

Universidade Federal de Santa Catarina
Centro de Comunicação e Expressão
Curso de Graduação em Letras Língua Inglesa e Literaturas

THE PRODUCTION OF ENGLISH FINAL [ɸ] BY BRAZILIANS

DANIEL HINCKEL MARTINS

Trabalho de Conclusão de Curso

Florianópolis
December, 2011

The production of English final [ʔ] by Brazilians

Trabalho de Conclusão de Curso (TCC) para a disciplina LLE7462 do Departamento de Língua e Literatura Estrangeira do Centro de Comunicação e Expressão da Universidade Federal de Santa Catarina – Curso de Letras – Língua Inglesa e Literaturas, como requisito parcial para obtenção do título de Bacharel em Letras – Língua Inglesa e Literaturas.

Orientadora: Dra. Rosane Silveira

BANCA EXAMINADORA

Prof^a. Dra. Rosane Silveira

Prof^a. Dra. Raquel Carolina Souza Ferraz D'Ely

Florianópolis
December, 2011

ABSTRACT

The Production of English Final [ɫ] by Brazilians**Daniel Hinckel Martins****Universidade Federal de Santa Catarina
2011****Prof. Dr. Rosane Silveira
Supervisor**

Research regarding the production of English final [ɫ] (male [meyɫ]) by Brazilian speakers of English as a second language has not been extensively conducted. The studies conducted with this purpose found out that Brazilians usually produce the final [ɫ] as [u] ('goal' [gou]) or [w] ('soul' [sow]) (Baptista, 2001; Avery & Ehrlich, 1992), a fact later confirmed by Moore (2004) and Baratieri (2006). Bearing these limitations in mind, this research aims at analyzing the way Brazilian speakers of English as a foreign language produce the English final [ɫ]. Moreover, this research also aims at verifying if participants' non-linguistic variables (such as age, education, attendance to English courses, and level of proficiency) influence the way they produce the target-phoneme. In order to investigate that this study verified Silveira's (2011, in press) data, which was gathered from 62 Brazilians, 31 living in Brazil and 31 living in the United States. A questionnaire was used to collect participants' background information, and a sentence reading test was used to collect the oral data. Participants had to read sentences containing the words 'while', 'whale', 'file', 'male', and 'pale'. After transcribing the results, it was possible to verify that Brazilians produce the English word-final /l/ in four different ways: a vocalized form [w], a non-vocalized form [ɫ], vowel insertion [lɪ], and deleting the final [ɫ] phoneme. Regarding the influence of the non-linguistic variables, three of them had direct relations to the way the target-phoneme is produced. Age and EFL courses presented a weak but significant relations to the productions of the phoneme /l/, while the variable level of proficiency showed a strong relationship to the way participants realize the English final [ɫ].

Keywords: phonetics and phonology, English final [ɫ], non-linguistic variables.

Number of pages: 55

Number of words: 12939

ABSTRACT

The Production of English Final [ɫ] by Brazilians

Daniel Hinckel Martins

**Universidade Federal de Santa Catarina
2011**

**Prof. Dr. Rosane Silveira
Supervisor**

Pesquisas relacionadas à produção do [ɫ] final do inglês (male [meyɫ]) por falantes brasileiros do inglês como segunda língua não foram extensamente conduzidas. Os estudos existentes pontuam que os brasileiros geralmente produzem o [ɫ] final como [u] ('goal' [gou]) ou [w] ('soul' [sow]) (Baptista, 2001; Avery & Ehrlich, 1992), confirmado posteriormente por Moore (2004) e Baratieri (2006). Levando em consideração a dificuldade dos alunos em produzir esse fonema apresentadas, esta pesquisa tem como foco analisar a forma como os falantes brasileiros do inglês como segunda língua produzem esse fonema. No mais, esta pesquisa também tem como objetivo verificar se as variáveis não lingüísticas dos participantes (como idade, escolaridade, participação em cursos de inglês e nível de proficiência) influenciam a forma como eles produzem o fonema-alvo. Para que isso pudesse ser investigado, este estudo verificou os dados de pesquisa de Silveira (2011, in press), que foram coletados de 62 brasileiros, 31 vivendo no Brasil e 31 vivendo nos estados unidos. Um questionário foi usado para coletar informações sobre os participantes, e um teste de leitura de sentenças foi usado para coletar os dados orais da pesquisa. Neste teste, os participantes deveriam ler frases que continham as palavras 'while', 'whale', 'file', 'male' e 'pale'. Após transcrição e organização dos dados em tabelas, foi possível verificar que os brasileiros produzem o [ɫ] final do inglês de quatro maneiras diferentes: de forma vocalizada [w], de forma não-vocalizada [ɫ], inserindo uma vogal [ɪ] e removendo o [ɫ] do fim das palavras. A respeito da influência exercida pelas variáveis não-lingüísticas na produção dos participantes, três dessas variáveis possuíram relações diretas com a forma como o fonema-alvo foi produzido. As variáveis idade e participação em cursos de língua estrangeira demonstraram relação fraca, porém significativa, com relação às diferentes produções do fonema /l/. já a variável nível de proficiência demonstrou possuir uma relação mais forte com relação à produção do [ɫ] final do inglês.

Palavras-chave: fonética e fonologia, [ɫ] final do inglês, variáveis não-lingüísticas

Número de páginas: 55

Número de palavras: 12939

TABLE OF CONTENTS

SECTION 1	1
INTRODUCTION	1
1.1 - Contextualization.....	1
1.2 - Objective and Research Questions	2
1.3 - Significance of the study	3
1.4 - Organization of the Study.....	4
SECTION 2	5
REVIEW OF THE LITERATURE	5
2.1 – The dark [ɫ]	5
2.2 – Production Strategies	7
2.2.1 – Vocalization	7
2.2.2 – Vowel Insertion	8
2.2.3 – Deletion	8
2.3 - The role of the nonlinguistic variables	9
SECTION 3	11
METHOD	11
3.1 – Participants.....	11
3.1.1 - The group living in the United States	12
3.1.2 – The group living in Brazil	13
3.2 – Instruments.....	13
3.2.1 – Personal Information Questionnaire.....	14
3.2.2 - Proficiency Measure	14
3.2.3 - Sentence Reading Test.....	15
3.3 – Procedures for data collection.....	16
3.4 - Transcription.....	18

3.5 - Data analysis.....	19
SECTION 4	21
RESULTS AND DISCUSSION.....	21
4.1 – RQ1: How do participants realize the English final [ɫ]? Do they use more the non-vocalized [ʃ] or the vocalized [w] form?	21
4.2 – RQ2: Is there a difference in the way both group of participants produce the target sound?	25
4.3 – RQ3: What is the relationship between the production of the target sound and the non-linguistic variables (age, education, attendance to English courses, and level of proficiency)?	27
SECTION 5	30
CONCLUSION.....	30
5.1 – Main findings	30
5.2 - Pedagogical implications.....	31
5.3 - Limitations of the study and suggestion for further research	32
REFERENCES	33
APPENDICES.....	Erro! Indicador não definido.
APPENDIX A.....	35

TABLES

Table 1. Non-linguistic variables.....	12
Table 2. Number of occurrences per strategy.....	21
Table 3. Occurrences separated by words.....	26
Table 4. Spearman correlations between target production of /l/ and the non-linguistic variables.....	28

APPENDICES

APPENDIX A: Participants' non-linguistic variables and number of realizations of the target production of /l/.....	35
APPENDIX B: Personal information questionnaire from group living in Brazil.....	37
APPENDIX C: Personal information questionnaire from group living in the United States.....	41
APPENDIX D: Different productions of each word.....	45
APPENDIX E: Sentence-reading test.....	46

SECTION 1

INTRODUCTION

This section of the research will present the contextualization of the research together with the objective of this work and the research questions raised in order to guide the study. After it the justification and significance of this study will be given.

1.1 - Contextualization

When learning another language, learners tend to have difficulties to produce the sounds of this second or third language. This happens because languages usually have different groups of sounds. One of the sounds that may bring some trouble for Brazilian speaker of English as a foreign language (EFL) is the English /l/. The English /l/ is denominated by researchers as a liquid sound. Meaning that when this phoneme is produced the airflow in the mouth moves as a liquid, changing its flow every time it finds an obstruction (Câmara Jr., 1973). The /l/ phoneme has two allophones, which are different realizations of the same sound (Finegan, 2007). The first allophone is the light [l] ('lip' [lɪp]), which appears in the beginning of words, and the second allophone is the dark [ɫ] ('pole' [pɔwɫ]), which appears at the end of words (for more explanation on the phoneme see section 1).

Research regarding the way Brazilian speakers of English as a second language produce the English final [ɫ] has not been extensively conducted. Nevertheless some empirical studies have signaled that Brazilians usually produce the final [ɫ] as [u] ('goal'

[gou]) or [w] ('soul' [sow]) (Baptista, 2001; Avery & Ehrlich, 1992), a fact later confirmed by Moore (2004) and Baratieri (2006).

