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Trajectory of liquid production in typically developing children: European Portuguese[1]

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Abstract

Dependence relationship between segmental and syllabic acquisition has been described in several languages phonological acquisition. In European Portuguese, there are only two segments (/l/ and /ɾ/) licensed in all syllabic position: Onset, Onset cluster and Coda. This paper describes cross-sectional data for /l/ and /ɾ/ in all syllable position in typically developing children aged 3 to 5 years old, contributing with empirical data from European Portuguese to the dependence relationship between segmental and syllabic acquisition. A native speaker audio-recorded and transcribed single words in an original spontaneous picture naming task, allowing eliciting words in connected speech. Results show a dependence relationship between segmental and syllabic acquisition consistent with previous research on European Portuguese. Onset /l/ and /ɾ/ were in advance of /l/ and /ɾ/ clusters and Coda. Both segments have different paths in acquisition: /l/ stabilizes first in Onset cluster and later in Coda, whilst the rhotic stabilizes first in Coda and later in Onset cluster. Besides the syllable constituent, along with the syllable position in the word, was relevant for the stabilization of liquid consonants: contrary to lateral Coda, rhotic Coda acquisition stabilizes first in word-final position and only later within word. Finally, the prosodic variable tonicity was also relevant for the acquisition of within-word rhotic Coda: it is acquired earlier in stressed syllable and later in unstressed syllable.

Keywords: Phonological acquisition, liquids, syllable constituents, monolinguals, Portuguese

1. Introduction

Studies about European Portuguese (EP) phonological acquisition are relatively recent, having begun with Freitas's work about syllable structure acquisition (Freitas, 1997). After this seminal work, further research has been conducted either on syllable structure acquisition (Correia 2004; Almeida 2011) or on segmental acquisition (Mendes *et al.* 2009/2013; Costa 2010; Amorim 2015; Ramalho 2017). Following Brazilian Portuguese (BP) phonological acquisition research, EP works have used nonlinear phonology to describe and account for data collected, focusing mainly on segmental acquisition and its relationship with syllable, foot and prosodic word (Freitas 1997; Costa 2010; Almeida 2011; Amorim 2015; Ramalho 2017). In this theoretical framework, segmental acquisition description is based on distinctive features, which are inherent to segmental roots, and on distinctive features co-occurrences.

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In Portuguese, liquid consonants /l/ and /ɾ/ are the only segments licensed in all syllable positions: Onset[3], Onset cluster and Coda (Mateus & Andrade, 2000). It is known that even though the segments are already available in the child's system, they do not appear in all positions of the syllable structure simultaneously (Fikkert 1994; Miranda 1996; Freitas 1997; Lamprecht *et al.* 2004; Almeida 2011, Amorim 2015; Ramalho 2017, among others).

In Brazilian Portuguese (BP), the sequence for the acquisition of liquids in Onset cluster ($CC_{liq}V$) and in Coda (CVC_{liq}) is CVC_l final > CVC_l medial > $CVC_ɾ$ final > $CVC_ɾ$ medial > $CC_{ɾ/l}V$ medial / final (Lamprecht *et al.* 2004). According to Ribas (2004), the liquids in Onset cluster are dominated only after 5 years old and there is not a temporal sequence in mastering different Onset clusters ($CC_ɾV$ and CC_lV), unlike Coda. The position in the word also is not considered determinant in the acquisition of this constituent.

The existing data for EP are scarcer. The main study on EP syllable structure acquisition (Freitas 1997) shows that liquids are not used immediately in all syllable constituents, although they are already present in children's system. Therefore, although children used liquids in Onset position, lateral Coda acquisition occurs at a later stage, following the acquisition of Onset cluster (Freitas 1997).

The relationship between segment and syllabic constituent is also confirmed by Nogueira (2007). On her research about phonological development of very low birth weight infants between the ages of 3;6 and 4;6, a group of 15 very low birth weight children was compared to the control group, consisting of 15 children with the same ages. The results show that liquids stabilize first in Onset, then in Coda, and finally in Onset cluster. In Coda position, Nogueira (2007) points out that /ɾ/ has a more stable behavior than /l/, a fact already mentioned by Freitas (1997), who hypothesizes that the stabilization of /ɾ/ is faster than that of /l/ because it is more prominent in the system.

In a cross-sectional longitudinal study on the acquisition of rhyme in EP, Correia (2004) analyzes the productions of 6 children aged 2;10 and 4;7, attesting the following sequence: $CVC_ɾ$ final (stressed > unstressed) > CVC_l final (stressed) > CVC_l medial (stressed and unstressed) > $CVC_ɾ$ medial (stressed > unstressed).

Regarding the acquisition of the Onset cluster in EP, Santos (2013) reports that at the beginning of the first year of Basic Education, the syllable $CC_ɾV$ is produced incorrectly more frequently than the syllable CC_lV.

