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## PROGRAM AND ABSTRACTS

Faculdade de Letras  
Universidade Federal de Minas Gerais  
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# PROGRAM

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# ORAL PRESENTATIONS

## **British or American English: Acoustic Characteristics of the English Vowels as Produced by Brazilian Learners of English**

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This paper aims at analyzing the acoustic characteristics of the English vowels as produced by advanced Brazilian learners of English. In Brazil, pronunciation teaching has been systematically neglected; even so, the teaching of English as a foreign language has always privileged the American and British varieties. The former is present in most teachers' pronunciation. The latter is most commonly found in teaching materials. Therefore, Brazilian learners of English are constantly exposed to both varieties, which in turn may develop in the acquisition of only one of them or rather a hybrid type including aspects of both. Furthermore, the L1 system, in this case Brazilian Portuguese, may also interfere mainly at early levels of learning. In this study, the *Acoustic Theory of Speech Production* (FANT, 1960) and the *Interlanguage Theory* (SELINKER, 1972) have been adopted as theoretic background for the analysis and later interpretation of the results. Two female volunteers were recorded following the same methodology adopted in previous stages of this research by MARUSSO (2003) and CAMARGOS (2009). First, an auditory analysis was done in order to identify the predominant variety of English (American or British) in each of them. Second, the acoustic analysis was carried out characterizing a total amount of 252 vowels both in terms of quality and quantity using the software PRAAT © 5.1.31. Third, the results obtained for the English vowels as produced by the

Brazilian learners of English were contrasted to those corresponding to the Portuguese vowels produced by Brazilians, the British English vowels, produced by native speakers of RP English, and the American English vowels produced by native speakers of GA English. This final contrastive analysis allows us to assert that these two advanced learners of English already have a distinct vowel system for the foreign language with no systematic interference from the native one. On the other hand, there are aspects of both varieties (American and British) present in the vowels produced by both of them, which evidences a hybrid pattern. Even if the amount of data is small, the results follow what the *Interlanguage Theory* predicts and reinforce the notion of English as a global language.

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## **Emergence and Evolution of Templates: Two Case Studies of Brazilian Portuguese**

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Several studies of phonological development have focused on babbling, the transition from babbling to first words, and the distinction between early and later words in the first word period (VIHMAN, 1996; VIHMAN & VELLEMAN, 2000; KEREN-PORTNOY et al., 2008). However, few studies have traced changes in the way that templates are expressed over time, and how children make the transition from a holistic, word-based representation to a more fully specified phonology. The goal of this study is to analyze the emergence and evolution of word templates through two case studies of children acquiring Brazilian Portuguese. The theoretical basis will be 'whole-word phonology'. According to this model the first unit of phonological organization corresponds to the word (FERGUSON & FARWELL, 1975; MENN, 1983; VIHMAN & CROFT, 2007). We argue that templates gradually disappear as the segment emerges as an important unit of representation. Children move from a holistic to a more detailed representation. This work investigates template development over the course of one year, showing how patterns emerge, change or gradually fade over time. We evaluate the emergence and extension of phonological templates to new words as the child's vocabulary increases. We reflect on such questions as the following: (1) How do templates emerge and then gradually fade over time? (2) Do templatic forms change over time? (3) How and when do children advance from whole-word to a more detailed phonology? (4) What is the role of templates in the course of phonological

development? The subjects are two boys, Paulo and Lucas, first recorded when their mothers reported a cumulative vocabulary of 20-25 words (ages 1; 11:13 and 1; 9:21). The children were audio- and video-recorded monthly for one year. First, we explore the role of the emergence of templates in 'selected' words, or words which are a relatively good match to their adult target forms and in 'adapted' words, or words which are less accurate, adapting the adult form to the child's phonological pattern. Then we evaluate the evolution of typical templates in each child, trying to identify points of instability and change. Both children developed identifiable templates, but they followed different paths in relation to adult targets. The gradual disappearance of templates is found to reflect the emergence of the segment as a unit of child phonological representation.

