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The Perception of Vowel Epenthesis and Word Stress in an English as a Lingua Franca Context

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Abstract

This article aims at presenting two experiments that investigated the intelligibility of Brazilian speakers' production of words ending with the *-ed* morpheme and production of words stressed on the fourth to last syllable of suffixed words. Three groups of listeners, English native speakers, Brazilian speakers, and non-native speakers other than Brazilians transcribed the sentences produced by Brazilians with different levels of English proficiency. Under the assumption of English as a Lingua Franca (Jenkins, 2000) and the propositions of Probabilistic Linguistics (Bod, Hay & Janedy, 2003), the intelligibility of Brazilian English is discussed. The great relevance of this study is the contribution to second language research, especially regarding the lingua franca core and the perception of Brazilian speakers' English.

The starting point for this article is the fact that English is today the worldwide means of communication among people from different nationalities, and that more and more often conversation in English will take place without the presence of a native speaker. Embracing sociolinguistic facts of variation, Jenkins (2000) proposes a lingua franca core (LFC) – a set of priorities for English language teaching. In establishing the priorities, Jenkins argues that in the production of consonant clusters, epenthesis is preferable to consonant deletion. She also mentions that inadequate word stress assignment rarely causes intelligibility problems for non-native speakers. Although these two features are not included in Jenkins' LFC, they are usually problematic for Brazilians' production of English. According to several studies, a relevant aspect of a Brazilian speaker's accent in English is the production of an epenthetic vowel in words with the *-ed* morpheme (Alves, 2004; Delatorre, 2006; Gomes, 2009). Regarding stress assignment, Brawerman (2006) shows that Brazilians have difficulties assigning stress on the fourth to last syllable in English words. Based on these factors, this article will present the results from a study on the perception of verbs in the regular past tense and words stressed on the fourth to last syllable produced by Brazilian speakers. The listeners were divided in three groups: native speakers, non-native speakers other than Brazilians, and Brazilians. The objective of the research was to test Jenkins' LFC concerning the phenomena of epenthesis and word stress. The relevance of this study is its contribution to second language research, especially regarding the lingua franca core and the perception of Brazilian speakers' English.

THE THEORETICAL BASES

For decades, studies of L2 phonology or interlanguage phonology have discussed the relationship between transfer, development, and universal factors during second language acquisition. Various new ideas on language acquisition have led researchers to review positions on the concepts of transfer, language development, and marking. Probabilistic Linguistics (Bod, Hay & Janedy, 2003) has shed some new light on language acquisition of sounds. We part from two models found in probabilistic notions to focus our research: Usage-based Phonology (Bybee, 2001, 2006, 2010) and the Exemplar Model (Pierrehumbert, 2003).

According to Bod et al. (2003), language shows evidence of a probabilistic system. Categories and word formation are gradient, and frequency effects are in all contexts of analysis, permeating the

representations of language processing and linguistic change. All levels of representation in phonetics and phonology show statistical variation and the speakers have implicit knowledge of this change (Pierrehumbert, 2003). Phonetic coding of items is probabilistic, with these same items competing for primacy. Probabilistic linguistics considers linguistic categories as distributions and conceives linguistic knowledge not as a limited amount of categorical restrictions, but as a series of gradient rules that can be characterized by statistical distribution (Bod et al, 2003).

For Bybee (2010), language is not a fixed mindset. If it were, the categories would be discrete. As language is a mental structure in constant use and always filtered through processing activities which cause changes, there is variation and gradience in the forms. In a usage-based phonology, grammar is seen as the cognitive organization of the experience a speaker has with language (Bybee, 2006). With use, the linguistic items acquire pragmatic, semantic and phonological characteristics. In this model, three points are crucial: the creative role of repetition, the effects of frequency and the emerging character of grammar.