Lousada *et al.* (2012) indicate that the stabilization of the liquid in the most complex syllabic constituents follows different pathways: Coda > Onset cluster, in the case of the rhotic; Onset cluster > Coda, in the case of the lateral, as suggested by Nogueira (2007) and Santos (2013).

The aim of this paper is to provide additional empirical evidence for the dependence relationship between segmental and syllabic acquisition (among

[3] There is a theoretical discussion about the existence of one or two rhotic phonemes in Portuguese (Câmara Jr. 1953/1970; Harris 1983; Mateus & Andrade 2000; Amorim & Veloso 2018). At the phonetic level, there are two rhotics ([ɾ] and [ʁ]) in complementary distribution at word borders: only [ʁ] can occur at word initial position and only [ɾ] can occur at word-final position. Nevertheless, only [ɾ] can occur in all syllabic constituents (except in word initial position), therefore we are not analyzing rhotic productions at word initial position.

others, Miranda 1996; Freitas 1997; Lamprecht *et al.* 2004; Nogueira 2007; Almeida 2011). For that purpose, data of 80 EP northern dialects native speakers aged between 3;0 and 4;11 years old will be analyzed, namely all productions of liquid consonants in Onset, Onset cluster and Coda. In addition to the syllabic constitution, word position of the syllable (initial/ medial) and stress will also be analyzed.

2. Methodology

1.1. Participants

The speech data analyzed in this paper were collected from a sample of 80 normally developed children aged between 3;0 and 4;11. All the children live in North of Portugal and acquire Portuguese as their first language. The sample was divided into four age groups, each with twenty children (3;0-3;5, 3;6-3;11, 4;0-4;5 and 4;6-4;11 months).

1.2. Data collection and processing

The speech samples were collected in an original spontaneous picture naming task, built on the basis of the criteria used in Yavas, Hernandorena & Lamprecht (1992). In a single session, each child was invited to tell a story from a book with a sequence of five colored thematic drawings forming a narrative. The target words were, therefore, mainly elicited in connected speech.

The selection of target words had into account children's age as well as linguistic factors: the list includes at least three words of each liquid consonant (/l/ and /ɾ/) in all syllable constituents and word positions. The only exception is CC_lV at word medial position. The distribution of the target segments in stressed and unstressed syllables is uneven because of the difficulty to find words that are present in the vocabulary of young children. The word list is presented in Table 1.

Table 1
The list of target words

	/l/		**/ɾ/**	
	Stressed	**Unstressed**	**Stressed**	**Unstressed**
Initial CV	**l**ágrima, **l**ápis, **l**ivro, **l**obo	**l**agarto, **l**avar	___	___
Medial CV	bo**l**acha, re**l**ógio, zoo**l**ógico	bo**l**a, cabe**l**o, camiso**l**a, caste**l**o, caval**o**, estre**l**a, janel**a**s, ve**l**a	cho**r**ar, gi**r**afa, na**r**iz, o**r**elha,	árvo**r**e, bandei**r**a, banhei**r**a, cadei**r**a, cla**r**o, pinhei**r**o
Initial CCV	**pl**aca, **bl**oco, **bl**usa, **cl**aro, **gl**obo, **fl**or	**pl**asticina,	**br**aço, **br**anco, **br**inco, **cr**eme, **fr**alda, **fr**ita, **gr**ande, **gr**ua,	**dr**agão, **gr**avata, **pr**esente, **tr**ator, **tr**iciclo

			praia, **pr**ato, **pr**eto, **tr**ês	
Medial CCV	bici**cl**eta,	trici**cl**o	a**br**ir, so**pr**ar, es**tr**ela	ze**br**a, es**cr**ever, pe**dr**a, qua**dr**o, vi**dr**o, lá**gr**ima, ti**gr**e, qua**tr**o, li**vr**o
Medial CVC	ba**l**de, ca**l**ças, fra**l**da	go**l**finho	á**r**vore, ba**r**co, go**r**do, guar**d**a-chuva, lagar**t**o, ve**r**de	do**r**mir, ve**r**melho
Final CVC	azu**l**, pince**l**, so**l**	—	abri**r**, colhe**r**, cose**r**, chora**r**, dormi**r**, escreve**r**, flo**r**, lava**r**, ma**r**, nada**r**, pinta**r**, rasga**r**, sopra**r**, toma**r**, trato**r**	—

The speech data were recorded in a Sony Minidisc MZ-NH900 digital recorder with a Lifetech unidirectional microphone (model LF 65) and later saved in a laptop ASUS N43SL and phonetically transcribed by the author. All doubtful transcriptions were reviewed by an experienced phonetician–transcriber. Whenever the transcriptions were not coincident, the productions were not analyzed. The productions considered motivated by assimilation or that suffered vowel epenthesis were also not analyzed, as these reconstruction strategies are not motivated by the internal structure of the segments, but the result of the effect of the sequence, either syllable structure or influence of adjacent sounds.