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## **Ever-changing Grammars: How Usage Shapes Our Linguistic Knowledge**

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Although traditionally *parole* has been considered peripheral to the study of language, many theoretical approaches have acknowledged that language structure should not be isolated from language use (BYBEE 2006b). Approaches that take usage into account have been labeled *usage-based* even though this term, coined by LANGACKER (1987), has a theoretical meaning besides the methodological one. In usage-based *theories*, a speaker's linguistic system is fundamentally grounded in usage events. That is to say, grammar is formed on the basis of instances of language usage, and frequency of use plays a role both in language acquisition as well as in continuously reshaping the "stored" linguistic knowledge in a kind of feedback loop between instances and their representations (BARLOW & KEMMER 2000). In light of the usage-based framework (LANGACKER 2000; BYBEE 2006a, 2006b) and the theory of utterance selection proposed by CROFT (2000), this study investigates the inflection of the infinitive in Brazilian Portuguese, which for many years has intrigued speakers. Because in the usage-based framework frequency is correlated to the degree of entrenchment of constructions in speakers' grammars, the variation in the usage of the inflected infinitive is measured in a corpus of standard written language in order to investigate how entrenched the inflected constructions are in the grammars of these prestige speakers. Although it may look contradictory to use a written

corpus in order to demonstrate that change happens through use, the idea behind this methodological choice is that if a high-frequency usage of “innovations” is attested in a written corpus, it should be symptomatic that changes might have taken place in interaction and now belong to the speakers’ linguistic knowledge. The results reveal a tendency for the inflection in the investigated constructions, suggesting their high degree of entrenchment as well as a positive social meaning attached to the inflection.

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## **The Duration of the Voiceless and Voiced Occlusive Consonants in the Onset of Words and after Opened and Closed Syllables: An Experimental Study**

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The Autosegmental Phonology focuses specially aspects which are over the phoneme, as the duration of the vocalic and consonant segments. Recent works indicate that the segmental duration is not arbitrary. In Brazilian Portuguese, PACHECO (2004) showed that the occlusive consonants have a tendency to be reduced when they are after syllables closed by any consonant; this is a particular behavior of the occlusive consonants, characterized as a phenomenon of micro-prosody. PACHECO and SOUZA (2005), analyzing the occlusive and fricative consonants in the onset of syllables, show that only the occlusive ones vary their duration according to the difference among voiced and voiceless ones. In order to investigate the duration of the occlusive consonants in isolated disyllable words and its relation with the duration of the vowels, it was composed a corpus of words with the structures 'CV.CV, CV.'CV, 'CVC.CV and CVC.'CV, with the occlusive consonants /p/, /b/, /t/, /d/, /k/ and /g/ in the onset of the syllables, the vowels /a/, /i/ and /u/ in the syllabic nucleus and the consonants /N/, /R/ and /S/ in the position of syllabic coda. The words were recorded by using a digital recorder with the participation of a feminine informant. To measure the duration of the segments, it was used the software *Praat*. The results are the following: the voiceless and voiced occlusive consonants in onset of word tend to present a shorter duration in relation to these consonants after opened

syllables. The voiced occlusive consonants are longer in position of onset of word are longer than in the position after closed syllables. The voiceless ones in the same context of the voiced ones tend not to present difference about the duration. However the voiced ones are predisposed to have a longer duration than the corresponding voiceless ones after opened syllables. The vowels present longer duration in opened syllable preceded by a voiceless occlusive consonant. The duration of the vowels in closed syllable is indifferent to the type of occlusive consonant which follows such syllables. The achieved results point to the hypothesis that the occlusive segments can be influenced in their duration by the syllabic structure of the words which they are in, what confirms that the segmental duration is not an aspect simply arbitrary as occurs in other languages.