More recently, Baratieri's (2006) result brought evidence that Brazilians realize the final [ɫ] in three different ways, a vocalized one (like the Brazilian Portuguese word *mel* – 'honey' [mɛw]), a non-vocalized one (the English final [ɫ] like in 'doll' [dɔɫ]), and a semi-vocalized one, which is an intermediate between the other two ('doll' [dɔɫ^w]). More recently, Moore (2008), noticing a gap in the area regarding perception of the English /l/ phoneme, investigated how both native and non-native speakers perceived this sound. His research indicates that both groups of participants performed similarly with low error rates, thus concluding that non-native speakers perceived the dark [ɫ] with an error rate similar to the way native speakers perceive the same sound.

1.2 - Objective and Research Questions

Taking the evidence afore mentioned into consideration, the present study aims at analyzing the production of the English final [ɫ] by Brazilian speakers of English in two different contexts, one group living in Brazil, and another group living in the United States. A total of 62 participants will be analyzed in order to try to fill the gap appointed by Baratieri (2006) in his research, regarding the number of participants. He explains that one limitation of his study was the reduced number of participants, and advises that further studies should include a larger number of participants to ensure that more tokens are produced, and any generalizations made become more powerful.

This research aims at verifying if the productions elicited from the participants match the ones found by Baratieri (2006). Although he mentions three different types of productions

([l], [lw], and [w]), this research will focus only on two of them, which is the non-vocalized [ɫ] and the vocalized [w].¹ Another aim of this research is to analyze the productions in contrast with participant's background variables, such as age, education, attendance to English courses, and proficiency. Moreover, some pronunciation strategies used by participants in the production of the target sound will be examined. The following research questions were raised in order to guide this study:

1. How do participants living in Brazil and in the United States realize the English final [ɫ]? Do they use more the non-vocalized [ɫ] or the vocalized [w] form?
2. Is there a difference in the way both groups of participants produce the target sound?
3. What is the relationship between the production of the target sound and the non-linguistic variables (age, education, attendance to English courses, and level of proficiency)?

1.3 - Significance of the study

As mentioned before, little research has been conducted regarding the English final [ɫ] produced by Brazilians. The importance of this study is to present some of the strategies Brazilian speakers of English use to produce the English final [ɫ] and to briefly analyze the effect that variables such as learning context, age, education, attendance to English courses, and proficiency have on these productions. The effects of non-linguistic variables on the production of the allophone [ɫ] have not been thoroughly analyzed yet. Thus, this research aims at also shedding some light upon this issue.

¹ This choice was made because it would be rather difficult to perceive the semi-vocalized production [lw] without using proper software for acoustic analysis.

Furthermore, this study is also relevant to the area of phonetics and phonology because of the group of participants who contributed with data. Other studies collected data from Brazilians who had predominantly learned English in a classroom in Brazil (formal EFL setting). On the other hand, this research works with a group of learners from a formal EFL setting (the group living in Brazil), and another group of Brazilians living in the United States (ESL setting). The results of this research can add valuable data to the area in terms of how the language context may affect pronunciation.

Finally, the results of this research may contribute to the area of phonetics and phonology shedding more light upon the different productions of the allophone [ɸ]. They may also help teachers of English to realize the reasons why their students present so many different realizations of the same sound, and even why some of them may have difficulties to produce the target sound.

1.4 - Organization of the Study

The present study is organized in the following way. After this brief *Introduction*, section 2 brings the *Review of the Literature*. In this section the relevant literature regarding the English /l/ phoneme and its allophones is presented. In section 3, *Method*, participants' background information is given, together with the description of the instruments used to collect data, the procedures for data collection and analysis. In section 4, *Results and Discussion*, the results obtained from data analysis will be explained in light of the literature reviewed in section 2, and using the research questions presented in section 1, *Introduction*, in order to guide the discussion. Finally, in section 5, *Conclusion*, the main points of the research are restated, together with the limitations of the study, and pedagogical implications, and suggestion for further research.

SECTION 2

REVIEW OF THE LITERATURE

In this section, some theoretical considerations on the English final [ɫ] will be presented in order to better understand the topic of this research. Together with it, some explanation regarding the strategies of production that Brazilian speakers of English use in order to articulate the second language (L2) consonant sounds will be given. Strategies such as vocalization, epenthesis, and deletion will be briefly explained in the following sections, together with the role that non-linguistic variables may have upon the realizations of [ɫ].

2.1 – The dark [ɫ]

The /l/ sound is considered by scholars as a lateral sound. Lateral sounds are the ones that allow the air to flow through the mouth freely, passing by the sides of the tongue, by the passages created by the tongue touching or almost touching the roof of the mouth (Ladefoged, 2005; Ladefoged & Maddieson, 1996; Tasca, 2002). The /l/ sound is also defined as a liquid sound together with /r/. These sounds are called liquids because when the airflow in the mouth finds an obstruction, it flows through the sides of the obstruction like a liquid does in order to keep its flow (Câmara Jr., 1977).

The phoneme /l/, as several researchers have found, has two allophones. Allophones are basically different realizations of the same phoneme (Finegan, 2007). Taking the phoneme /p/ as an example, this phoneme can be realized in an aspirated form such as in ‘pot’ [p^hɔt], and in an unaspirated form such as in ‘tape’ [teɪp]. For the phoneme /l/ researches agree that there are two allophones. The first one, known as pre-vocalic, also called ‘light’ [l], occurs

with the tip of the tongue touching the alveolar region (the roof of the mouth), and the air passing by the sides of the tongue. One example of this sound can be found in the word ‘lick’ [lɪk]. The second form is called post-vocalic, but is also known as dark [ɫ], represented by the symbol [ɫ]. In this allophone, there is another movement occurring with the tongue in addition to the ones of the light [l]. When [ɫ] is produced, the back of the tongue retracts towards the velum (the back of the mouth). One example of this phoneme can be found in the word ‘wool’ [wʊɫ] (e.g., Blandon & Al-Bamerni, 1976; Halle & Mohanan; 1985; Ladefoged, 2001; Wells, 1982). The following illustrations show the difference in the realization of the two sounds giving a better illustration of the focus of this research, which is the allophone named dark [ɫ]:

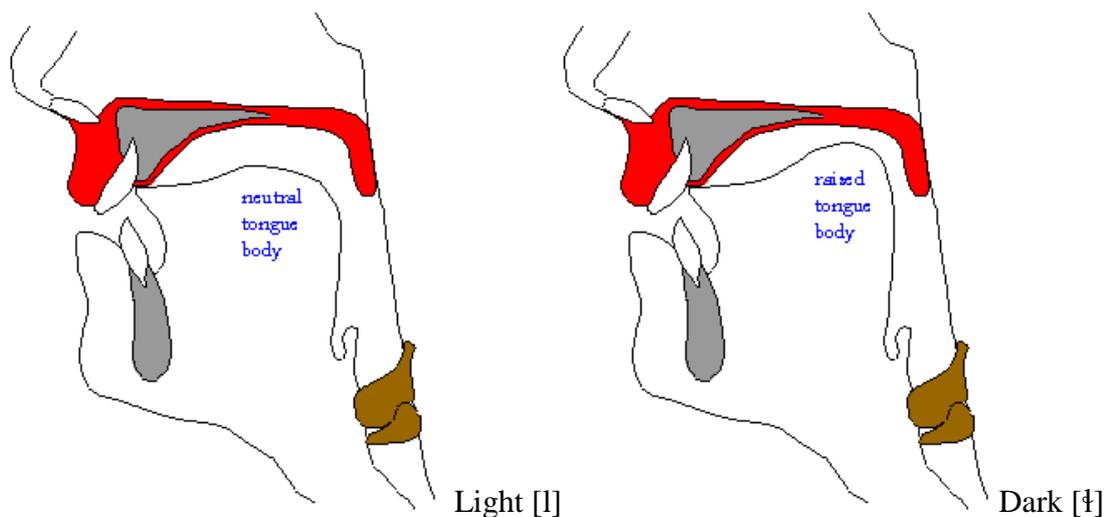


Figure 1: Articulation of [l] and [ɫ].

Source: <http://home.cc.umanitoba.ca/~krussll/phonetics/narrower/dark-l.html>

These images illustrate clearly the difference among the two allophones of the English /l/. For the light [l], the tongue touches the tooth ridge where for the dark [ɫ], the tongue

touches or almost touches the same place but the back of the tongue retracts to the back of the velar region.

Having presented the two forms of the phoneme /l/, this study aims at analyzing the production of the variation known as dark [ɫ] by Brazilian speakers of English. The next section of this review will explain some of the strategies used by speakers when realizing sounds that they are not usually used to pronounce. Among these strategies there is the use of vocalization, vowel insertion, and the deletion of sounds.