1.3. Data analysis

A total of 6068 tokens were analyzed, with the following distribution in the syllable. Bold is used to signal the liquid consonant.

Table 2
Number of tokens by segment and syllable constituent

	CV	C**C**V	CV**C**
/l/	1508	455	615
/ɾ/	837	2653	1735

In order to obtain the frequency counts and factor weightings concerning the significance of linguistic factors (syllable constituent, stress, number of syllables), the data were analyzed using GoldVarb X (Sankoff, Tagliamonte & Smith 2005). This is a logistic regression factor-analysis software that performs a step-wise regression analysis presenting an ordered selection of the factors. A value greater than 0.5 means that factor favors use of a particular variant (in this case, substitution or omission of the target

segment); on the contrary, a value less than 0.5 means that use of the variant is disfavored.
The criteria adopted for determining if a segment is acquired is the same used in recent research on EP phonological acquisition (Costa 2010; Almeida 2011; Amorim 2015):
- target-like productions ≥ 80%: segment is acquired;
- target-like productions between 50% and 79%: segment is being acquired;
- target-like productions ≤ 50%: segment is not yet acquired.

3. Findings

3.1. Onset

Although there is a small decrease in medial /l/ in 3;6-3;11 group age, the target-like productions of /l/ in Onset position surpasses the level of 80% at 3;0-3;5 years, which means that segment is already acquired at that age. The rhotic is acquired later, at 3;6-3;11.

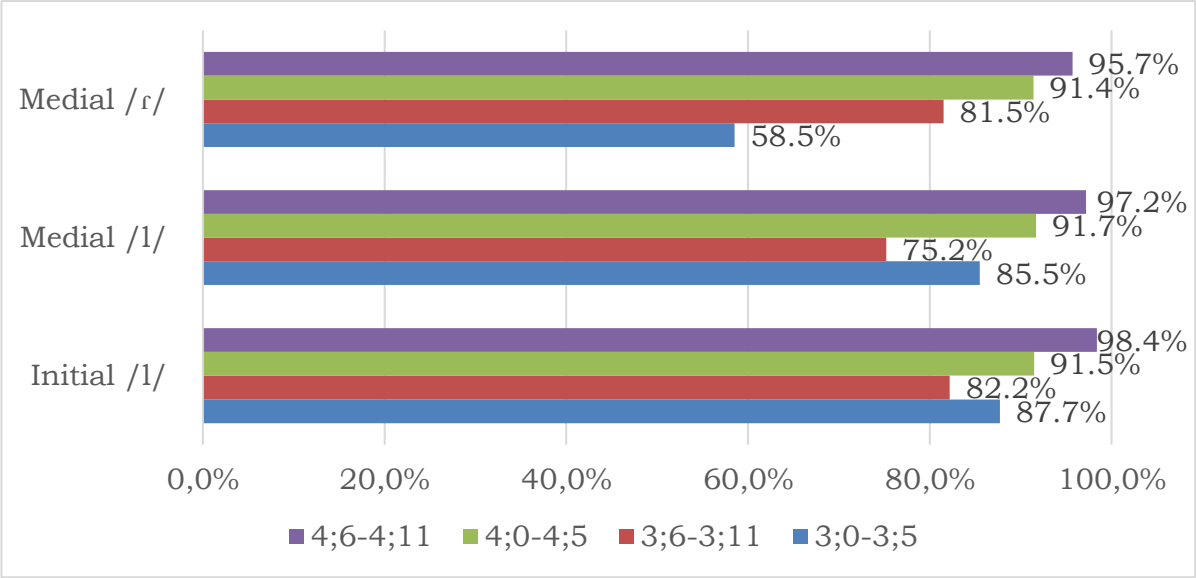

Figure 1. Liquids in Onset target-like productions per age

When children do not produce the target segment, they use different strategies: they tend to substitute [l] by another sound, although deletion of the segment is also present at younger ages: 3;0-3;5 (8.3%) and 3;6-3;11 (9.4%); whilst they prefer not to produce any sound to target /ɾ/. This is, in effect, the main strategy in almost age groups, although it decreases as children are older (36.9% of deletion at 3;0-3;5; 12.0% and 6.7% at 3;6-3;11 and 4;0-4;5 age groups).
Post-tonic syllable favors substitution of /l/ in Onset position. The preferred production to substitute [l] is the glide [w], which is used in 69% of the non-target-like productions and by 25% of the children.
When target /ɾ/ is substituted, the preferred sound produced is the homorganic sonorant [l].

Some examples of non-target-like productions for both liquids are provided in (1).