Following the same line of thought, in the Exemplar Model there are also three fundamental bases: phonetic details, gradience of mental representations, and the notion of frequency. As a result of contact with the language, the speaker will make an exemplar map, forming clouds and taking into account social, pragmatic, semantic, morphological, phonological and phonetic factors. According to Pierrehumbert (2001), a cloud of detailed memory is associated with each category, and the most frequent categories have more exemplars and are more easily activated than less frequent categories.

As can be seen, Probabilistic Linguistics is based on three pillars: the dynamic character of language, the gradience of linguistic forms, and the effects of frequency. Aligned with the view of dynamicity, gradience and frequency is the perspective of English as a *Lingua Franca*, which seems to be a perfect match for the assumptions of the models described above.

THE PERSPECTIVE OF TEACHING/LEARNING ENGLISH AS A LINGUA FRANCA

Years ago when faced with the responsibility to choose a variety of English to teach, there was but a simple dichotomy: American English or British English? Today the existence of "New Englishes" (Crystal, 2010) is gaining ground in discussions about the status of English in international

communication. According to Jenkins (2000), speakers of English as an L1 have lost the right to dictate the standards of pronunciation for its use as an L2.

From her research, Jenkins (2000) establishes a series of priority items in relation to teaching English pronunciation, which she calls LFC - *Lingua Franca Core*. Containing characteristics of American English, British English and varieties of English as L2, the LFC, according to Jenkins, allows for some freedom. As the focus is intelligibility, specific characteristics of native varieties that are difficult for the learner to acquire should not be considered for teaching if not relevant in international communication.

According to Walker (2010), pronunciation teaching can have two different orientations, one focused on communication with native speakers - the teaching of English as a Foreign Language (EFL), and the other focused on international intelligibility - the teaching of English as a *Lingua Franca* (ELF). The author presents a number of concerns and benefits in adopting an approach to teaching English as a *Lingua Franca*, and then suggests several teaching techniques. In short, Jenkins (2000) defines the priorities for the teaching of English pronunciation as an international language in her LFC, and Walker (2010) employs Jenkins' core in the classroom, which involves not only production but also perception of the English sound system.

According to this new perspective, teachers and material writers will need information about the New Englishes and Brazilian English will definitely be one of them.

STUDIES ABOUT BRAZILIAN ENGLISH

This section describes some studies about Brazilian English regarding the *-ed* morpheme and stress assignment.

The *-ED* Morpheme

Several researchers have analyzed the production of words ending in the *-ed* morpheme, all of them confirming the tendency of Brazilians to insert an epenthetic vowel. Alves (2004) investigated the influence of instruction and showed that students can be helped to perceive input details. Delatorre (2006) examined the preceding phonological environment and discovered that a preceding consonant induces more epenthesis than a preceding vowel, and that some consonants induce more epenthesis than

others. Another variable investigated by Delatorre (2006) was orthography, which also exerts influence in epenthesis production. Frese (2006) investigated the relationship between production and perception and suggested that the latter precedes the first. Gomes (2009), after investigating the influence of previous phonological environments and crossing categories with word frequency, concluded that not only token frequency, but also type frequency affected the production of words with *-ed* morpheme by Brazilians.

To verify intelligibility of words ending in *-ed* by Brazilian speakers of English, Fernandes (2010) conducted a research project with Portuguese and Indian listeners. The Brazilians were recorded creating short stories and reading small texts. The Portuguese and Indians listened to the recording and were asked to evaluate the performance of the speakers. According to the researcher, the level of intelligibility varied between the Portuguese listeners, speakers of English as a Foreign Language (EFL), and Indian listeners, speakers of English as a Second Language (ESL). While for the Portuguese listeners, the Brazilians had a 74,19% level of intelligibility, for the Indian listeners the level of intelligibility was 48,38%. The author concluded that the characteristics from different mother tongues which cause problems for communication should be presented to students through explicit instruction. On the other hand, those characteristics which do not cause communication problems should not be considered.