2.2 – Production Strategies

2.2.1 – Vocalization

Vocalization stands for the replacement of the consonant /l/ by /w/ or /u/. There are many different explanations to this phenomenon. Some scholars claim that it happens because the tongue does not touch the alveolar region. In other words, an articulatory change occurs and the dark [ɫ] is realized as [w] or [u] (Câmara Jr., 1973). Others say that vocalization may occur due to the misperception of /l/ as /w/ or /u/ because of their acoustic similarity (Ohala, 1974, 1981, 1985; cited in Recasens, 1996). There are yet some authors that explain that vocalization is a natural phenomenon in languages that have the distinction of light [l] and dark [ɫ] (Johnson & Britain, 2003). They also say that this process is common in many dialects of American English, Australian English and New Zealand English, especially among children learning English as their first language. This occurs because the phoneme /l/ is usually the last consonant acquired by children, and it imposes some difficulty at the age of 4 (Crystal, 1997).

2.2.2 – Vowel Insertion

Vowel insertion is a production strategy commonly found in Brazilian Portuguese speech. It stands for the addition of a vowel, named epenthetic vowel (beginning of the syllable) or paragogic vowel (end of the syllable), in order to facilitate the production of words with syllabic patterns that offer a certain level of complexity. For example, when pronouncing the word *pacto* ‘pact’, Brazilians tend to insert the vowel /i/ to break the consonant cluster /kt/, thus producing [ˈpakitʊ].

When facing a foreign language such as English, BP speakers have some problems regarding the difference in the syllabic structures of both languages. In English most consonantal sounds can appear in final position of words, except /h/. Whereas in BP the consonantal sounds that may occupy the final position in words are /r/, /l/, /m/, and /s/. Thus, when learning another language, Brazilians need to cope with complex structures not present in their first language (L1). Camara Jr (1973) says that because of these limitations in the syllabic structure of the L1, PB speakers tend to insert the epenthetical vowel /i/ or /e/ in order to transform those ‘strange’ syllabic structures into something that fits their L1 syllabic system (for example, *pneu* ‘tyre’ [piˈnɛw]).

This strategy is usually found in final position of words that do not respect the L1 syllabic structure (‘take’ [ˈtɛykɪ]), in consonantal clusters that start with /s/ (‘speak’ [isˈpiyk]), and in final position consonantal clusters (‘kick’ [ˈkiykɛd]) (Silveira, 2011).

2.2.3 – Deletion

Deletion, as vowel insertion, is a production strategy that aims at facilitating the complex structure of clusters that speakers are not familiarized with. It can be considered the

opposite of epenthesis, where instead of adding a sound in the word to make it easier, the deletion process removes a sound in order to achieve the same result. In BP this process is very common, it happens naturally. In words that end in /r/, for example, the last sound is usually deleted, except in some dialects of BP in which final /r/ is very marked (*beber* ‘to drink’ [be'be]). When facing a L2, BP speakers may use this strategy as a resource, transferring this natural process of their L1 to the second language.

2.3 - The role of the nonlinguistic variables

This section of the review of the literature will aim at shedding some light on the possible effects that nonlinguistic variables may have upon participants’ phonological productions.

Many different variables have been studied throughout the years regarding participants’ profiles. As examples of these variables there is chronological age, education in L1 and L2, amount of time used speaking both languages, time spent in a country where the foreign language is spoken as first language, motivation to learn another language, and level of proficiency.

These variables may have a direct effect upon participants’ productions, one variable that may exemplify it is the variable age. It is believed that when a person gets into contact with the foreign language in his or her early ages more chances s/he may have on learning the foreign language and all its subtleties. Researches call it the “critical period hypothesis” where from some age beyond the person will have more difficulties learning a foreign language. This happens because the brain has already reached a mature form and it has lost a great amount of flexibility (Lenneberg, 1967). Regarding the exact age that this starts to happen researchers did not reach a conclusion; what they know is that the younger the person

is when L2 learning begins, greater the chance the person will learn the language and all its particularities. Singleton & Lengyel (1995) state that there are exceptions to the critical period hypothesis regarding second language acquisition. The authors mention that some adults may master the second language even though they started learning it in their adulthood, far away from their critical period.

Even though many different non-linguistic variables exist, this research will take into account only the following non-linguistic variables: age, education, attendance to English courses, and level of proficiency. This choice was made because education and EFL courses did not appear frequently in the literature, so in order to fill this gap these two variables were chosen. The age variable was chosen for its controversial status existent in the literature. And proficiency was included because it is relevant to relate it with the way the target sound is produced by the participants from different learning contexts. The non-linguistic variables will be correlated with participants' production of the target sound in order to analyze if they can help us understand the different realizations of the target sound.

Having presented the theoretical background that informs this research, I will move onto the method section.

SECTION 3

METHOD

This section of the research will explain how data were collected. It will explain what instruments were used to gather the data and provide information regarding participants' background. Each procedure used to collect and organize data will be explained. This brief study uses part of the data collected by Silveira (2011, in press), so this section will also explain how she gathered the data, and how this particular dataset was transcribed by the author of this research. Before starting all explanations, the purpose of this study will be restated. Basically the present study aims at analyzing Brazilians' productions of the English final [ɸ], and how the variables age, education, attendance to English courses, and proficiency influence these productions.

3.1 – Participants

In the study carried out by Silveira (2011, in press) 62 (sixty two) volunteers participated in the research. All of them were Brazilian speakers of English, 31 (thirty one) living in the United States at the time of the data collection, and 31 (thirty one) living in Brazil. The following table will show the characteristics of both groups, and after it an explanation of the table will be given. For more detailed information about the non-linguistic variables a complete table showing the results for each participant can be found in Appendix A.

Table 1. Non-linguistic variables²

Variables	US Participants		BR participants	
	mean	range	mean	range
Chronological age	37.2	19-60	35.6	20-65
Schooling in Brazil (Years)	12.8	2-17	14.0	11-17
English as an FL (Months)	29.5	0-144	47.7	12-98
Level of proficiency	6.9	4.0-10.8	6.0	2.8-9.2

3.1.1 - The group living in the United States

This group is compound of Brazilian speakers of English as a foreign language that were living in the United States by the time data were collected. The participants of this group were living in different parts of the country, such as New York, New Jersey, and Connecticut. The group includes 7 (seven) men and 24 (twenty four) women. The age varies from 19 (nineteen) to 60 (sixty) years, having a mean of 37 years. The participants are originally from different regions of Brazil such as Santa Catarina, São Paulo, Rio de Janeiro, Goiás, Minas Gerais, Pernambuco, Espírito Santo, Paraíba, Brasília, and Rio Grande do Sul. Regarding their education, five participants have finished secondary school, 18 completed part of their secondary-studies back in Brazil, and the other ones had completed most of their elementary school. Great part of the group³ had studied English in Brazil before moving abroad (a mean of 29.5 months), another part (25,8%) went abroad without having any knowledge of English, and a minor part (9.6%) studied English for more than 8 years in Brazil. Concerning their arrival in the foreign country, all of the participants arrived in the United States being 18 or more years old. Regarding proficiency, participant's level varied from 4 to 10.8 in a scale where 12 is the highest level, having a meaning of 6.9 points. The great majority of the group (21) had a performance, regarding proficiency, of 6 or more score points, whether the other 10

² Table adapted from a paper in preparation by Silveira.

³ Percentage not presented by Silveira (2011, in press).

participants received a score grade of less than 6. This demonstrates a considerably high level of proficiency overall.

3.1.2 – The group living in Brazil

This group is formed by Brazilian speakers of English as a second language that were living in Brazil when data were collected. Originally the participants of this group come from different regions of Brazil such as Santa Catarina, Rio de Janeiro, Rio Grande do Sul, and São Paulo. This group is formed by 9 (nine) men and 22 (twenty two) women. Their age varies from 20 (twenty) to 65 (sixty five) years old, having a mean of 36.5 years. When asked if they had ever been abroad, 2 (two) participants answered that they had spent 3 (three) months in a foreign country, 15 (fifteen) spent from one to four weeks, and 14 (fourteen) stated that they had never been abroad. Concerning their attendance do EFL courses, the group showed a range from one year to a little more than 8 years studying English, presenting a mean of almost 4 years of formal study of the foreign language. Regarding the level of proficiency of the group, they presented results showing a range of 2.8 to 9.2 from a scale of 12 points, with a mean of 6 points. From all of the participants, 16 had a score of less than 6 points while the other 15 had a score equal or superior than 6 points. In contrast with the group living abroad, this group showed a lower level of proficiency.

3.2 – Instruments

This section will describe the instruments used for data collection, such as tests, questionnaires, and recordings. All the instruments used to collect data and participant's biographical information will be explained in detail.

3.2.1 – Personal Information Questionnaire

In order to obtain information about the participants, Silveira (2011, in press) used a questionnaire. Both groups of participants received a similar questionnaire containing questions regarding their age, their education, the time they spent speaking, reading, and listening the foreign language, if they attended EFL courses, and a consent form. For the group in Brazil, the questionnaire presented questions where participants should tell if they had ever been abroad (see APPENDIX B). For the group living in the United States the questionnaire included questions regarding their age of arrival in the foreign country, the length of time they had been living there, and their background when they were in Brazil (see APPENDIX C). With this questionnaire the variables of the participants were gathered and will be taken into account into the data analysis, as participant's non-linguistic variables are one of the focuses of the present research.