(1) */l/ >> Ø*

Lágrimas (tears)	/ˈ**l**agɾimɐʃ/	→	[ˈaɣimɐʃ]	(M.ª Francisca 3;9.0)
Bola (ball)	/ˈbɔ**l**ɐ/	→	[ˈbɔɐ]	(Leonor 4;2.17)
	/l/ >>[ɯ]			
Estrela (star)	/iʃˈtɾe**l**ɐ/	→	[iʃˈtɾe**w**ɐʃ]	(Rafaela 3;11.4)
Janelas (windows)	/ʒɐˈnɛ**l**ɐʃ/	→	[ʒɐˈnɛ**w**ɐʃ]	(Bernardo 4;8.11)
	/ɾ/ >> Ø			
Nariz (nose)	/nɐˈ**ɾ**iʃ/	→	[nɐˈiʃ]	(Leonor 3;3.9)
Bandeira (flag)	/bɐ̃ˈðɐj**ɾ**ɐ/	→	[bɐˈðejɐ]	(Marco 4;4.3)
	/ɾ/ >>[l]			
Chorar (to cry)	/ʃuˈ**ɾ**aɾ/	→	[ʃuˈ**l**aɾ]	(Rodigo 3;9.24)
Cadeira (chair)	/kɐˈðej**ɾ**ɐ/	→	[kɐˈðej**l**ɐ]	(Afonso 3;10.7)

3.2. Onset cluster

The acquisition of /l/ in Onset cluster is completed only after 4 years old, as target-like productions surpass 80% only in 4;0-4;5 age group, both in initial and medial position. The consonant /ɾ/ is acquired later, surpassing 80% at 46;1-4;11 at initial position, as shown in the next figure.

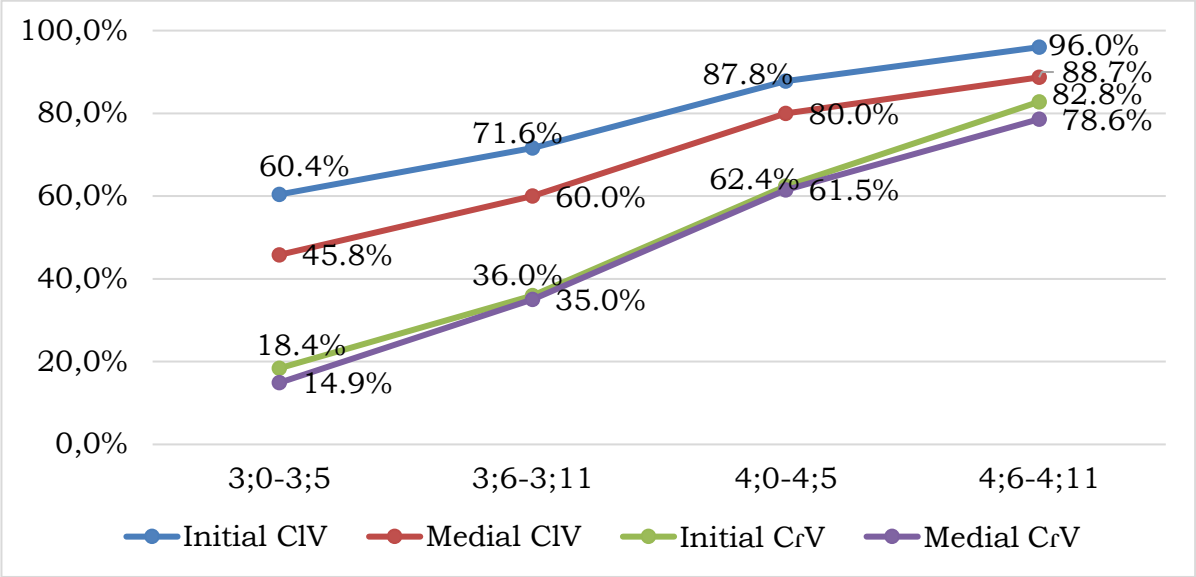

Figure 2. Target-like Onset cluster productions per age

When children do not produce the target segment, they use different strategies for each consonant: they tend to substitute the lateral and to delete the rhotic, as shown in Figure 3.