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## **The Epenthesis in the Production of the *-ed* Morpheme by Brazilians: a Dynamic View.**

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Variability in the production of a foreign language is a fact accepted by researchers in language acquisition. It is also accepted that there are common features in the production of a target language depending on the learner's mother tongue. A common feature of Brazilian accent in the production of English language is in the pronunciation of words with the *ed* morpheme. Brazilians tend to produce an epenthetic vowel when they pronounce a regular verb in the past tense or past participle. Some research studies have provided data for our understanding of the phenomenon (ALVES, 2004; DELATORRE, 2006; FRESE, 2006) and in my Doctoral research I tried to contribute with new information. I analyzed the inflected words statistically, considering different variables as possible factors of influence for the realization of epenthesis, such as level of proficiency, time of study, time of living in an English speaking country, word frequency and phonological context (GOMES, 2009). The results were then analyzed from the perspective of usage-based phonology (BYBEE, 2001) and exemplar model (PIERREHUMBERT, 2000, 2001, 2003). Now, using data from that research, I present an acoustic analysis of the epenthetic vowel produced by the informants (KENT & READ, 2002). The goal is to measure and compare the duration of the epenthetic vowel, considering the individual's

dynamic and changing system put into play according to language use (BYBEE, 2010).

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## **The Superlative Synthetic Construction of Absolute States in Portuguese with the Suffix -íssimo: A Case of Morphological Mismatch**

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Assuming the sociocognitive and constructionist perspective taken by Cognitive Linguistic (LAKOFF, 1987, 1993; JOHNSON, 1987; LAKOFF & JOHNSON, 1980[2002], 1999; SALOMÃO, 1999, 2009, MIRANDA, 1999, 2000, 2002; CROFT & CRUSE, 2004; SILVA, 1997, 2003) and by the Usage-Based Model from the Construction Grammar (GOLDBERG, 1995, 2006; SALOMÃO, 2002, 2009<sup>a</sup>; MIRANDA, 2007, 2008<sup>a</sup>, 2008<sup>b</sup>, TRAUGOTT, 1995), this work aims at investigating one of the net nodules of the Superlative Constructions in Portuguese, here referred as the **Superlative Synthetic Construction of Absolute States** (SSCAS). It is a morphological construction built from the integration of a **chore** which refers to a non-gradable absolute state (*desempregada*, *casada*, *grávida*) with a **superlative scale operator** (*-íssimo/a*). The result of this integration are types such as: *desempregadíssima*, *casadíssima*, *gravadíssima*, *formadíssima*. The methodological choice, derived from Cognitive Linguistic engagement to empiricism, led to a search on natural corpora. In this approach, there was built a specific corpus of this construction based on real and spontaneous data of linguistic use, verified by the electronic concordancer Web Concordancer beta - <http://webascorpus.org/searchwac.html>. Our corpus is made of 8.189.656 words in which 30 types were investigated and 1757 tokens were recorded. The configuration of SSCAS points to the mismatch phenomenon

(FRANCIS & MICHAELIS, 2000; MICHAELIS, 2004; TRAUGOTT, 2007), due to the fact that it makes clear the incompatibilities between the formal-semantic properties of the units which integrate this pattern – the superlative affix *-íssimo* – and the lexical item graduated by it. The incompatibility of this construction is approached from the polar relations of contrariety and contradiction, as they were describe by Israel (2004). Assuming the hypothesis that SSCAS is a construction, we propose the description of its formal and semantic-pragmatic poles to be the main analytical task in this work. As concerns the formal aspects, there were described three constructional patterns in the SSCAS, defined by Adjective, Nouns and Adverbs chores. The major formal pattern (64,1%) is made of deverbal participle radical (*casado, namorado, eleito*). As concerns the SSCAS Semantic, we aimed at revealing the frames/conceptual scenes which are related to the types and recover the new profiling given to these scenes. Therefore, we assess the presence of two types of profiling in the SSCAS contexts: (i) Features Profiling; ii. Contradiction Profiling. The configuration of the discourse habitat of SSCAS, characterized by the informality, was pointed out by three categories for analysis of the source: (i) main thematic; (ii) discourse genres; (iii) target. Our analysis got to consolidate the initial hypothesis that SSCAS is built as a constructional pattern for a specific use within the Superlative Construction network in Portuguese. Its productivity was attested as well as its conventionalization process of some of its types in the informal discourse surroundings in the Portuguese from Brazil.