3.2.2 - Proficiency Measure

In order to measure participant's proficiency, Silveira (2011, in press) used an image-description test. The test contained 26 PowerPoint slides where images were showed to the participants to be described. The images represented animals, objects in general, and humans performing different actions. Each image represented one of the target-words Silveira used in her research, for example, a whale for the /l/ sound, a lake for the /k/ sound, a nose for the /z/ sound, and so on. After collecting the data with this test, Silveira prepared a CD containing a two minute sample of each participant describing from 4 to 6 slides. The software program

GoldWave 5.23 was used to edit the audios of the CD removing the long pauses. The final result of the CD included an average of one hour of recordings.

Four listeners analyzed the CD in order to give the proficiency scores. All of them were experienced teachers of English of 30 or more years old. Two of them were American and taught English in language schools in New York, and both had a Master's. The other two were both Brazilian and were PhD students in a Brazilian post-graduate program.

3.2.3 - Sentence Reading Test

In order to collect oral data from the participants of this research, a sentence reading test (APPENDIX E) was used. Silvera's (2011, in press) focus with this test was to analyze the production of words containing the following phonemes: /m, n, s, z, l/ found in words such as 'home' [howm], 'moon' [muwn], 'chess' [tʃɛs], 'vase' [veyz], and 'pale' [peɪl], respectively. These are sounds that tend to cause difficulties for Brazilian Portuguese speakers, as they tend to transfer the sound-spelling correspondence from their L1 to the L2. The sentence reading test contained 75 (seventy five) sentences, each sentence containing a word with one of the target sounds mentioned. The majority of the words contained the syllabic structure CVC (consonant, vowel, consonant), except for 'us'.

The sentences were constructed to have a maximum of six words, and simple vocabulary was used to prevent participants from having difficulty to read the sentences. For the present research, the focus is on the words containing the sound /l/, which are 'pale', 'male', 'file', 'whale', and 'while'. All of the words contain the silent *-e* because this type of word presents a greater amount of different productions, as observed by Silveira (in press) who explains that sound-spelling correspondence from L1 to L2 is more recurrent in words ending with the silent *-e*. The sentences that participants had to read in the data collection

phase were: ‘I left the file at home.’, ‘We travelled for a while.’, ‘The whale got trapped.’, ‘She had a male child.’, and ‘You look pale and tired.’. This study focuses on five words produced by 62 participants, resulting in an amount of 310 tokens to be analyzed.

3.3 – Procedures for data collection

This section of the research will explain the procedures used to collect data. Explanation on how each instrument was applied, how participants proceeded during the application of the tests and how data were transcribed and organized will be given as well.

The questionnaire was distributed together with the sentence reading test and the picture description test⁴. After receiving the instruments, participants listened to an explanation of what they had to do, signed the consent form, and then started answering the questionnaire. After answering all questions regarding their background information (such as chronological age, education, attendance to EFL courses, time spent in the foreign country, or use of the L2, and others) the participants started to complete the tests.

First of all, the participants passed through a training session, in order to get used to the instruments used for the collection and the task itself. The instruments are composed of the software program used for recording (GoldWave 5.23), the Olympus Digital Voice Recorder WS-311M, the computer, and the .ppt file containing the sentence reading test and the image-description test. Silveira (2011, in press) provided the participants with the instructions in English, but she did not provide any help during the recording of the tests, in order to not bias the production of the target words. After the training, participants started the

⁴ Silveira recorded the sentence reading test together with the picture-description test, which she used to get participants’ level of proficiency. For time constraint reasons, data regarding the production of the target-phoneme from the picture description test will not be used in the present research.

recordings. Participants were recorded one at a time, in a quiet room, in order to optimize the quality of the recordings.

After getting used with the instruments, participants started the image description test. Participants described freely what they were seeing in each slide. No time constraint was put on them, leaving them free to realize the test in their own speed. After describing all the images in all the slides, participants started immediately the sentence reading test.

Participants received their sentences organized in different orders, this way the order effect variable would be minimized. The participants read the 75 sentences that appeared on the slides on the computer screen, and in order to pass from one slide to another the participants had to press the page-down key. The devices used for recording were turned on during the entire procedure, which took from 30 minutes to two hours, depending on the speed in which participants answered the tests. With the data recorded, Silveira used the software GoldWave 5.23 to remove the long pauses in the recordings, ending with files of both tests with an average of forty minutes of duration per participant.

After removing the pauses of the files, Silveira (2011, in press) built a CD with the image description test only. She then selected raters to analyze the content of the CD, and rate the level of proficiency for each participant of both groups. After choosing the raters, she distributed the CDs among them. With the CD in hands each rater analyzed it at home. They had to read the instructions first and perform a training session provided by Silveira before doing the rating itself. The raters were told that there were no right answers for the test, and that different levels of description would be found. So, bearing this in mind, raters had to measure participants' proficiency based on their notion of language proficiency. They should do it as they were used to doing when placing their students in English courses according to their proficiency levels.

Raters then reported that they spent 1.5 to 2 hours to realize the task, and it was done in two or more sessions. They listened to each participant and had to rate participant's production using a scale ranging from 1 (very low proficiency) to 12 (native-like proficiency).

3.4 - Transcription

This section will explain how the data from the sentence reading test were transcribed, in order to build tables with the pronunciation of the five target words 'male', 'pale', 'file', 'whale', and 'while' organized to show data for the participants.

The first step of the transcriptions was to separate the data from the sentence reading test from the picture-description test. In order to do it, the software GoldWave 5.23 was used, resulting in two different files for each one of the participants. After the separation of the audio files, the transcription took place.

The GoldWave software was used to play the audios, as the software features tools that allow noise reduction (for audios containing too much noise), maximization of volume (for audios that had a low volume), and a zoom on the audio, which permits to select the audio to play from any desired part. The audios were played twice in their entirety, and the sections that presented problems to understand the pronunciation of the target sound were played as many times as necessary to clear any kind of misunderstanding.

Baratieri (2006) mentions that Brazilians produce the English final [ɫ] in different ways: a vocalized form [w], a semi-vocalized form [l^w], and a non-vocalized form [ɫ]. But in order to perceive the semi-vocalized form, proper equipment for acoustic analysis would be needed, and too much time would be required to analyze all the results. So in the moment of the transcription the productions of the participants were classified into a category that include all productions that were closer to the vocalized form [w], or into the non-vocalized category

[ɸ]. Bearing this in mind, the target words were typed in and organized in spreadsheets (Microsoft Office Excel 2007) for each participant. Only the target words were transcribed using the IPA (International Phonetic Alphabet), with special attention given to the production of the target sound [ɸ]. All the words were transcribed based on Avery and Elrich (1992) system of transcription.

3.5 - Data analysis

This section will explain how data was analyzed in order to answer the four research questions proposed.

In order to answer the first question of this research, regarding the way participants realize the English final [ɸ], a table was built containing each one of the different realizations that appeared on the reading of the sentence reading test. The number of occurrences of each realization was counted and separated for both groups. For both groups, percentages of the total number of occurrences of the different realizations were calculated.

In order to answer the second research question (*Is there a difference in the way both group of participants produce the target sound?*), a second table was built. The table shows how both groups realize the phoneme /l/ in each word. For each group the table shows the number of occurrences of each variation of the final [ɸ] in each word used in the research. After building the table and summing the total realizations, percentages were calculated. These percentages were compared across both groups and were used to answer the second question.

The third question (*What is the relationship between the production of the target sound and the non-linguistic variables (age, education, attendance to English Courses, and*

level of proficiency?) was answered using data from the questionnaire eliciting participants' background information. After building a table with each participant of each group and summing the number of target-productions, correlation tests were run using Spearman⁵ test of correlation. All the non-linguistic variables considered by this research were correlated to the number of realizations of the target sound, dark [ɫ]. After running the tests, a table was built to show the possible relations that the non-linguistic variables may have with the way participants produce the English final [ɫ].

⁵ Spearman correlation is the nonparametric alternative to run correlational analysis when the sample has variables that are not normally distributed, which is the case of this research (Larson – Hall, 2010).

SECTION 4

RESULTS AND DISCUSSION

This section will present the results obtained from the analysis of the data. All research questions will be restated and will be answered in light of the theoretical groundwork laid in the review of the literature section. This section begins by reporting the results that allow the discussion of the first research question regarding how participants produce the English final [ɫ]. Then, the focus of this section moves to the second question explaining how the two groups of participants produced the target sound. And finally, the research moves to the last question where the discussion will focus on possible relationships between the non-linguistic variables and the way participants produce the target sound.

4.1 – RQ1: How do participants realize the English final [ɫ]? Do they use more the non-vocalized [ɫ] or the vocalized [w] form?

In order to see how participants produced the English final [ɫ] a table was built containing the different productions that appeared during the transcription phase. Each occurrence was counted separately per group. Then the number of occurrences and the percentages were calculated, as can be seen in Table 2.