Word Stress

According to Roach (2009), an incorrect stress assignment may lead to intelligibility problems for foreign speakers. Likewise, Kenworthy (1987) suggests that when a speaker is not able to understand a word, it is very common that the problem lies in wrong stressing rather than in an inadequate pronunciation of a specific sound.

Cruz (2011) has authored a series of studies that tests the intelligibility of Brazilian speakers of English by native English speakers. The author suggests that word stress is the most important aspect for the intelligibility of English as a foreign language.

Various studies have worked with the difficulties regarding word stress for Brazilian speakers of English. Two of them (Brawerman, 2006; Brawerman-Albini, 2012) work with a difficult stress pattern for Brazilians: words stressed on the fourth to last syllable. This stress pattern is practically non-existent in Brazilian Portuguese and it can be argued

that Brazilian speakers store few examples of this stress pattern, which is rare and unproductive for them.

Brawerman (2006) states that the unfamiliar metrical pattern in words such as *refrigerator*, *organizer*, and *fascinating* is problematic even for relatively advanced Brazilian speakers of English. The source of error is likely to lie in the overall influence of the L1 metrical pattern, combined with incorrect input and lack of negative feedback. Brawerman-Albini (2012) shows that despite Brazilians' difficulty producing this stress pattern, they do not seem to have perception problems. That study also explores the use of perceptual training and shows great results in participants' production, despite the fact that the participants were exposed only to auditory input and there was no production practice. The results suggest that perceptual training, which is usually used with segments, can also have good results for stress. In that particular study, it seems that exposure to correct and sufficient input was the key to the formation of a category for words stressed on the fourth to last syllable, illustrating the relevance of frequency.

INTELLIGIBILITY

Although Jenkins (2000) is not specific regarding the pronunciation of words ending with the *-ed* morpheme, she includes problems of consonant clusters in the list of errors that may cause miscommunication and therefore must receive pedagogic priority. The author states that "because L1s differ widely in their permissible syllable structures and, thus, in their speakers' routes to cluster simplification, international English intelligibility is likely to be jeopardized" (Jenkins, 2000, p.101). Most non-native speakers tend to simplify clusters using a strategy of addition instead of deletion, "because of the effect on the recoverability of their words for the listener" (p. 118). Therefore, epenthesis and paragoge might be common strategies used by EFL or ESL speakers of English. Words with the *-ed* morpheme present several consonant clusters that are not admitted in Portuguese syllable structure, causing epenthesis strategy by Brazilian speakers. It is important to find out how troublesome epenthesis is for intelligibility.

Regarding stress, Walker (2010) states that the importance of correct stress for intelligibility depends on whether English is treated as a foreign language or a lingua franca. In the first case, the aim is to be understood by native speakers and word stress has a crucial role for intelligibility. In the second case, however, the objective is to be understood by non-native

speakers and word stress is not as relevant. Jenkins (2000) considers word stress “something as a grey area. Word stress seems to be reasonably important to L1 receivers, but rarely causes intelligibility problems in the Interlanguage Talk data and, where it does so, always occurs in combination with another phonological error” (p.150). Thus, according to both authors, the importance of word stress depends on how English is dealt with. Nevertheless, even when English serves as a lingua franca, stress remains important due to nuclear stress, a relevant element in the lingua franca core.

EXPERIMENT 1: INTELLIGIBILITY OF WORDS ENDING WITH THE *-ED* MORPHEME

In this experiment, a set of ten sentences to be transcribed orthographically was presented to 30 participants. The participants divided in three groups of listeners were: (1) native speakers of English; (2) Brazilian speakers of English; (3) non-native speakers of English other than Brazilians.

The Speakers

The recordings, taken from Gomes (2009), were composed of two native speakers of English (an American woman and a British woman) and eight Brazilian women at five different levels of proficiency according to the Common European Framework of Reference (A1, A2, B1, B2 and C1). The ages of all speakers ranged from 18 to 28.