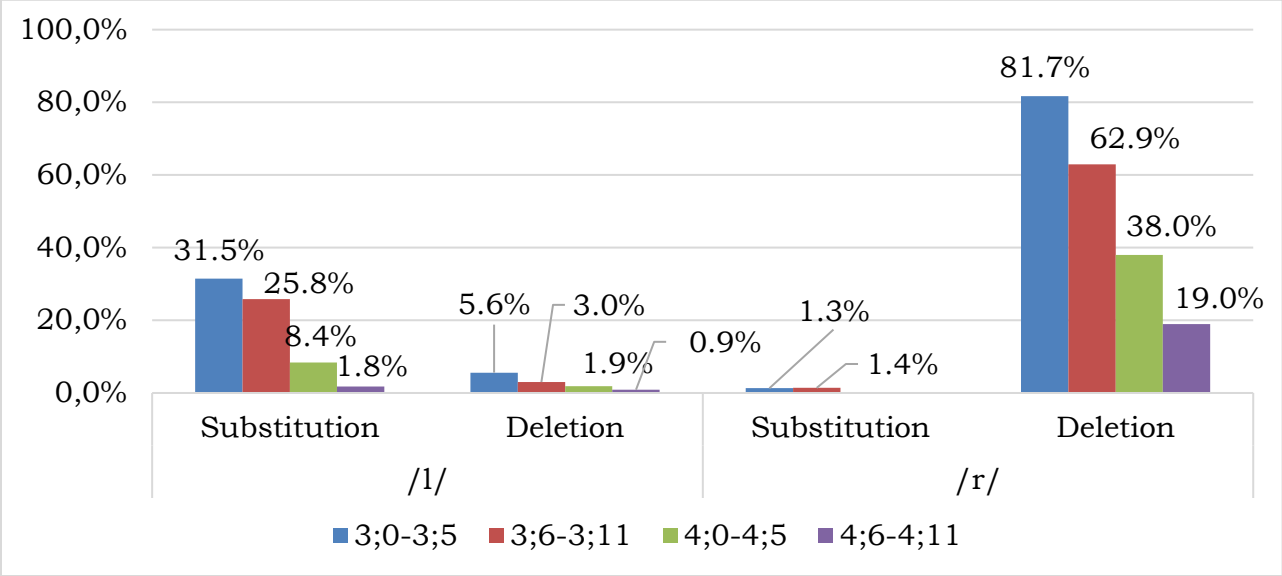

Figure 3. Substitution and deletion of liquids in Onset cluster

The results found in the production of CC_rV confirm what has been reported in phonological development research: children tend to simplify the syllable structure (among others, Fikkert 1994; Miranda 1996; Freitas 1997; Bernhardt & Stemberger 1998; Morales-Front 2007). Therefore, what is particularly difficult to children is the syllable format and not the segment (which is acquired at 3;6-3;11).

There is no linguistic factor, such as adjacent sounds, stress or word extension, favoring the substitution of the lateral consonant in Onset cluster. That means that the only relevant factor that favors the substitution of this consonant in Onset cluster is age: younger children are expected to use this strategy more than older ones. Deletion, though, is favored in unstressed syllables.

The analysis of the substitutions reveals the same pattern found for /l/ in Onset: the glide [w] is the preferred production. The predominant substitution type affecting /ɾ/ is rhotic → glide [j].

Some examples in (2) illustrate the non-target-like productions for liquids in Onset clusters.

(2) */l/ >> Ø*

Plasticina (plasticine)	/p**l**ɐʃti'sinɐ/	→	[pɐʃti'sinɐ]	Miguel (3;1.6)
Bloco (notepad)	/'b**l**ɔku/	→	['bɔku]	Afonso (3;0.23)
/l/ >>[w]				
Bicicleta (bicycle)	/bisi'k**l**ɛtɐ/	→	[bisi'k**w**ɛtɐ]	Teresa (3;9.28)
Triciclo (tricycle)	/tɾi'sik**l**u/	→	[ti'sik**w**u]	M.ª Vitória (3;4:3)
/ɾ/ >>Ø				
Abrir (to open)	/ɐ'bɾiɾ/	→	[ɐ'biɾ]	João F. (3;8.4)
Brinco (earring)	/'bɾĩku/	→	['bĩku]	Lourenço (3;8.16)
/ɾ/ >>[j]				
Zebra (zebra)	/ˈzebɾɐ/	→	[ˈzeb**j**ɐ]	Ana Rita (3;1.25)
Livro (book)	/ˈlivɾu/	→	[ˈliv**j**u]	M.ª Francisca (3;9.0)

3.3. Coda

In Coda position, we found different results for both consonants, depending on the position of Coda in the word. In fact, /l/ in word-final Coda is acquired at 3;0-3;5 years, although a regression was found in the following age group, which does not accomplish 80% of target-like productions. On the contrary, within-word Coda is not acquired until 4;11 years old, which reveals a greater difficulty on the stabilization of /l/ in this position.

A similar behavior was found for /ɾ/ in Coda: it is acquired first in word-final position, at 4;0-4;5 and only later within the word, at 4;6-4;11.