Table 2. Number of occurrences per strategy

TYPES OF PRODUCTION	BR GROUP	USA GROUP	TOTAL
[ɫ]	120 (38,96%)	119 (38,63%)	239 (77,59%)
[w]	24 (7,79%)	21 (6,81%)	45 (14,61%)
[ɪ]	10 (3,3%)	12 (3,89%)	22 (7,14%)
[∅]	0	2 (0,64%)	2 (0,64%)
TOTAL	154 (50%)	154 (50%)	308 (100%)

The results of Table 2 show that participants produced the English final [ɫ] in four different ways. First, 77,59% of the tokens analyzed were productions using the target-phoneme, which is the allophone [ɫ]. This result shows that the majority of the participants perceive the distinction between the English and the Brazilian Portuguese pronunciation of the final [ɫ]; this assumption can be made as most participants produce the dark [ɫ] and do not resort to any other strategy in order to produce it. Second, the results also show that participants articulate the final [ɫ] resorting to vocalization. A total of 14,61% of the tokens present this pronunciation strategy. Another production noticed for the realization of English final [ɫ] was the addition of the epenthetic vowel in order to facilitate the production of the word. The table shows that 7,14% of the tokens transcribed resorted to the use of this strategy known as vowel addition. This strategy changes the syllabic structure of the word that is being pronounced. The structure changes from a monosyllabic CVC⁶ word, to a disyllabic CVCV word. Finally, in a minor scale of occurrences, 0,64% of the tokens showed the usage of deletion. Instead of using any of the other three phonemes, the person deleted the /l/ phoneme. With this strategy, instead of producing the word using the CVC syllabic structure, the person produced it in a CV structure. In both cases the person approximates the structure of the word of the foreign language to their own language structure, considering that in Brazilian Portuguese, the CV syllabic structure pattern predominates.

Previous research (Baptista, 2001; Avery & Ehrlich, 1992) shows that Brazilians tend to produce the final [ɫ] using the vocalization, but in this research it was not verified, on the contrary, the participants used more the dark [ɫ] than the vocalized form [w]. This finding might be related to the type of words used to test the sound in the present study. As Silveira (2011, in press) points out, words containing the silent *-e* trigger different types of production

⁶ C stands for consonant and V, for vowel.

strategies. Previous studies have tested the production of /l/ by using either words without the silent *-e* (e.g. ‘well’ [wɛɫ]), or mixing both types of words (Silveira, 2011, in press).

More results from Table 2 show that the majority of participants resort to the use of the allophone known as dark [ɫ]. On the other hand, only an average of 15% of the participants uses the vocalized form [w]. These results contrast with Baratieri’s (2006). In his research, he analyzed 2480 tokens of realizations of the /l/ sound by Brazilian EFL learners. He tested /l/ in coda position. This means that he tested it when it appeared after the nucleus of the syllable (a vowel). His study included words containing /l/ in word-final position, but also /l/ followed by other consonants, that is, as part of a consonant cluster (‘help’), which it is not the case of the present research, which only focuses on the consonant /l/ in word-final position. Through his analysis Baratieri perceived that Brazilians produce the English /l/ in 5 different ways: [l], [lwo], [lw], [wo], and [w]. Then he unified these 5 realizations into only 3, grouping the ones that have acoustical similarities together. The result of this unification was the non-vocalized [l], the vocalized [w], and the partially vocalized [lw]. Retaking Baratieri’s results, the tokens analyzed showed that Brazilians mostly realize the English final [ɫ] using the partially vocalized form, representing 61.8% of his tokens. Then the vocalized form came in second place, representing 35.5% of his tokens. Finally, appearing in 2.7% of the tokens, the non-vocalized form was the one that had the fewest realizations.

Comparing the results of Baratieri’s research to the present research a great difference in the way Brazilians produce the English /l/ can be perceived. The present research excluded the semi-vocalized form category from its analysis; instead, both non-vocalized forms and semi-vocalized forms were unified (see section 3). A different result might have been found if both forms had not been unified. But even so the results would have been differently from the ones found by Baratieri, because I classified the semi-vocalized forms as either vocalized or non-vocalized, depending on the realization, and even so the frequency of productions with

the target form [ɫ] is much higher than the vocalized production. Thus, this research found that in final position, Brazilians tend to produce the English /l/ resorting to the non-vocalized variation known as dark [ɫ]. This is true for both the Brazil (38,96%) and the USA (38,63%) participants, which performed very similar on the test, thus suggesting that learning context is not a relevant variable concerning the production of English word-final /l/ by Brazilians.

Silveira (2011) analyzed productions of Brazilians learner of English as a second language of words containing different consonants in final position, among these consonants the /l/ was analyzed. Silveira inserted in her research the English final [ɫ] in 2 different contexts: one with words ending with the /l/ consonant (*doll, roll*), and the other with words that finished with the silent *-e* (*whale, male*). She made this distinction because the silent *-e* tends to cause more difficulties to Brazilians as they usually transfer their L1 sound-spelling correspondence to the L2 when facing this silent sound. The present research focused only on words with the silent *-e* because of the probable transfer of the L1 to the L2, as more interesting tokens would be produced. Returning to Silveira's results, she found that the most used form of the final [ɫ] was the vocalized one (she calls it delateralization⁷).

She also mentions that this process appears more in words ending with the consonant alone, than the ones with the silent *-e*. In the words with the silent vowel, Silveira argues that almost 60% of the words were produced using some strategy of the L1, such as deletion, or vowel insertion. The non-vocalized form of the English /l/ was not mentioned in her research, since her focus was on the transfer of phonological processes roots in the L1. However, by looking at her results, it is possible to infer that /l/ was produced in a native-like fashion by 31% of the part in words ending with <l> grapheme, and 36,1% with words ending with <le>. Silveira's research still shows different results regarding the use of the vocalized /l/ with a

⁷ Delateralization is used to describe the phonological process of pronouncing a lateral phoneme (in this case, /l/) as a vowel.

lower percentage of native-like pronunciation of the /l/ than the present study, but this percentage is higher than Baratieri's (2006). However, we need to keep in mind that the three studies have tested the /l/ in different phonological and/or orthographic contexts, which certainly contributed to the different results.

Having presented how both groups of Brazilians produce the English final [ɫ] and describing the processes they resort to when realizing this phoneme, I move to the next research question.

4.2 – RQ2: Is there a difference in the way both group of participants produce the target sound?

In order to answer this question regarding the way both groups of participants pronounce the English final [ɫ] Table 3 was built. The table contains the percentage of occurrences of each kind of production separated by the words used to collect data. The table shows both groups and the way they realized the [ɫ] in each word.

Table 3. Occurrences separated by words⁸

NUMBER OF OCURRENCES (SEPARATED BY WORD)										
BR	WHALE		PALE		FILE		MALE		WHILE	
	[w]	6 (20%)	[w]	6 (19,35%)	[w]	6 (19,35%)	[w]	4 (12,90%)	[w]	2 (6,45%)
	[lɪ]	2 (6,66%)	[lɪ]	2 (6,45%)	[lɪ]	2 (6,45%)	[lɪ]	2 (6,45%)	[lɪ]	2 (6,45%)
	[ɫ]	22 (73,33%)	[ɫ]	23 (74,19%)	[ɫ]	23 (74,19%)	[ɫ]	25 (80,64%)	[ɫ]	27 (87,09%)
	left out	1								
TOTAL		30		31		31		31		31

USA	WHALE		PALE		FILE		MALE		WHILE	
	[w]	6 (19,35%)	[w]	4 (12,90%)	[w]	5 (16,12%)	[w]	3 (9,67%)	[w]	3 (10%)

⁸ The shaded cell indicates the number of tokens excluded from the analysis due to the participants misreading the word.

	[lɪ]	2 (6,45%)	[lɪ]	2 (6,45%)	[lɪ]	1 (3,22%)	[lɪ]	3 (9,67%)	[lɪ]	4 (13,33%)
	[ɸ]	23 (74,19%)	[ɸ]	25 (80,64%)	[ɸ]	23 (74,19%)	[ɸ]	25 (80,64%)	[ɸ]	23 (76,66%)
					[∅]	2 (6,45%)			left out	1
TOTAL		31		31		31		31		30

Both groups produce the English word-final /l/ basically in three different ways, the non-vocalized [ɸ], the vocalized [w], and production with vowel insertion [lɪ]. In the group living abroad a fourth production appeared in the word *file*, the strategy of deletion, it appeared only in 2 tokens composing 6,45% of the tokens analyzed for this word. In the word *whale* both groups realized the /l/ similarly. The values of the percentages are almost the same, except that in the group living in Brazil one of the participants produced a token for this word that was none of the four productions aforementioned. Probably the participant misunderstood the word, so as it was a totally unexpected production, this token was excluded from the analysis. In the word *pale* a slight difference can be perceived in the way the groups realize the /l/ phoneme, even though the numbers do not show a considerable difference. In this word the group living abroad seemed to use more of the non-vocalized form, and the group living in Brazil used more the strategy of vocalization. The word *file* was the only word that presented deletion. It was not expected to appear in a word that is considered “common” and that does not have a complex structure, but it was the only word that had 2 occurrences of deletion produced by the group living in the USA. The other forms of the English /l/ did not have major differences in the productions of both groups. Concerning the word *male* both groups produced the same amount of the non-vocalized form, around 80% of the tokens of the groups. On the other hand, the group living in Brazil used the vocalization a little bit more than the vowel insertion, around 13% and 7% respectively, while in the group living abroad both strategies had the same percentage of use around 10% of the realizations. As for the word *while*, the group living in Brazil realized the word mostly using the non-vocalized form, around 87% of the tokens. The other strategies, vowel insertion and vocalization, appeared the

same amount of times in the tokens, representing almost 7% each. The same tendency to use non-vocalization appeared in the group living in the USA, but it appeared only in 77% of the tokens, 11% less than the group in Brazil. For the other strategies this group performed similarly, the epenthesis appeared in 13% of the tokens, and vocalization appeared on 10% of the tokens. This word also presented a production that was not expected for this word, probably for misreading, so it was removed from the analysis together with the one in the word *whale* produced by the group living in Brazil.