## **Paradigmatic Effects on the Interaction of Epenthesis and Primary Stress in Brazilian Portuguese**

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Brazilian Portuguese (BP) occupies a quite peculiar position among Romance languages in several aspects of its grammar. In phonology, e.g., a characteristic which sets it apart is the fact that some consonant sequences are usually eliminated by the epenthesis of an [i]. This is what occurs, e.g., with words such as *afta*, *digno*, *optar*, *gnomo*, *pneu*, *técnico* and *psicólogo*. This is not the only context for epenthesis in BP. Words with non-sibilant obstruents as their final segment undergo the same process. They include words such as: *déficit*, *superávit* e *hábitat*. One point which has not been given the due attention is the fact that this epenthetic vowel has distinct effects on the prosody of different word classes. Obviously, it is only possible for primary stress to be affected by epenthesis in BP if the epenthetic vowel occurs between the stress and the final edge of the word, because that is the edge BP primary stress is aligned with. Given this caveat, we should note that in nominal forms, for example, epenthesis seems not to affect primary stress, whereas in verbal forms it occurs in variation, either affecting primary stress or keeping it in the same place as in the form without the epenthetic vowel. The contrast is illustrated by the invariability of primary stress in *digno*, *técnico* and *déficit*, e.g., regardless of the occurrence of the epenthetic vowel. We have, respectively, the pronunciations ['dʒiginu], ['tekiniku] e ['defisitʃi]. If we compare these words with the verbal forms *impregna* and *se indigna*, we will observe that the latter may be

pronounced with no change in the location of the primary stress, i.e., [i'pregine] and [si'dʒigine], but they also occur with primary stress shifting to the following syllable, i.e., as [ipre'gine] and [si'dʒi'gine]. It is important to observe that this incompatibility between epenthetic vowels and stress in non-verbs is limited to primary stress, since forms such as *psicólogo* occur with the pronunciation [psi'sikólogo], i.e., they may receive secondary stress. The present paper has the purpose of discussing these differing prosodic effects in words belonging to different word classes. Crucially, verbs stand apart from all other word classes in that verbal paradigms necessarily involve primary stress shifts, whereas in non-verbal paradigms any such shift is avoided in BP. The fact that forms in a paradigm establish connections among themselves means that the knowledge speakers have of a paradigm shows them the syllable containing the theme vowel is stressed in some forms (e.g. in *comprava*), but in other forms it is either the previous syllable or the following syllable which receives main stress, as in *compro* and *compraria*, respectively. So main stress is not inherently associated to any one syllable of the paradigm, whereas in nouns the need for stress displacement hardly ever arises. I will argue, in short, that the lexical connections present in the paradigm are an important factor for the oscillation of primary stress location in verbs.

## **L2 Production of English Word-Final Consonants: The Role of Orthography and Learner Profile Variables**

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The present study investigates some factors affecting the acquisition of second language (L2) phonology by learners with considerable exposure to the target language in an L2 context. More specifically, the purpose of the study is two-fold: (a) to investigate the extent to which participants resort to phonological processes resulting from the transfer of L1 sound-spelling correspondence into the L2 when pronouncing English word-final consonants; and (b) to examine the relationship between rate of transfer and learner profile factors, namely proficiency level, length of residence in the L2 country, age of arrival in the L2 country, education, chronological age, use of English with native speakers, attendance in EFL and ESL courses, and formal education. The investigation involved 31 Brazilian speakers living in the United States with diverse profiles. Data were collected using a questionnaire to elicit the participants' profiles, a sentence-reading test (pronunciation measure), and an oral picture-description test (L2 proficiency measure). The results indicate that even in an L2 context, the transfer of L1 sound-spelling correspondence to the production of L2 word-final consonants is frequent. However, extensive exposure to rich L2 input, combined with a solid knowledge to the L2 grammar upon arrival in the L2 country, is closely related to the development of L2 proficiency and improvement in the production of L2 word-final consonants.