The Task

The participants listened to ten sentences played twice and had to transcribe each sentence orthographically (Table 1). The sentences were played twice to assure that the participants could remember the whole sentence. Eight sentences were in the past tense and had one or two regular verbs (ten verbs in total) and two sentences were distractors. The verbs produced by the Brazilians were pronounced with an epenthetic vowel in the *-ed* morpheme, a typical feature of the Brazilian way of speaking English.

Table 1. Sentences of Experiment 1

SPEAKER	SENTENCE
AS*	This seemed like the right thing to do.
BS**	So I called out from my car.
C2	That was the luckiest trip of my life.
C1	We've changed the tire.
B2	She begged her husband to do the same.
B2	Bad figures made me even more tired.
B1	She loved him and was concerned about his health.
A2	She called me to ask if I wanted to help her.
A1	Suddenly somebody touched her arm.
A1	Actually she was in love with her.

Note: * American speaker ** British speaker

The Participants

The participants formed three groups of ten listeners.

English Native Speakers (NS). The native English speakers were students of Portuguese for speakers of other languages – PFOL at a federal university in Curitiba, nine Americans and a Belgian who declared he was a native English speaker. Eight participants stated they were familiar with Brazilians speaking English and two of them stated they were not.

Brazilian Speakers (BR). The group of Brazilians was formed by ten undergraduate students of Language and Arts at a federal university in Curitiba. They were all at least at intermediate level of English and had had around 400 hours of English class. Their age ranged from 21 to 25 and they were all native speakers of Portuguese.

Non-Native Speakers Other than Brazilians (NN). The third group was composed of one Korean, one Dane, one Norwegian, one Dutch, one Colombian, one Chilean, and three French, who were all students of Portuguese for speakers of other languages – PFOL at two federal universities in Curitiba, and one Haitian Spanish speaker. They were all proficient in English. Five of them were familiar with Brazilians speaking English and the other five were not.

Results

The results of Experiment 1 are presented in Table 2. As can be seen, the most intelligible verbs for the native speakers were *tired*, *loved* and *called*, all produced by Brazilians at levels B2, B1 and A2, respectively. The words were transcribed correctly by all native listeners. The group of Brazilians did not have 100% of correct transcriptions in any of the verbs, but had 90% in *changed*, *begged*, *tired*, *loved*, *called* and *touched*, pronounced by speakers at all levels, from A1 to C1. For the non-native speakers the only verb that had 100% of correct transcription was *changed*, pronounced by a C1 leveled Brazilian speaker. Verbs *loved* and *called* were transcribed correctly by 90% of non-native listeners. The verbs that were best transcribed considering the three groups were *loved* and *called*, both pronounced by Brazilians at levels B1 and A2, respectively.

Table 2. Transcriptions of Verbs with the *-ed* Morpheme by the Three Groups of Participants

SPEAKER	Verbs transcribed correctly			Verbs transcribed correctly, but without -ED			Verbs transcribed incorrectly			Blank space		
	NS	BR	NN	NS	BR	NN	NS	BR	NN	NS	BR	NN
SEEMED – AS*	70%	20%	10%	30%	80%	60%	0	0	0	0	0	30%
CALLED – BS**	30%	30%	40%	0	0	0	30%	10%	10%	40%	60%	50%
CHANGED – C1	80%	90%	100%	20%	10%	0	0	0	0	0	0	0
BEGGED – B2	80%	90%	60%	10%	0	0	0	0	0	10%	0	40%
TIRED – B2	100%	90%	80%	0	0	0	0	10%	0	0	0	20%
LOVED – B1	100%	90%	90%	0	10%	10%	0	0	0	0	0	0
CONCERNED – B1	30%	50%	30%	0	0	0	40%	10%	0	30%	40%	70%
CALLED – A2	100%	90%	90%	0	10%	0	0	0	10%	0	0	0
WANTED – A2	50%	70%	40%	40%	30%	50%	10%	0	0	0	0	10%
TOUCHED – A1	70%	90%	40%	0	0	0	20%	10%	40%	10%	0	20%