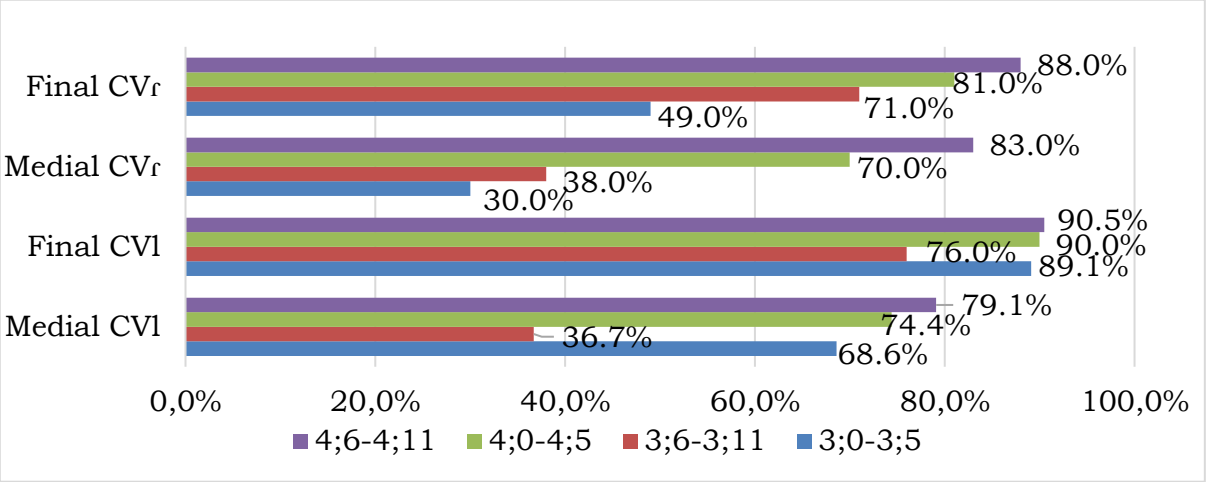

Figure 4. Target-like Coda productions per age

These results show a bigger difficulty in the production of both liquids when they are in within-word Coda position. While in Onset cluster, lateral is the first liquid stabilizing; in Coda position the first liquid being mastered is the rhotic.

Coda acquisition of the rhotic is affected by tonicity: in within-word stressed syllable, it is acquired at 4;6-4;11, whilst in unstressed syllable the acquisition is stabilized later (after 5 years old). Nevertheless, it should be emphasized that there were only two targets words with unstressed CVr, both in medial position, which means that Coda acquisition of the rhotic may also be affected by word position, and not only tonicity.

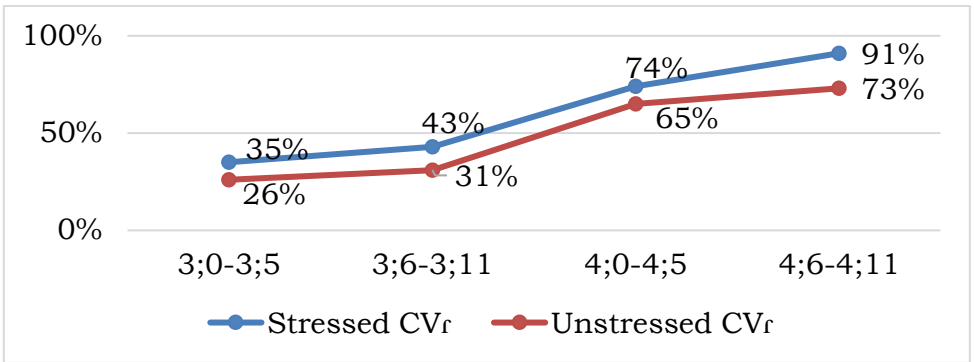

Figure 5. Target-like Coda productions in stressed and unstressed syllables

These results reiterate the importance of tonicity in phonological acquisition, as stated in other works (Freitas 1997; Correia 2004; Lamprecht *et al.* 2004; Vigário, Frota & Martins 2007; Jordão 2009; among others). Nevertheless, the reduced number of target words with unstressed CVCɾ (only two and in medial position) has to be taken into account.
Coda position is relevant for the selection of reconstruction strategies used in non-target-like productions: word-final /l/ is preferably deleted, whilst it is mainly substituted by another sound when it occurs in within-word Coda.

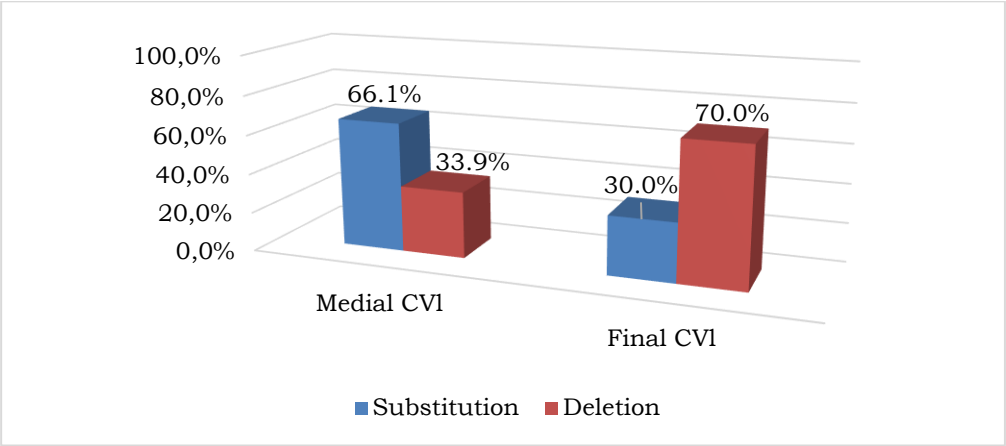

Figure 6. Strategies adopted in /l/ non-target-like productions

On the contrary, deletion is the main strategy used for final-syllable /ɾ/, either in word-final or medial position, as described for Onset and Onset cluster position.
Figure 7 shows the reconstruction strategies used for both liquids in Coda position.