## **Perception and production of English VOT patterns by Brazilian learners**

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Learning L2 phonology is a dynamic process. In order to acquire a second language sound system, learners are faced with challenging tasks in terms of perception and production. With regard to perception, learners have to listen for acoustic cues that may not necessarily be salient in their L1 system. As it comes to production, speech is as multimodal process, resulting from the orchestration of dynamic action units, gestures, both at the abstract – representational – and concrete levels (BROWMAN & GOLDSTEIN, 1992). Departing from this dynamic view of phonological acquisition, the present study investigates the acquisition of English VOT patterns by Brazilian learners of English. Besides a word production task, discrimination and identification tests were conducted in order to study students' perception of the phonological aspect in question. In the identification test, participants were required to recognize the existing VOT patterns in English and associate them with the correspondent plosive from the English Language. The discrimination test consisted of an AXB task, in which we contrasted the three existing VOT patterns produced by native speakers of English: pre-voicing, short VOT and long VOT. For this test, productions of voiceless plosives were also manipulated on *Praat*, so that we could obtain *fake* short VOT stops: as the VOT of the plosives was reduced, the resulting consonant would have the same VOT duration as a

voiced plosive. These *fake* voiced stops were contrasted with the three natural VOT patterns in the AxB task. Production test results show that, although near, VOT values produced by the learners are not the same as those produced by native speakers of English. With regard to perception, we have found high accuracy levels in the identification test. The results obtained from the AxB task indicate that learners tended to associate the fake short VOT to voiceless plosives, not voiced ones. As short VOT and pre-voicing plosives sound like a voiced stop to learners' perception, whereas a *fake* short VOT sounds like a voiceless stop, we are led to suggest that, in order to discriminate sounds, a different acoustic cue, other than VOT, may be used in learners' judgments. Possible cues include burst intensity, closure duration and vowel change due to VOT duration. Experiments aiming at the identification of the acoustic cue(s) used by Brazilian learners on this discrimination process are being elaborated.

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# POSTER PRESENTATIONS



## **Fluctuation of Stress in Word Production by Native Speakers of Brazilian Portuguese**

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The purpose of the present research is finding the conditions or the stimuli in the fluctuation of stress in the production of words by native speakers of Brazilian Portuguese. The corpus is composed of a set of words whose pronunciation shows variation which has been considered by grammarians as nonstandard, such as [gra'tujtu] [gratu'itu] and [no'bew] ['nobew]. In the first part of the research, I surveyed the main theories that, according to FERREIRA-NETTO (2007), try to explain primary stress in Brazilian Portuguese, which are: a) Câmara Jr.'s (2001) Free Stress Hypothesis, which maintains it is previously defined in the lexicon; b) Bisol's (1992) Trochaic Stress Hypothesis, based on the trochee as its characteristic rhythmic pattern; c) Lee's (1995) Morphological Stress Hypothesis, based on the quality of the stress-bearing morpheme, which is sensitive to its lexical category. However, I have observed that they cannot cover regular stress without using a large number of exceptions, treated by the authors as extrametrical or marked, which has kept me from adopting them as the method of analysis for the words in the corpus until this moment. Now, in the second part of research, I have followed one of the initial hypothesis according to which the frequency of use can influence the variation, and seems to be a good method for explaining regular stress in Brazilian Portuguese as well as its stress fluctuations effectively. However, the analysis of the corpus

considering this theory is still under way. During the research, I will try to establish if this theory explains the stress oscillations and, as in some the texts I am faced with an opportunity to interface with cognitive linguistics, I intend to link the principles of both theories.

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## **Constraining the Syntax-Prosody Relation under an Identity Thesis for Language and Music Approach**

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KATZ & PESETSKY (2011) presents and defends a hypothesis that claims that music and language are formally identical, except for their building blocks, *i.e.* although the building blocks of language are lexical items and the ones of music concern pitch-class and chord quality, it is what language and music do with these units that is identical. Thus all the apparent structural differences between language and music are only a consequence of differences in their building blocks. Since they defend this hypothesis under a generative approach (which is concerned with cognitive issues), to know to what extent this hypothesis is verified can tell us a great deal about how to search for the (un)communalities between these two cognitive domains in empirical studies which, in its turn, can tell us a great deal about human brain. One of the topics KATZ & PESETSKY (2011) discusses concerns mapping between two components that generative theories of both domains postulate to their respective objects, namely **syntax** and **(prosodic) phonology** for language and **time-span reduction (TSR)** and **prolongation reduction (PR)** for music. They point out the fact that both syntactic structure and PR structure encode structural relations between elements that are not necessarily string-adjacent, among other similarities, and that both phonological structure and TSR structure invoke notions of relative prominence. Thus their claim is that mapping between syntax

and phonology and between TSR and PR should be equal. In order to constrain these mappings, they formulate a single condition, called Region Condition, that is responsible for creating constrained non-isomorphism (isomorphism being the default) between these components of both music and language. Although their arguments are most strongly based on the Minimalist Program model, to apply the Region Condition requires the use of a mechanism from Optimality Theory (OT), namely the ranking between things that compete against each other. This paper aims to find a way of reformulating the Region Condition in a way that it doesn't need to appeal to OT constructs.