Note: * American speaker; ** British speaker

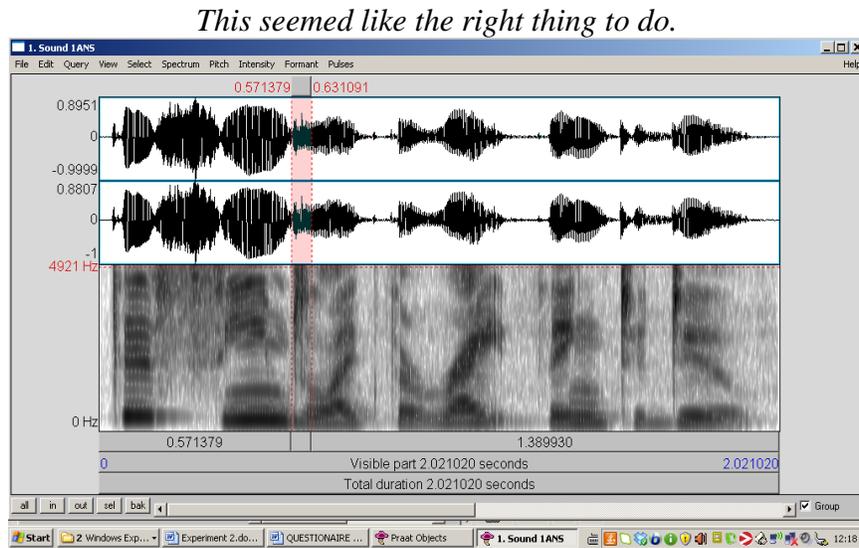
NS – native speakers of English; BR – Brazilian Portuguese speakers; NN – non-native speakers of English, other than Brazilians

The worst results, presented on Table 2, are for the verb *called*, produced by the British native speaker (BS), and the verb *concerned*,

produced by a level B1 Brazilian speaker. Another verb that had a poor result by the three groups was *wanted* – 50% by the native participants, 70% by the Brazilian participants, and 40% by the non-native participants. The verbs *called* (by the BS) and *concerned*, when not correctly transcribed, were changed for another word (*concerned* for *closer*, *confident* [3 times] for *quality*, and *called* for *crawled* [2 times]), while the verb *wanted* was mostly transcribed without the *ed-* morpheme. The verb *touched* was also changed for other words by participants of the three groups of listeners (for *tortured* [5 times], *told* and *tore*). The verb pronounced by the American native speaker (*seemed*) was transcribed without the *-ed* morpheme by 57% of all participants. Even 30% of native speakers transcribed it as a present tense.

Discussion

Some interesting results can be highlighted from the task. Let us begin with the first sentence produced by the American Speaker.