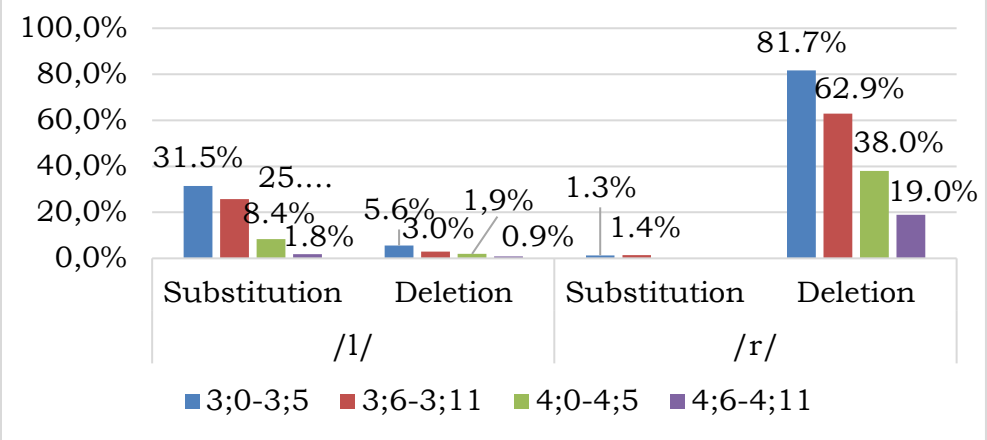

Figure 7. Substitution and deletion of liquids in Coda position

As previously reported for other syllable constituents, the glide [w] is the main substitute for [l], no matter whether it occurs in a stressed or an unstressed syllable. On the contrary, substitution by another sound is barely used for

final-syllable /ɾ/. Nevertheless, a different substitution pattern was found for the rhotic, depending on Coda position: in within-word position, only a glide (mainly [j]) is used; in word-final position other substitute sounds ([l] and [d]) can be found, although palatal glide is also the most used sound.
Some examples of non-target-like productions for both liquids are provided in (3).

(3) */l/ >> Ø*

Golfinho (dauphin)	/goɬˈfiɲu/	→	[goˈfiɲu]	Rafaela (3;11.4)
Azul (blue)	/ɐˈzuɬ/	→	[ɐˈʒu]	Lourenço (3;8.16)
/l/ >>[ɯ]				
Calças (trousers)	/ˈkaɬsɐʃ/	→	[ˈka**w**sɐʃ]	Hugo (3;8.25)
Fralda (diaper)	/ ˈfɾaɬdɐ/	→	[ˈfɾa**w**dɐ]	João F. (3;8.4)
/ɾ/ >>Ø				
Árvore (tree)	/ˈaɾvuɾɨ/	→	[ˈaviɾɨ]	Tirso (4;1.10)
Gordo (fat)	/ˈgoɾdu/	→	['godu]	Mariana M. (3,8:20)
/ɾ/ >>[j]				
Trator (tractor)	/ˈtɾatoɾ/	→	[ta'to**j**]	M.ª Francisca (3;5.2)
Barco (boat)	/ˈbaɾku/	→	[ˈba**j**ku]	Leonor (3;4.22)

4. Discussion and Conclusions

The data analyzed in the previous section show that children master both liquids earlier in Onset and later in other syllable positions. In fact, although the distinctive feature [+approximant] and its co-occurrence with [±continuous, coronal] are already acquired at 4 years old (the lateral is acquired before the rhotic), allowing the contrast between /l/ and /ɾ/, both liquid consonants are not mastered in all syllable positions until much later.
When alveolar lateral in Onset is not produced target-like, it has a different substitution pattern from the one described for BP. In the data analyzed, the lateral is mainly substituted by the glide [w], although occurrences of [g] are also found, while Brazilian children prefer the glide [j] or coronal consonants [n] and [ɾ] (Mezzomo & Ribas, 2004).