In a general analysis both groups realize the English word-final position /l/ in a similar way. They tend to realize it producing the target-phoneme for the words, which is the non-vocalized dark [ɫ]. The second type of production that appears more frequently is vocalization [w], and the third one is another strategy transferred from their L1 to the L2, namely, addition of the vowel. Deletion was very rare in the dataset and it occurred with a single word. After presenting how both groups produced the English final [ɫ], I will focus on the next question, which is the relationship that participant's biographical background may have to the way they produced the English final [ɫ]. For the statistical analysis, alpha was set at .05, following the tradition of studies in second language acquisition. This level indicates that there is a possibility of 5% for these results not to be right.

4.3 – RQ3: What is the relationship between the production of the target sound and the non-linguistic variables (age, education, attendance to English courses, and level of proficiency)?

In order to answer this question, a table was built displaying the results for each variable and for the target-production of /l/, organized by participants (APPENDIX A). Based on the table in appendix A, each variable was correlated to the number of the target productions each participant realized. Because of the non parametric nature of the

nonlinguistic variables, Spearman correlations were run and the correlation matrix with the correlations coefficient (ρ) and the probability level of significance (p) can be seen in Table 4.

Table 4. Spearman correlations between target production of /l/ and the non-linguistic variables

	Age	EFL	Proficiency	Education
BR	$\rho = -.369$	$\rho = .378$	$\rho = .582$	$\rho = -.039$
	$p = .041$	$p = .036$	$p = .001$	$p = .836$
USA	$\rho = -.265$	$\rho = .293$	$\rho = .668$	$\rho = .347$
	$p = .150$	$p = .109$	$p = .001$	$p = .056$

The results obtained from the correlations show that for the group living in Brazil, three variables influence the way participants produce the English final [ɫ], whether in the group living in the USA, only one variable has a significant influence on participant's productions. Regarding the variable Education, no significant relation was found for the target production of /l/. In both groups the level of Education did not play a role in the way participants realized the target phoneme, although the correlation coefficient shows a positive correlation (.347) that approaches significance ($p = .056$). On the other hand, the variable Age presented a weak correlation to the way in which the group living in Brazil produced the dark [ɫ]. The ρ value for this group was $-.369$ with the value of p being $.041$ meaning that the older the participant is the more non-target pronunciations of the dark [ɫ] s/he will produce. So Age does play a role in BR participants' productions, bringing evidence for the fact that there might be a critical period hypothesis which says that after a certain age learning becomes more difficult due to the loss of flexibility of the brain's connections (Lenneberg, 1967). On the other hand Age did not show a significant relationship for the group living

abroad even though both groups have similar averages of participants' age (see METHOD), thus suggesting that learning context may overrule the effects of age.

Another significant weak correlation found after the application of the test was the relation of participants' attendance to English Courses and the target-production of the phoneme analyzed. Once again the correlation was only significant to the group living in Brazil. The group living abroad did not present significant values. For the EFL variable the values found for the BR group were *rho* equals .378 and the *p* value equals .036. These values show that the participants who spent more time learning English in an EFL course performed better than the ones that did not. The last correlation test run was across participants' level of proficiency and participants' realizations of the dark [ɫ]. This test presented significant correlations for both group of participants. A moderate correlation among the two variables was found for both groups, meaning that proficiency is a good predictor of how often the participants produce the target-phoneme. In both groups the value of the *p* was .001, and the values of the *rho* was .582, for the BR group, and .668 for the USA group. The correlation was a little stronger for the second group than for the first one, but in both groups the variable proficiency is a good predictor of native-like productions.

From all the four non-linguistic variables, the level of proficiency of the participant may have a stronger influence in the way s/he realizes the analyzed phoneme. So, in other words, the higher the level of proficiency the participant has, the fewer non-target productions of the phoneme occur, which means that the most proficient participants depend less on strategies of productions from their L1 when pronouncing the English word-final /l/. Specially because this "lower level processes" have already been automatized.

SECTION 5

CONCLUSION

This section of the study will revise the main findings obtained from this research. First of all, the results will be restated presenting only the main findings, and then the pedagogical implications will be given. To finish, the limitations of the study will be presented and ideas for further research will be given.

5.1 – Main findings

The first research question analyzed in this study was regarding the way Brazilians speak the English final [ɫ]. It was possible to notice that Brazilians realize English word-final /l/ in four different ways: The first and most frequent one was the non-vocalized form of the /l/ phoneme, that is, the allophone known as dark [ɫ]. The vocalized form [w], which results from the transfer of L1 phonologic process into the L2, was also frequent. Another realization that results from L1 transfer was the production of /l/ followed by the /i/ vowel. More rarely, the use of deletion was found. These findings partially corroborate in the results reported by Baratieri (2006) and Silveira (2011, in press), though due to methodological differences among these studies need to be taken into consideration.

The second question of the research aimed at verifying if there were any differences in the way both groups of participants produce the English final [ɫ]. The results did not present considerable differences in the realization of the target phoneme of both groups. It was found that the group living in Brazil and the one living in the United States produced the English word-final /l/ in the four ways reported when answering the first research question. The only difference found in the productions was that the use of deletion appeared marginally only in

the group living in the United States, the group living in Brazil did not use this kind of strategy.

Finally, the last research question aimed at verifying if the non-linguistic variables (age, education, attendance to English courses, and level of proficiency) influenced the way participants produced the English final [ɫ]. The results showed that for the group living in Brazil, the variables age and attendance to EFL courses had a weak but significant relation to the way they produce the target-phoneme. Moreover, the variable level of proficiency showed a strong relationship to the way both groups of participants realized or not the dark [ɫ], meaning that the higher the level of proficiency, the more target-productions of the dark [ɫ] were produced.

5.2 - Pedagogical implications

The present study has shown that participants' non-linguistic variables may influence the way they produce the English final [ɫ]. Teachers should be aware that when teaching, student's background information has to be taken into consideration. It is important to know that students produce differently the same sound, and this may happen because of their age, or because of their level of proficiency in the foreign language, or even because of their previous contact with the foreign language, among other factors.

Another important aspect of this research is to call attention to teachers regarding the teaching of the /l/ phoneme. When teaching this sound, it is important to make students aware of the different allophones that exist for it in the L1 and the L2. This increases students understanding of the sound in L2 and makes them aware of the movements their tongue does in order to produce the sound in a target-like fashion. In the case of Brazilian Portuguese learners of English, raising awareness and providing practice with the English /l/ in word-final

position may reduce the use of the vocalization and/or vowel insertion, which are phonological processes that the Brazilian learners, especially the less proficient ones, tend to transfer into the L2, thus leading to possible misunderstandings.

5.3 - Limitations of the study and suggestion for further research

This research tried to fill the gap of Baratieri's (2006) research regarding the number of participants, but maybe one of the limitations of this research was the reduced number of tokens produced by each participant. Moreover, this study reported data collected with a sentence-reading test, which may have influenced the participants' production (Silveira, 2011). The data used in this research were provided by Silveira. Her data contained also a test where participants had to describe images. So, two types of data could have been used, data from a sentence-reading test, and data from a picture-description test providing speech data without orthographic material. If both types of data had been analyzed in the present study, more relevant results might have been found.

Moreover, the results showed considerable difference in the way both groups produced the words regarding the vowels used (see APPENDIX D). Future studies could also focus on the analysis of the quality of the vowels produced by participants, maintaining the same group of participants and the same choice of words, as this allow a more comprehensive picture of the participants' productions.

Finally, future studies should control for the phonological environment following the target sound being investigated, possibly using acoustic analysis to validate the results of the phonetic transcription.