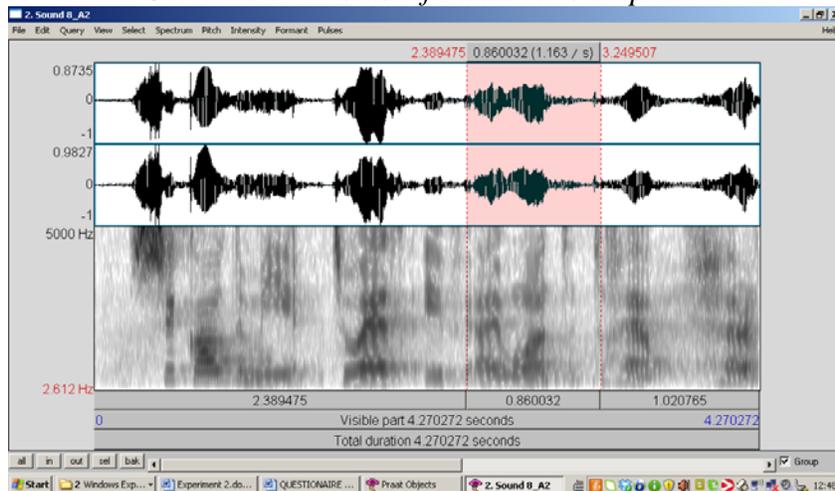


Although it is clear on the spectrogram that the alveolar plosive /d/ was produced by the speaker, it was not perceived by 30% of the native, 80% of the Brazilian, and 60% of the non-native listeners. That means that the morpheme, mainly in the /t/ and /d/ allomorphs, is not salient. That may be one of the reasons why Brazilians tend to pronounce the “e” of the morpheme. Jenkins (2000) is emphatic when she states that, in consonant cluster production, an addition is preferable to a deletion. Having that in mind we could agree with Jenkins (2000) that non-native fluent English

speakers are better understood in an international context of English use than are native speakers.

Another verb in which the *-ed* morpheme was not pronounced clearly (and this time it should be because it was in a verb containing the /id/ allomorph) was the verb *wanted*.

She called me to ask if I wanted to help her.



Though not saliently, the speaker produced a second [t] before the preposition *to*, as the spectrogram shows. The lack of the epenthetic vowel, which should be pronounced, led a good part of the listeners to write the word without the *-ed*, 40% of the native, 30% of the Brazilian, and 50% of the non-native listeners. It is interesting to note that the best result in this verb was performed by the Brazilians.

As mentioned above, the best results of the transcription occurred with the verbs *called* and *loved*, pronounced by Brazilians at level B1 and A2. Even at a low level of proficiency, there was a very good level of intelligibility. We could infer that the epenthetic vowel does not cause many problems of intelligibility as the general result was 76.2% of correct transcription and 8.7% of transcription of the correct verb, without the *-ed* morpheme by the native listeners, 82.5% and 7.5%, respectively, by the Brazilians, and 66.2% and 7.5%, by the non-native listeners. It is important to remember that 20% of the native listeners and 50% of the non-native listeners said they were not familiar with Brazilians speaking English. According to an exemplar model, experience will determine perception, categorization and storage (Bybee, 2001). Bybee cites Johnson (1997), who “argues for an exemplar model of speech perception to account for the fact that hearers not only correctly identify words or utterances produced by different speakers (whose acoustic properties vary considerably), but also

correctly identify the voice of different speakers they have heard before. In an exemplar model all perceived tokens are categorized and stored, creating categories that directly represent the variation encountered," (p.51).

It is also worth commenting on the verbs that had the worst results: *concerned* and *touched*. We could infer that the reason could be the lower lexical frequency of the two verbs when compared to *loved* and *called*, the verbs with best results. However, there are two aspects involved in the transcriptions of those verbs that deserve some discussion, two aspects that are not related to the production of the *-ed* morpheme but rather to Jenkins' LFC. The verb *concerned* was pronounced with a mistake on the stressed syllable: ['kɒnsɜːnɛd]. That fact resulted in miscomprehension by 40% of the native listeners, who transcribed it as *closer* by one listener and *confident* by three listeners, while one of the Brazilians transcribed it as *quality*. 70% of the non-native listeners left a blank space for the verb *concerned*. According to Jenkins (2000), word stress is important for L1 English receivers, but not crucial to the intelligibility of individual words in ILT (International Language Teaching) "as the rules are so complex as to be unteachable,"(p.150). The author recommends though that learners should be provided with a number of general guidelines. It is clear in our data that for some of the native listeners the stress on the wrong syllable caused a communication breakdown, but for the non-native it is not possible to say if the problem was really the stress which caused the unintelligibility of the word.

