 (0)	0 (0)
		Dorsal vowel	0 (0)	0 (0)
		Coronal vowel	2/37 (5)	0 (0)
	Tonicity	Labial/dorsal vowel	4/47 (9)	0 (0)
		Pre-tonic	1/15 (7)	
		Tonic	2/53 (4)	
	Number of syllables	Post-tonic	3/16 (19)	
		Monosyllable	0 (0)	0 (0)
Disyllable		3/34 (9)	7/83 (8)	
Trisyllable		2/46 (4)	7/66 (11)	
Word position	Polysyllable	1/4 (25)	0 (0)	
	Initial onset	1/24 (4)	2/72 (3)	
	Medial onset	5/60 (8)	12/77 (16)	
Substitution by liquids /r/ and/or /l/	Precedent context	Empty context	1/24 (4)	42/169 (25)
		Dorsal vowel	2/27 (7)	37/106 (35)
		Coronal vowel	0 (0)	0 (0)
		Labial/dorsal vowel	1/2 (50)	21/61 (34)
	Following context	Dorsal vowel	0 (0)	16/72 (22)
		Coronal vowel	2/31 (6)	25/90 (28)
		Labial/dorsal vowel	2/22 (9)	59/174 (34)
	Tonicity	Pre-tonic	1/16 (6)	11/65 (17)
		Tonic	3/37 (8)	52/164 (32)
		Post-tonic	0 (0)	37/107 (35)
	Number of syllables	Monosyllable	0 (0)	3/12 (25)
		Disyllable	1/17 (6)	60/181 (33)
Trisyllable		2/31 (6)	34/135 (25)	
Polysyllable		1/5 (20)	3/8 (38)	
Word position	Initial onset	1/24 (4)		
	Medial onset	3/29 (10)		

Statistical program VARBRUL ($p < 0.05$)

strategy was unstressed. The post-tonic variable was favorable for this strategy. A study verifies that the favorable elements for semivocalization concluded that the post-tonic variable is the variant with the highest frequency of semivocalization⁽²⁰⁾.

Regarding the substitution by the lateral liquid [l], in Santa Maria, no variable was selected. However, in Crissiumal the

selected variables were word position (medial onset), gender (male) and age group (alternated groups). A study mentions that, among the possible phonological processes during phonological acquisition, the liquid substitution is the most frequent, reaching pre-school age, sometimes⁽²¹⁾. In another study performed with children between one year old and a half and two

years old and a half, the lateral liquid emerged in the speech data and it was used correctly once in medial onset when the child was two years and a half, but it was not acquired⁽⁹⁾. So, the medial onset emerged before the medial onset.

In relation to the variable gender, it was selected twice in Santa Maria (omission and substitution by [j] and [w]) and once in Crissiumal (substitution by the lateral liquid [l]). In those cases, the male gender always obtained the highest frequencies of repair strategies use. It is possible to verify that between men and women, there are not only external anatomic differences of the primary and secondary features, but also of the way they acquire the linguistic system, particularly the phonology of their language is different. Confirming this difference, it is possible to state that girls speak earlier and with less grammar mistakes than boys, being more precocious to acquire linguistic abilities⁽²²⁾.

About the variable gender, when it was not selected by the statistical program (omission and substitution by [j] and [w] in Crissiumal and substitution by [l] and [r] in Santa Maria), only in Crissiumal the male gender does not present the highest frequency of omission. It means higher use of repair strategies by boys^(22,23), who acquire the speech sounds later⁽²⁴⁾. This information does not agree with a study which observed that girls present more errors than boys⁽²⁵⁾. The male gender, according to another study, presents better performance in tasks of phonological awareness⁽²⁶⁾. There are other studies in which the variable gender is neutral regarding the use of repair strategies and the order of acquisition of phonemes by subjects with typical^(1,27) and atypical⁽²⁸⁾ phonological development.

About the extra-linguistic variable age group, when it was not selected, it also presented decrease of production, what is normal during the phonological acquisition. It can occur because the child is improving some ability, such as monitoring of the hearing control in speech to synesthetic information, so that children can create more efficient strategies to correctly produce the language sounds⁽⁹⁾.

In relation to tonicity, even when it was not selected by the statistical program, there was higher frequency of post-tonic syllables to the use of repair strategies. A study refers that there is a phenomenon called unstressed syllable erase which usually occurs in words with more than one syllable (trisyllables or polysyllables)⁽⁴⁾.

A study confirms the findings of the present research, which reports that omission occurs more frequently in trisyllable words and the repair strategies, in general, even when they are not selected by the statistical program, they occur in trisyllable and polysyllable words. Besides, post-tonic syllables are unstressed. Based on this idea, another research with children with typical phonological development selected trisyllable words as favorable for semivocalization, confirming the results from Crissiumal (Table 3). The same research selected polysyllable words as favorable for liquid substitution, confirming the findings from Santa Maria and Crissiumal (Table 3). Other variants which were observed as favorable for omission in that research were empty context in precedent context, as in Crissiumal, and labial vowel in following context, as in Santa Maria (Table 3)⁽¹⁹⁾.

So, through general analysis of the information which was found in this study, it is possible to verify that during the /R/

acquisition process, children who are exposed to different variants of the studied phoneme use different repair strategies. In a research about linguistic variation and language acquisition⁽²⁹⁾, the authors refer that it is undeniable that children develop their phonological knowledge, or part of it, through the phonetic substance to which they are exposed. The result of this study shows that it is necessary to take into account the patterns of variability of the adult community, to have a correct evaluation of the targets which should be reached by children. Thus, children need to correctly reproduce the sociolinguistic variants which are proper in their community. So, not to consider the linguistic variability as improper learning, it is important to discover the input received by the evaluated children, before the diagnosis of atypical phonological development.

CONCLUSION

It was possible to observe that the repair strategies may be different according to the sociolinguistic variant being used. In Santa Maria, the most used repair strategy was omission. In Crissiumal, the most used repair strategy was substitution by the lateral liquid [l], followed by omission. Besides, it was verified that the children from Crissiumal used more repair strategies during the analyzed age groups, because in Santa Maria there were more cases of correct production.

The hypothesis of this study could be confirmed. It means that the repair strategies used by the children who are exposed to both studied dialects are different. So, differences which were found should be observed to analyze the cases of atypical phonological development.

This research is justified as it can help the speech language therapists to distinguish cases of phonological disorders and dialectal variation, considered as typical phonological development. Thus, it will avoid unnecessary therapy in cases of linguistic variation.

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