REFERENCES

- Avery, P., & Ehrlich, S. (1992). *Teaching American English pronunciation*. Oxford: Oxford University Press.
- Baptista, B. O. (2001). Frequent pronunciation errors of Brazilian learners of English. In M. B. M. Fortkamp & R. P. Xavier (Eds.), *EFL teaching and learning in Brazil: Theory & practice* (p. 223-230). Florianópolis: Insular.
- Baratieri, J. P. (2006). The production of the English dark /l/ by EFL Brazilian Teachers. *Master's Thesis*. Universidade Federal de Santa Catarina, Florianópolis.
- Bladon, A. & Al-Bamerni, A. (1976). Coarticulation resistance in English /l/. *Journal of Phonetics*, 4, 137-150.
- Camara Jr, J. M. (1973). *Estrutura da língua portuguesa*. Petrópolis: Vozes.
- Camara Jr, J. M. (1977). *Para o estudo da fonêmica portuguesa*. Rio de Janeiro: Padrão – Livraria English Editora.
- Crystal, D. (1997). *The cambridge encyclopedia of language*, second edition. Cambridge: Cambridge University Press.
- Finegan, E. (2007). *Language: Its structure and use* (5th ed.). Thomas Wadsworth
- Halle, M. & Mohanan, K. P. (1985). Segmental phonology of modern English. *Linguistic Inquiry*, 16, 57-116.
- Johnson W. & Britain D. (2003). L vocalization as a natural phenomenon. Essex *Research Reports in Linguistics Vol. 44*.
- Ladefoged, P. (2001). *A course in phonetics* (4th ed.). Fort Worth: Harcourt College Publishers.
- Ladefoged, P. (2005). *Vowels and consonants*. Oxford: Blackwell Publishing Ltd
- Ladefoged, P. and Maddieson, I. (1996). *The sounds of the world's languages*. Oxford:

Blackwell Publishers.

Larson-Hall, J. (2010). *A guide to doing statistics in second language research using SPSS*.

New York: Routledge

Lenneberg, E.H. (1967). *Biological foundations of language*. Wiley.

Moore, D. (2004). The production of English final /l/ words by Brazilian learners of

English. *Unpublished monograph*. Universidade Federal de Santa Catarina,

Florianópolis.

Moore, D. (2008). The perception of English word-final /l/ by Brazilian learners. *Master's*

Thesis. Universidade Federal de Santa Catarina, Florianópolis.

Recasens, D. (1996). An articulatory-perceptual account of vocalization and elision of

dark /l/ in the Romance languages. *Language and Speech*, 39 (1), 63 - 89.

Silveira, R. (in press). L2 production of English word-final consonants: The role of

orthography and learner profile variables. *Trabalhos em Lingüística Aplicada*.

Silveira, R. (2011). Pronunciation instruction and syllabic-pattern discrimination. *D.E.L.T.A*,

27 (1), 21 – 36

Singleton, David, and Lengyel, Zsolt. (1995). *The age factor in second language*

acquisition. Clevedon: Multilingual Matters.

Tasca, M. (2002). Variação e mudança do segmento lateral na coda silábica. In L. Bisol,

& C. Brescancini, (Org.), *Fonologia e variação: recortes do português*

brasileiro (pp. 269 – 299), EDIPUCRS.

Wells, J. C. (1982). *Accents of English, (3 Vols.)*. Cambridge: Cambridge University

Press.

APPENDIX A

Participants' non-linguistic variables and number of realizations of the target production of /l/

PARTICIPANT	WHALE	PALE	FILE	MALE	WHILE	TARGET PRODUCTION	EDUCATION	AGE	EFL COURSES	PROFICIENCY
BR1	weyow	peyow	fayow	meyow	wayt	1	14	35	98	3.25
BR2	walɪ	peylɪ	fayɪ	meylow	wayɪ	0	14	40	12	4.75
BR3	weyt	peyt	fayt	meyt	wayt	5	11	31	48	5.25
BR4	weyt	peyt	fayt	meyt	wayt	5	16	36	48	9.0
BR5	weyow	peyt	fayt	meyt	wayt	4	11	21	12	6.0
BR6	wal	peyt	fayt	meyɪ	wayt	3	11	23	12	2.75
BR7	weyt	peyt	fayt	meyt	wayt	5	11	20	12	4.5
BR8	weyt	peyt	fayt	meyt	wayt	5	17	34	84	5.25
BR9	weyt	peyt	fayt	meyt	wayt	5	17	40	84	9.25
BR10	weyt	peyt	fayt	meyt	wayt	5	15	27	48	8.75
BR11	weyow	peyow	fayow	meyt	wayt	2	11	51	12	6.0
BR12	weyt	peyt	fayt	meyt	wayt	5	14	46	60	5.75
BR13	weyow	peyow	fayow	meyow	wayt	1	17	33	48	7.25
BR14	weyow	peyt	fayt	meyt	wayt	4	14	49	48	5.5
BR15	weyt	peyt	fayt	meyt	wayt	5	17	31	60	6.5
BR16	weyow	peyow	fayow	meyow	wayow	0	14	65	48	3.5
BR17	weyt	peyt	fayt	meyt	wayt	5	17	44	84	7.0
BR18	weyt	peyt	fayt	meyt	wayt	5	14	25	48	8.25
BR19	weyt	peyt	fayow	meyt	wayt	4	11	21	48	5.25
BR20	weyt	peyt	fayt	meyt	wayt	5	11	21	48	7.5
BR21	weyt	peyt	fayt	meyɪ	wayt	4	17	44	48	5.25
BR22	weyt	peyt	fayt	meyt	wayt	5	11	22	48	7.25
BR23	weyt	peyt	fayt	meyt	wayt	5	14	29	48	6.0
BR24	weyt	peyt	fayt	meyt	wayt	5	14	30	48	9.0
BR25	weyt	peyt	fayt	meyt	wayt	5	13	21	86	3.2
BR26	weyt	peyt	fayt	meyt	wayt	5	14	42	48	7.25
BR27	weyt	peyt	fayt	meyt	wayt	5	14	48	36	4.75
BR28	weyt	peyt	fayow	meyt	wayow	3	17	26	48	5.0
BR29	weyt	peyow	fayt	meyt	wayt	4	14	43	24	6.5
BR30	ʃaɪ	peyow	fayt	meyt	wayɪ	3	14	54	48	4.75
BR31	weylɪ	peylɪ	fayɪ	meyɪ	wayɪ	0	17	54	36	5.0

									English as an FL (Months) mean: 47.7/range: 12-98	mean: 6.0/range: 2.8-9.2
USA1	wayow	pɛʔ	fay	mɛʔ	wayow	2	15	33	36	5.25
USA2	weyʔ	peyʔ	fayʔ	meyʔ	wayʔ	5	16	43	24	8.75
USA3	weyʔ	peyʔ	fayʔ	meyʔ	wayʔ	5	13	25	8	7.25
USA4	waw	peyow	fayow	maw	waylɪ	0	11	42	12	4.75
USA5	waw	pɛʔ	fayow	meyl	awon	1	11	42	0	6.75
USA6	waw	peyʔ	fayʔ	meyʔ	wayʔ	4	12	19	6	6.75
USA7	hɛʔ	pɛʔ	fayʔ	mɛʔ	wayʔ	5	13	32	0	9.75
USA8	weyʔ	peyʔ	fayʔ	meyʔ	wayʔ	5	15	42	60	9.0
USA9	waʔ	pɛʔ	fayl	mɛʔ	wɛʔ	4	8	51	0	5.25
USA10	wayow	peyow	fayow	meyow	wayow	0	15	44	48	7.0
USA11	waw	pɛʔ	fayʔ	mɛʔ	waylɪ	3	11	46	6	4.75
USA12	wɛʔ	piyʔ	fayʔ	mɛʔ	wayʔ	5	11	50	0	4.75
USA13	wɛʔ	pɛʔ	fayʔ	mɛʔ	wayʔ	5	12	36	144	9.0
USA14	weyʔ	peyʔ	fayʔ	meyʔ	wayʔ	5	17	33	96	8.5
USA15	waʔ	peylɪ	fayʔ	mɛʔ	waylɪ	3	12	22	24	6.25
USA16	weyʔ	peyʔ	fayʔ	meyʔ	wayʔ	5	15	41	6	8.25
USA17	weyʔ	payow	fayow	mayow	wayʔ	2	13	38	24	4.75
USA18	wɛʔ	payʔ	fay	maylɪ	wayow	2	12	52	0	4.75
USA19	waylɪ	paylɪ	faylɪ	maylɪ	waylɪ	0	2	60	0	4.0
USA20	weyʔ	peyʔ	fayʔ	meyʔ	wayʔ	5	15	25	60	10.75
USA21	wɛʔ	pɛʔ	fayʔ	mɛʔ	wayʔ	5	11	32	12	6.0
USA22	waylɪ	payow	fayow	meyʔ	wayʔ	2	15	12	26	4.25
USA23	weyʔ	peyʔ	fayʔ	meyʔ	wayʔ	5	15	33	60	7.75
USA24	weyʔ	peyʔ	fayʔ	meyʔ	wayʔ	5	13	26	24	6.25
USA25	weyʔ	peyʔ	fayʔ	meyʔ	wayʔ	5	12	43	48	10.5
USA26	weyʔ	peyʔ	fayʔ	meyʔ	wayʔ	5	15	28	60	10.5
USA27	wɛʔ	peyʔ	fayʔ	mayʔ	wayʔ	5	15	41	12	8.25
USA28	weyʔ	peyʔ	fayʔ	meyʔ	wayʔ	5	14	33	108	9.5
USA29	wɛʔ	pɛʔ	fayʔ	mɛʔ	wayʔ	5	11	37	12	6.5
USA30	weyʔ	peyʔ	fayʔ	meyʔ	wayʔ	5	15	34	0	6.25
USA31	woʔ	peyʔ	fayʔ	maylɪ	wayʔ	4	13	30	0	4.5
									English as an FL (Months) mean: 29.5/range: 0-144	mean: 6.9/range: 4.0-10.8

APPENDIX B

8. Check the best option regarding how much you **TALK** (face-to-face or phone conversations) with native speakers of English **only**:

I talk to native speakers:

- a) every day b) sometimes c) hardly ever
d) never e) other:

9. On a daily basis, how much do you **SPEAK** English in general (including with non-natives)?

- a) about 10 hours or more
b) about 5 hours or more
c) about 1 hour or more
d) less than 1 hour
e) other

.....