As for the verb *touched* another item of Jenkins' LFC could be the reason for unintelligibility: vowel sound. Brazilians tend to pronounce the word *touch* as [tɒtʃ] or [tɒʊtʃ]. It is clear that the changing in the vowel resulted in unintelligibility as two of the native and three of the non-native listeners transcribed the verb as *tortured*. Two other incorrect transcriptions were *tore* (by a non-native) and *told* (by a Brazilian). The other 90% of Brazilians on the other hand transcribed it correctly given that the verb, pronounced as it was, is frequent for them. The fact that both native and non-native listeners had problems with the misproduction of the vowel confirms that item of LFC, as Jenkins (2000) states that L2 regional qualities of vowel sounds are permissible if consistent.

EXPERIMENT 2: WORD STRESS

This experiment presented a similar task to that of Experiment 1. However, the focus was on word stress. The participants were also

divided in three groups of listeners: (1) native speakers of English; (2) Brazilian speakers of English; (3) non-native speakers of English other than Brazilians.

The Speakers

Eight sentences were recorded by Brazilian speakers of English whose level was considered to be Intermediate (about 400 hours of instruction in English in their undergraduate course – Language and Arts). Two sentences were recorded by an American native speaker to serve as a control to the experiment.

The Task

Similarly to Experiment 1, the participants listened to ten sentences (Table 3) played twice and had to transcribe each sentence orthographically. All sentences contained a suffixed word in the middle of the sentence in which stress was on the fourth to last syllable. The Brazilian speakers had assigned the stress to one of the three last syllables and the American speaker had assigned correct stresses.

Table 3. Sentences of Experiment 2

SPEAKER	SENTENCE
American	I would categorize this as a work of art.
B1	I have a calculator in my pocket.
B2	It's a really satisfying job.
B3	The architecture of the town is very modern.
B4	A modifier gives extra information about a word.
B5	There is only one elevator in my building.
B6	The mind has great generative capacity.
B7	He was arrested and subsequently freed.
B8	Bright colors characterize his paintings.
American	Food is marginally more expensive.

The Participants

The participants formed three groups.

English native speakers (NS). The group of native speakers was composed of seven participants: six North Americans and one Belgian

who stated his native language was English. The participants were living in Brazil when the test was conducted.

Brazilian speakers (BR). The group of Brazilian speakers was composed of 12 students who had at least an Intermediate level in the language and were taking a class on English Phonology. The data was collected during their classes with all students together. All participants said their native language was Portuguese and their ages ranged from 21 to 29 years old.

Non-native speakers other than Brazilians (NN). The group of non-native speakers of English was composed of seven participants: three French, one Dane, one Korean, one Dutch and one Haitian. Most of them had been living in Brazil for some time before the test and were taking a Portuguese course for speakers of other languages. The Haitian, however, was not living in Brazil.

Results

The results of Experiment 2 are presented in Table 4. It can be seen that native speakers were most able to correctly transcribe the recorded sentences, followed by the non-native speakers other than Brazilians and then the Brazilians themselves. We can also see, however, that the Brazilians were the ones who struggled most with the first and last words, those produced by an American speaker.

Table 4. Results of Experiment 2

WORD	Words transcribed correctly			
	NS	BR	NN	AVERAGE
CATEGORIZE	100%	33%	43%	59%
CALCULATOR	100%	100%	100%	100%
SATISFYING	72%	25%	43%	47%
ARCHITECTURE	29%	92%	43%	55%
MODIFIER	72%	50%	43%	55%
ELEVATOR	100%	83%	100%	94%
GENERATIVE	86%	67%	86%	80%
SUBSEQUENTLY	72%	67%	72%	70%
CHARACTERIZE	100%	67%	100%	89%
MARGINALLY	86%	17%	43%	49%