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## **The Influence of Instruction on the Production of Regular Verbs Ending in -ed by a Brazilian Undergraduate Learner of English**

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Studies have demonstrated that Brazilian EFL learners tend to insert an epenthetic vowel on the production of regular verbs ending in *-ed* (ALVES, 2004; DELATORRE, 2006), which may be influenced by the (a) voiced/voiceless context preceding the *-ed* (DELATORRE, 2006); (b) unconscious generalization of the *-ed* pronunciation to the other two ones (GOMES, 2010); (c) orthography of the *-ed* ending verbs (ALVES, 2004; DELATORRE, 2006), and (d) influence of L1 knowledge (GOMES, 2008). FERNANDES (2009) found that the insertion of epenthetic vowel on the pronunciation of *-ed* verbs by Brazilians interferes in the intelligibility of their pronunciation of these verbs to European Portuguese (EP) and Hindi L1 speakers. Fernandes claimed that instruction on the *-ed* pronunciation in the classroom would help Brazilians to improve its pronunciation becoming more intelligible to another L1 speakers who also speak EFL. Studies on the influence of instruction have demonstrated that it has influenced the decrease of vowel epenthesis insertion on *-ed* verbs (ALVES, 2004, MARIANO, 2009). Participant of the present study was a Brazilian female undergraduate student of English who received pronunciation instruction from a female native speaker of American English and had perception and production practice with some pronunciation material in the classroom. The results demonstrate that (a) pronunciation instruction helped her to decrease the insertion of epenthetic vowels

in the pronunciation of *-ed* ending verbs; (b) despite this positive influence of instruction, voiceless contexts induced more vowel epenthesis than voiced consonantal and vocalic contexts preceding the *-ed* possibly due to the influence of sonority of the preceding context and frequency of voiced context occurrence since voiceless contexts are less sonorous and less frequent than voiced contexts; (c) orthography, unconscious generalizations of one the *-ed* pronunciation to the other two ones, and L1 knowledge influenced her pronunciation of these verbs, thus following the tendencies found in previous studies.

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## Phoneme Boundary Detection Using Speech Morphing

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The nature of phoneme boundaries has been debated in the recent literature about speech perception (Port, 2010; Hay, Pierrehumbert and Beckman, 2004). The ability to precisely detect the perception boundaries between phonemes might come in hand to help in this debate. This work describes an experiment that uses speech morphing in the construction of a continuum between vowels. This continuum was used to evaluate the perception boundary between the vowels [a] and [ɛ] in Brazilian Portuguese. The developed speech morphing algorithm is based on an initial source/filter analysis. The two sound streams to be morphed are divided in segments that roughly correspond to phonemes. For each segment the source is temporally aligned and linearly added, while the filter LSP coefficients are linearly interpolated. The interpolated source is applied to the filter generating a window of the output signal. The resulting speech streaming is almost free of hiss and is well suited for perception experiments. A perception experiment with 32 subjects was performed in order to investigate phoneme category transition. Two nouns and two verbs that only differ by their tonic vowels were recorded inside a sentence: s[a/ɛ]la pequena “*small room/saddle*”; l[a/ɛ]va para mim “*take/wash it for me*”. Two male speakers recorded the four sentences, one was less than 25 years and the other was more than 45. The stressed vowels of the nouns and verbs were morphed using the algorithm previously described. For each category, one thousand sentences that corresponded to the continuum between [a] and [ɛ] were generated. The task of the subjects was to