(4) *Substitution pattern for [l] in EP and BP*

Glidization				
PE: [l] >> [w]				
Cabelo (hair)	/kɐˈbe**l**u /	→	[kɐˈbe**w**u]	(Hugo 3;8.25)
PB: [l] >> [j]				
		→	[kɐˈbeju]	(Mezzomo & Ribas, 2004)
Substitution				
PE: [l] >> [g]				
Lápis (pencil)	/ˈlapiʃ/	→	[ˈgapiʃ]	(Francisca 4;0.25)
PB: [l] >> [n, ɾ]				
		→	[ˈnapiʃ]	(Mezzomo & Ribas, 2004)
Calo (callus)	/ˈkalu/	→	[ˈkaɾu]	(Mezzomo & Ribas, 2004)

The difference found between the two substitution patterns may be explained by the different articulation of the lateral in the two language varieties. Articulatory and acoustic research has shown that, differently from BP, in

contemporary EP, /l/ is velarized in all syllable positions (although in varying degrees) and not only in Coda (among others, Andrade 1998, 1999; Martins *et al.* 2010; Oliveira *et al.* 2011; Monteiro, 2012).
Therefore, maintenance of the secondary point of articulation ([Dorsal]) of lateral /l/ in contemporary EP may account for the preferred use of a dorsal segment by Portuguese children for target /l/.
Although both liquid consonants are already in children's phonological systems at 4 years old, only later they emerge in other syllable positions.
Lateral Coda in word-final position stabilizes earlier (at 3;0-3;5 years old); when it occurs in within-word position it presents more difficulties to children. In this position, it stabilizes only after 4;11 years old. This result confirms the greater instability of lateral Coda when compared to rhotic Coda (Freitas 1997; Nogueira 2007), which Freitas (1997) assigns to the greater prominence of rhotic Coda in the system.
Acquisition of the lateral consonant in Onset cluster stabilizes at 4;0-4;5 years old in both word positions. The results show that the lateral stabilizes first in Onset cluster and only later in Coda position, which corroborates Lousada *et al.* (2012).
In non-target-like productions, lateral in CC_lV is mainly substituted by another sound (mainly [w]), although deletion is favored in unstressed syllables.
The acquisition path of the lateral in all syllable positions in provided in (5).

(5) *Acquisition path of /l/ in all syllable constituents*

C_lV >> final CVC_l	>>	initial CC_lV >> medial CC_lV	>>	medial CVC_l
3;0-3;5		4;0-4;5		after 5;0

Contrary to lateral Coda, rhotic Coda acquisition stabilizes first in final-word position and only later within word, which is also described in other phonological acquisition research either on EP (Freitas 1997; Correia 2004) either BP (among others, Miranda 1996; Mezzomo 2004).
The earlier acquisition of final Coda may be explained by tonicity (Miranda 1996), as the majority of $CVC_ɾ$ syllables are stressed in Portuguese[4], and, on the other hand, by the relationship between phonological and morphosyntactic factors, as proposed by Freitas (1997):

> [...] the confluence of distinct grammatical (phonological, and morpho-syntactic) factors define the Coda at the end of the word, whether associated with fricative or liquid, as a structural point in focus in the acquisition, making its early stabilization in relation to the Coda in an inner syllable of a word, of an exclusively lexical nature (p. 253).[5]

We should note, though, that morphological Coda does not present, in this research, higher accuracy rates.
In Onset cluster, rhotic acquisition stabilizes first in word-initial position and later in within-word position. Therefore, path acquisition for the rhotic is

[4] In this research, there was no target word with final-word /ɾ/ in unstressed syllable.
[5] Own translation.

different from the lateral, as it stabilizes first in Coda position and only later in Onset cluster. Similar results are found by Lousada *et al.* (2012).
The main strategy in non-target-like productions for /ɾ/ in Onset cluster is deletion. Production of another sound may be found, although barely used. The most used sound is glide [j], both in within- and final-word position.
The acquisition path of /ɾ/ in all syllable positions in provided in (6).

(6) *Acquisition path of /ɾ/ in all syllable constituents*

CɾV	>>	final CVCɾ	>>	medial CVCɾ + initial CCɾV	>>	final CCɾV
3;6-3;11		4;0-4;5		4;6-4;11		after 5;0

In this paper, we have provided additional empirical evidence for the dependence relationship between segmental and syllabic acquisition (among others, Fikkert 1994; Miranda 1996; Freitas 1997; Lamprecht *et al.* 2004; Nogueira 2007; Almeida 2011). This was demonstrated by the fact that although /l/ and /ɾ/ are used contrastively before 4 years old, only later they are mastered in either Onset cluster and Coda.
Besides the syllable constituent, also the syllable position in the word has been found important in the stabilization of liquid consonants. Tonicity has been found relevant in the acquisition of within-word rhotic Coda.
The results have shown that liquid consonants acquisition has different paths: the lateral stabilizes first in Onset cluster (CC_lV >> CVC_l), whilst the rhotic stabilizes first in Coda (CVCɾ >> CCɾV). The same path is attested by Lousada *et al.* (2012).

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