Considering specifically the intelligibility of individual words, the most intelligible words for native speakers were *categorize* (produced by another native speaker), *calculator*, *elevator* and *characterize*. For Brazilians, the only word which was 100% intelligible is *calculator* and for the NN group the totally intelligible words are *calculator*, *elevator* and *characterize*. Moreover, looking at the “Average” column, it can be noticed that these were the most intelligible for the participants in general. As for the words with the worst results, the least intelligible word for the NS group was *architecture*, with only 29% of correct transcriptions. For the BS group, it was the word *satisfying* and for the NN group, five words had 43% of correct transcriptions: *satisfying*, *architecture* and *modifier* and the two words produced by a native speaker (*categorize* and *marginally*). In general, the least intelligible words were *satisfying*, *marginally*, *modifier* and *architecture*. A possible explanation for the contrast between the most and least intelligible words is token frequency, as the speakers may be more exposed to the words which they were able to transcribe correctly. Also, type frequency may play a role here, as the most intelligible words were the ones with the suffixes *-ate* and *-ize*. The only exception is the word *categorize*, but it was pronounced by a native speaker.

Discussion

As shown in Table 4, in this experiment Brazilian's speakers were most intelligible to native speakers, followed by non-native and other Brazilians. Analyzing only the words produced by native speakers, the result is the same: again, the group with the highest intelligibility rate is the native speakers and displaying the lowest are the Brazilians. The fact that Brazilians also had the greatest problems understanding the native speakers may imply that this group of participants may have had difficulties in general and not only with stress (despite being a group of future English teachers taking a Phonology course).

The words which were not intelligible were often changed for other words. Some participants of the NS group changed the word *satisfying* for the expressions *set fine* / *sits fine*; *architecture* for *texture*, *catcher* for *caricature* and *modifier* for the phrases *I'm going to fire* / *I want to fire*. The BS group had more problems with the words *satisfying*, substituted three times for *find* and twice for *fine* and *marginally*, substituted once for *largely* and once for the name *Marjorie*. The NN group had some problems with the words *satisfying* and *architecture*, which in some cases were changed for *fine* / *six times* and *structure* / *texture*, respectively.

According to Jenkins (2000), word stress does not affect intelligibility for non-native speakers. The data of this research is limited. However, some answers appear to indicate that an incorrect word stress assignment may indeed lead to a lack of intelligibility given that the listener may try to adapt the entire sentence so that it makes sense with the word he/she understood. The sentence *It's a really satisfying job*, for example, was once transcribed as *It finally found a fine job*. The sentence *The architecture of the town is very modern* was transcribed by a NN participant as *The structure of the tone is very modern*.

The same happened when the native speakers were the listeners. This data corroborates Kenworthy (1987)'s statement that an incorrect word stress can affect native speakers' intelligibility. The sentence *The architecture of the town is very modern* was transcribed by a native speaker as *The texture of their tongue is very modern*. The participant even wrote some question marks at the end of the sentence showing that he was probably unable to understand the meaning of the sentence given that when he changed the word *architecture* for *texture*, he also changed *town* to *tongue*, rendering the word *modern* nonsensical. Another example occurred in the sentence *A modifier gives extra information about a word*. One participant transcribed it as *I want to fire and give extra information about a word*.

FINAL REMARKS

The *-ed* morpheme is not salient even when produced and perceived by native speakers. It seems that the context of past tense is important for intelligibility. Jenkins' proposition of addition better than deletion may be an interesting explanation for intelligibility of Brazilian epenthesis production in regular past tense verbs.

Frequency must play a role in intelligibility, in both token and type frequency, not only related to phonetic and morphological contexts but also the pertinent social and pragmatic factors. Higher frequency words are more intelligible even when produced with an epenthetic vowel. Regarding stress, the most problematic words for Brazilians were those with little token frequency (e.g. *marginally*, *modifier*) and the words pronounced by the native speaker, which may show the influence of type frequency. A stress pattern unfamiliar to Brazilians would affect their understanding.

According to this study, Brazilians' incorrect stress assignment may lead to intelligibility problems in the following order: Brazilians > non-

native speakers > native speakers. This result seems to contradict Jenkin's claim that word stress does not cause intelligibility problems for non-native speakers. Nevertheless, the data of this study is limited and must be considered carefully. More studies concerning the intelligibility of word stress for native and non-native speakers should be conducted and could further the analysis of this somewhat contradictory finding.

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