10. On a daily basis, how much do you **LISTEN** to English (radio, TV, etc)?

- a) about 10 hours or more
b) about 5 hours or more
c) about 1 hour or more
d) less than 1 hour
e) other

.....

11. On a daily basis, how much do you **READ texts in** English?

- a) about 5 hours or more
b) about 1 hour or more
c) less than 1 hour

d) other

.....

12. Do you speak a language other than Portuguese and English? Yes No

13. If you speak a language other than Portuguese and English:

a) What is this language?

.....

b) Are you fluent in this language?

.....

c) Do you speak this language often?

.....

14. Where and how long have you studied English?

	1 year	2 years	3 years	4 years or more
Pre-school	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Elementary school	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Junior high	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
High school	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Private course	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other (explain)			

What have you studied?

	Most of the time	Sometimes	Never or hardly ever
Grammar	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reading	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Writing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Speaking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Listening	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pronunciation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

15. Are you currently studying English? If so, where and how many hours per week?

.....
.....

Thank you!

APPENDIX C

Personal information questionnaire from group living in the United States

Questionnaire - Participants living in the United States

Thank you for collaborating with this research. Please make sure you complete the questionnaire. If you have any questions, please ask the research assistant for clarification.

1. What is your name? Your e-mail
.....
2. How old are you?
3. Where were you born?
4. Where did you live most of your life in Brazil?
5. How long have you been living in the US?
6. How old were you when you arrived in the US?
7. Check the right option regarding your education **in Brazil**:
 - a) I finished my master's or PhD.
 - b) I finished college.
 - c) I finished high school.
 - d) I finished grade school.
 - e) I didn't go to school.
 - f) Other:
8. Check the right option regarding your education **in the United States or another English-speaking country**:
 - a) I finished my master's or PhD.
 - b) I finished college.
 - c) I finished high school.
 - d) I finished grade school.
 - e) I didn't go to school.

f) Other:

.....

9. Check the best option regarding how much you **TALK** (face-to-face or phone conversations) with native speakers of English **only**:

I talk to native speakers:

- a) everyday
- b) sometimes
- c) hardly ever
- d) never
- e) other:

10. On a daily basis, how much do you **SPEAK** English in general (including with non-natives)?

- a) about 10 hours or more
- b) about 5 hours or more
- c) about 1 hour or more
- d) less than 1 hour
- e) other

.....

11. On a daily basis, how much do you **LISTEN** to English (radio, TV, etc)?

- a) about 10 hours or more
- b) about 5 hours or more
- c) about 1 hour or more
- d) less than 1 hour
- e) other

.....

12. On a daily basis, how much do you **READ texts in** English?

- a) about 5 hours or more
- b) about 1 hour or more

- c) less than 1 hour
- d) other

.....

13. Do you speak a language other than Portuguese and English? Yes No

14. If you speak a language other than Portuguese and English:

a) What is this language?

.....

b) Are you fluent in this language?

.....

c) Do you speak this language often?

.....

15. Have you studied English before coming to the United States? Yes No

a) If you answered yes to question 15, where and how long have you studied English?

	1 year	2 years	3 years	4 years or more
Pre-school	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Elementary school	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Junior high	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
High school	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Private course	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other			
(explain)				

b) What have you studied?

	Most of the time	Sometimes	Never or hardly ever
Grammar	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reading	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Writing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Speaking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Listening	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pronunciation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

16. Are you currently studying English? If so, where and how many hours per week?

.....
.....

Thank you!

APPENDIX D

Different productions of each word

NUMBER OF OCCURRENCES (SEPARATED BY CONSONANTS AND VOWELS)										
BR	WHALE		PALE		FILE		MALE		WHILE	
	weyow	6	peyow	6	fayow	6	meyow	3	wayt	27
	walɪ	1	peylɪ	2	faylɪ	2	meylow	1	waylɪ	2
	weyt	21	peyt	23	fayt	23	meyt	25	wayow	2
	wal	1					meylɪ	2		
	ʃat	1								
	weylɪ	1								

USA	WHALE		PALE		FILE		MALE		WHILE	
	wayow	2	pɛt	8	fay	2	mɛt	9	wayow	3
	weyt	13	peyt	15	fayt	23	meyt	15	wayt	22
	waw	4	piyt	1	faylɪ	1	maw	1	wɛt	1
	hɛt	1	peyow	2	fayow	5	meyow	1	waylɪ	4
	wat	2	peylɪ	1			mayow	1	awon	1
	wɛt	6	payow	2			mayt	1		
	waylɪ	2	payt	1			maylɪ	3		
	wot	1	paylɪ	1						

APPENDIX E

Sentence-reading test

		Target consonant	Phonological context
1.	I live with my family.		
2.	This car is perfect.		
3.	I got your number		
4.	The <u>man</u> appeared on TV.	n	V
5.	Let's stay in the <u>sun</u> .		P
6.	He is a <u>coin</u> collector.		C
7.	He is wearing a <u>green</u> coat.		C
8.	It's the prettiest <u>moon</u> ever.		V
9.	The child broke a <u>bone</u> .	ne	P
10.	The <u>phone</u> rings all the time.		C
11.	Bring some <u>wine</u> and food.		V
12.	We can join the <u>line</u> again.		V
13.	There are lots of <u>pine</u> trees.		C
14.	See you next <u>week</u> .	k	P
15.	He went <u>back</u> home.		C
16.	We can take a <u>look</u> at this.		V
17.	Come <u>back</u> tomorrow.		C
18.	I can <u>look</u> after your baby.		V
19.	I can eat a whole <u>cake</u> .	ke	P
20.	We <u>wake</u> up early.		V
21.	I can't <u>shake</u> my head.		C
22.	He left his <u>bike</u> over there.		V
23.	This <u>lake</u> may dry soon.		C
24.	I took the wrong <u>bus</u> .	s	P
25.	We finished the <u>class</u> early.		V
26.	They gave <u>us</u> many books.		C
27.	He won the <u>chess</u> game.		C
28.	You can't <u>mess</u> up with him.		V
29.	We saw a <u>mouse</u> .	se	P
30.	They have a <u>house</u> and a flat.		V
31.	This <u>face</u> looks familiar.		C
32.	This <u>vase</u> came from China.		C
33.	I bought some <u>juice</u> again.		V

34.	I want some ice- <u>cream</u> .	m	P
35.	There is no <u>room</u> here.		C
36.	I <u>dream</u> about you.		V
37.	There is some <u>ham</u> left.		C
38.	My <u>mom</u> always calls me.		V
39.	Let's play a <u>game</u> .	me	P
40.	We have the <u>same</u> name.		C
41.	He got <u>home</u> early.		V
42.	This is just a <u>flame</u> of passion.		V
43.	It's <u>time</u> to go now.		C
44.	I have a ten dollar <u>bill</u> .	l	P
45.	My <u>cell</u> has no battery.		C
46.	He bought a <u>ball</u> again.		V
47.	She plays with her <u>doll</u> too.		C
48.	I need a <u>roll</u> of tape.		V
49.	I left the <u>file</u> at home.	le	V
50.	We travelled for a <u>while</u> .		P
51.	The <u>whale</u> got trapped.		C
52.	She had a <u>male</u> child.		C
53.	You look <u>pale</u> and tired.		V
54.	Watch out for the <u>bees</u> .	z	P
55.	The <u>trees</u> have no leaves.		C
56.	I saw the <u>news</u> on TV.		V
57.	He eats French <u>fries</u> every day.		V
58.	These <u>shoes</u> cost a fortune.		C
59.	Let's eat some <u>cheese</u>	ze	P
60.	She had a <u>nose</u> job.		C
61.	Please, <u>choose</u> a pin number.		V
62.	You hear the <u>noise</u> too.		C
63.	I receive a <u>rose</u> every morning.		V
64.	Music is my <u>thing</u> .	ŋ	p
65.	The <u>ring</u> fits perfectly.		C
66.	The day was <u>long</u> and tiring.		V
67.	I'll <u>sing</u> a song for you.		C
68.	He lives like a <u>king</u> here.		V
69.	Let's go out for lunch.		
70.	I saw a great movie.		