listen to a sentence and to choose the perceived word that contained either [a] or [ɛ]. Initially, each subject was presented with 40 sentences equally divided in nouns and verbs. After this first phase, a logistic function was adjusted to the subject categorical answer in order to estimate the intercept and slope. The intercept is related to the probability of choosing one vowel over the other and the slope, to how abrupt is the transition between vowels. In the second phase of the experiment, the fitted logistic function was used to automatically select another 40 sentences with vowels around the perceptual threshold. This procedure allows a more precise estimation of the intercept and slope. Results indicate that perceptual boundaries between the two vowels are gradient and have a great variability between subjects. Nonetheless, it was possible to identify a tendency in young speakers for responding less categorically to the stimuli in one of the classes. This might indicate that there is a sound change in progress in Brazilian Portuguese towards a merging, in certain situations, between the vowels [a] and [ɛ].

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## Two routes of a segmental reduction

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This paper considers segmental reduction involving unstressed [ãw] diphthongs in verbal forms in Brazilian Portuguese (BP). The theoretical framework adopted is the Network Model proposed by BYBEE (1985). According to this proposal, words are not stored in a random list. Regularities and similarities are observed and built through experiences of use. Morphology emerges through regularities observed in phonetic and semantic levels. The Network Model also proposes that linguistic storage is redundant. This means that a word might be stored multiple times and hold redundant information. Two verbal forms were considered: imperfect past verbal ending in -vam and perfect past verbal ending in -ram. In the case of imperfect past verbal ending in -vam we observed that the unstressed [ãw] diphthong was reduced to [ə]: falav[ãw] - falav[ə] (*they spoke*). In the case perfect past verbal ending in -ram we observed that the unstressed [ãw] diphthong was reduced to [ə]: falar[ãw] - falar[ə] (*they spoke*). In order to understand why the same unstressed [ãw] diphthong was reduced differently in each case we developed the current research. We will present suggestions for understanding the different unstressed [ãw] segmental reduction in the two verbal classes. We suggest that frequency effects and redundant information are crucial to understand the different routes observed in the segmental reduction investigated. We argue that the different behavior in each verbal tense follows from the fact that they belong to different morphological classes. We argue that this difference confirms the Network Model.

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## **A usage-based approach to prosodic prominence in Brazilian Portuguese**

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In the last three decades, usage-based models [1] [2] [3] [4] have succeeded in demonstrating that language complexity and dynamicity can be better modeled if we consider that linguistic representations are rich and multidimensional. This framework has been successfully developed in many areas of linguistic research, such as Semantics, Morphology and Syntax, and important advances were made with regard to previous symbolic frameworks. However, usage-based studies in Phonology and especially in Prosody are not as advanced and many aspects remain to be accounted for. Our study focuses on lexical stress in Brazilian Portuguese (BP). We are especially interested in the role of token frequency in the perception of stress as well as whether acoustic parameters involved in production of rhythmic patterns are the same as those involved in perception. The analysis to be developed is based on experimentally collected data regarding acoustic parameters employed in production and perception of lexical stress in BP. In BP, lexical stress is presented as acoustic prominence of one of the last three syllables in the word domain. Traditional analyses assume that stress is contrastive, on the base of a few minimal pairs such as *cara* "face" vs. *cará* "yam". In this study, we intend to address the representational issue of lexical stress based on its functional behavior, with the support of experimental data. The production experiment made use of voice recording, electroglottograph (EGG) signal and optotrack motion patterns. It was partially reported [5] and will be used here for reference purposes alone. The perception experiment consisted of a

disambiguation test, in which subjects heard ambiguous syllabic sequences that could be parsed either as a penultimate stressed word or as a ultimate stressed word. They were asked which word they heard. Comparing the perception test with results from the production experiment, we intended to examine whether perception and production involved the same acoustic parameters, and whether they had the same weight. By integrating production and perception experiments, we expect to contribute to the study of BP rhythm with new and reliable data. With the analysis to be developed, we argue that usage-based models, such as cognitive phonology and exemplar theory, provide advances to a comprehensive and robust model in phonology and prosody.

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## **The non-target pronunciation of the consonants /θ/ and /ð/ by Brazilian speakers of Portuguese: a source of incomprehensibility?**

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When learning English, Brazilian learners tend to replace the consonant sound /θ/ with /s/, /t/, or /f/, and replace /ð/ with /z/, /d/, or /v/ (Reis, 2006). Taking this into consideration, the objective of this study is to analyze if the non-target pronunciations of these consonant sounds by Brazilians hinder English native speakers' comprehension, which can be defined as "the ease or difficulty with which a listener understands L2 accented speech", according to DERWING, MUNRO and THOMSON (2007, p. 360). Therefore, in this study, ten samples of speech containing the pronunciation of the sounds /θ/ and /ð/ by Brazilians were collected from *The Speech Accent Archive* site and presented to a group of eleven native English speakers who were familiar with the way Brazilians pronounce English words. Then, after answering a questionnaire eliciting personal information, these listeners were asked to tell how difficult it was for them to understand the words that contained those consonant sounds. Being the main research question: *Does the non-target pronunciation of /θ/ and /ð/ by Brazilian speakers of Portuguese hinder English native speakers' comprehension?*, it was possible to conclude that the non-standard pronunciation of the interdental fricative sounds by Brazilians does hinder English native speakers' comprehensibility, even when they are already familiar with the accent. Therefore, teaching and practicing these sounds are important in order for ESL speakers not to have communication problems.

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## **Frequency Effects in L2: Learning 3<sup>rd</sup> Person Singular Present Forms in English**

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This study evaluates how Brazilian students learn 3<sup>rd</sup> person present forms in English. Usage Based Phonology (BYBEE, 2001) and Exemplar Models (PIERREHUMBERT, 2001) are the frameworks adopted. The 3<sup>rd</sup> person present forms in English are formed by adding [s] when a verb ends in a voiceless consonant, [z] when it ends in a vowel, diphthong or voiced consonant. They can be formed by adding [iz] when a verb ends in a sibilant consonant. There is a tendency for Brazilian students of English to insert an epenthetic vowel [i] when two consonants occur word finally in English: *fact* is pronounced as fa[ki]t. Thus, following the epenthesis of vowels between sequences of two consonants word-finally, we should expect subjects to pronounce forms such as *stops* or *robs* as sto[pi]s and ro[bi]s. However, we have noticed that in a form like *stop*, an epenthetic vowel rarely occurs, whereas, in a form like *robs*, an epenthetic vowel occurs more often. Our hypothesis is that segmental sequences which are known in L1 will occur in L2 without a problem. Conversely, segmental sequences that are not known in L2 will be subject to various strategies in order to be acquired. If we consider Brazilian Portuguese (BP), we notice that a voiceless stop followed by a voiceless sibilant occurs: par[ts] for “partes” *parts*. However, a voiced stop followed by a voiced sibilant does not occur. Whenever such sequence occurs, speakers either make the sibilant voiceless – as in ro[bs] – or insert an epenthetic vowel [i] between the stop and the sibilant – as in rob[i]s. Taken this into consideration, we expect that subjects are familiar with voiceless stops followed by a voiceless sibilant, but not with a voiced stop followed by a voiced

sibilant. Thus, when learning English, BP students will be able to produce voiceless stops followed by a voiceless sibilant as in sto[ps]. On the other hand, when BP students are supposed to produce a voiced stop followed by a voiced sibilant as in ro[bz], they will have more difficulties. Therefore, this study evaluates how Brazilian students learn 3<sup>rd</sup> person present forms in English by examining verbs ending in voiced and voiceless stops. We analyzed 3<sup>rd</sup> person singular verbal forms in English as produced by two groups of subjects, a basic and an advanced-level group. Results indicate that verbal forms ended in a voiceless stop – as in *stops* – present no problem for students since 96% of the advanced-level students produced the verbal forms as expected (stop+voiceless sibilant). 63% of basic-level produced them likewise. Results also indicate that various strategies were used in verbal forms that ended in a voiced consonant. A major contribution of this work is to show that known segmental sequences in L1 behave differently from unknown ones. More specifically, we suggest that mastered motor routines may only be adjusted to L2 learning, whereas unknown motor routines must be mastered and known strategies from L1 will be used to accomplish L2 patterns.

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