

VOWEL INSERTION IN THE SPEECH OF BRAZILIAN LEARNERS OF ENGLISH: A SOURCE OF UNINTELLIGIBILITY?

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Abstract

This article is an attempt to answer the following question: Is vowel insertion in the speech of Brazilian learners of English likely to be a source of unintelligibility? Insights to answer this question are provided on the basis of an analysis of empirical data derived from three studies which investigated the pronunciation intelligibility of Brazilian learners' English to three different groups of listeners. Samples containing words with vowel insertion, produced by Brazilian learners of English, were presented to three different groups of listeners who have the following three characteristics: (1) British listeners living in Birmingham, England, unfamiliar with the way Brazilians pronounce English words (1st study); (2) British and American listeners living in Brazil, familiar with the way Brazilians pronounce English words (2nd study); and (3) a second group of American and British listeners, also familiar with the Brazilian way of pronouncing English words (3rd study). The listeners were asked to listen to the samples once, and to carry out tasks. In one of the tasks, they were required to write down what they had heard. The analysis focused on the

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listeners' orthographic transcriptions of the samples. On the basis of the results obtained, I argue that the category vowel insertion in itself is insufficient and too broad to provide an answer to such a question. Instead, I suggest that it is necessary to specify the type of vowel inserted, as well as the strength with which it is produced, when vowel insertion is considered in Brazilian learners' pronunciation intelligibility.

Keywords: vowel insertion, intelligibility, Brazilian learners.

1. Introduction

Consonants in Portuguese do not usually occur in word-final position. Owing to this, an extra vowel is likely to be inserted by Brazilian learners and speakers of English (Macherpe, 1970; Lieff and Nunes, 1993; Baptista, 2001). This extra vowel is generally [i] (Mascherpe, 1970; Baptista, 2001). This [i] is added in word-final position after the voiceless and voiced plosives and the fricatives /f/, /v/, /ʃ/ and /ʒ/. The word *book* tends to be pronounced as [buki] (Mascherpe, 1970, p. 72). Brazilian Portuguese learners who pronounce the two affricates /tʃ/ and /dʒ/ instead of the plosives /t/ and /d/ before /i/ and /ɪ/ do so also in word-final position, where they tend to add the vowel [i]. Thus, *cat* is likely to be pronounced as [kætʃi] (Mascherpe, 1970, p. 72). Vowel insertion also occurs with the nasal consonants, especially when they are followed by a silent -e grapheme (e.g., *same*). See Silveira (2004) and Kluge (2004).

Vowel insertion in the positions mentioned above characterises a prototypically Brazilian accent. This motivated me to question whether this feature in the speech of Brazilian learners of English would affect the intelligibility of their speech to different groups of listeners. Thus, this study is an attempt to answer the following question: Is vowel insertion in the speech of Brazilian learners of English likely to be a source of unintelligibility? As an attempt to provide insights to answer this question, I present an analysis of part of the empirical data derived from three studies which investigated the pronunciation intelligibility in spontaneous speech of Brazilian learners' English. The objective of the three studies was to find the

extent to which features of mispronunciation in the speech of Brazilian learners of English would affect their intelligibility to three different groups of listeners. The three groups of listeners who participated in the studies have the following three characteristics: (1) British listeners living in Birmingham, England, unfamiliar with the way Brazilians pronounce English words (1st study); (2) British and American listeners living in Brazil, familiar with the way Brazilians pronounce English words (2nd study); and (3) a second group of American and British listeners, also familiar with the Brazilian way of pronouncing English words (3rd study)¹. The method followed in the three studies is presented in the next section.

2. Method

2.1 Participants and data collection

In the first study, ten Brazilian learners of English, with varying English proficiency levels, enrolled in the extracurricular courses at UFSC² (Federal University of Santa Catarina), were interviewed by an Englishman. Thirty samples containing features of mispronunciation were selected from the learner data, and presented to 25 British listeners living in Birmingham, England³. The listeners, as previously mentioned, were unfamiliar with the way Brazilians pronounce English words. In the second study, the thirty samples produced by the same Brazilian learners of English were presented to 12 listeners, 8 Americans and 4 British, living in Brazil, Paraíba, specifically in Campina Grande and in João Pessoa, familiar with the way Brazilians pronounce English words. In the third study, five undergraduate students majoring in English, at a university in the northeast of Brazil, were asked to talk spontaneously about two out of four topics. Eleven samples containing features of mispronunciation were selected from the undergraduate learners' data and presented to 8 native listeners, 7 Americans and 1 British, living in Brazil, Paraíba, specifically in Campina Grande and in João Pessoa, familiar with the Brazilian way of pronouncing English words. Overall, 45 listeners took part in the studies.

Among the unfamiliar listeners, who took part in the first study and also completed a questionnaire, none of them included Brazilians among the speakers of English as a Foreign Language (EFL) they had had contact with. Listeners who had had contact with speakers of European Portuguese were also excluded. Twenty-four listeners had had contact mainly with Asian and European speakers of English. One listener reported having had no contact at all with speakers of EFL. Unlike the unfamiliar listeners, the familiar ones, taking part in the second and third study, reported having had contact with Brazilian speakers of English in Brazil. Their time of residence in Brazil varied from four months to one year.

Although the groups of participating listeners differed in their familiarity with the way Brazilians pronounce English words, they shared two similar characteristics: (1) none of them were involved in linguistic studies; and (2) their professions were not linked to linguistics. The unfamiliar listeners' occupations varied. Seven of them were students, undergraduate and graduate, of courses other than linguistics. Fifteen had professions which were not linked to linguistics. The occupations included the following: one accountant, one consultant engineer, one solicitor, two dentists, one research scientist, one university administrator, one pub manager. One of them was retired, one was a housewife, and one was a mother. Their ages ranged from twenty to sixty-five. The familiar listeners' occupation also varied. Twelve of them were students: five undergraduate exchange students at a university in Paraiba, six exchange students with Rotary International, and one undergraduate student of neuroscience at a university in the United States, who was spending some time in Brazil. The remaining eight were missionaries. Their ages ranged from nineteen to twenty-eight.

Out of the 30 samples selected for the first and second studies, 5 contained words with vowel insertion (see Appendix): sample 1 contained 2 words, and the remaining 4 samples contained 1 word each. Out of the 11 samples selected for the third study, 1 only, sample 6,

contained 2 words with vowel insertion (see Appendix). Overall, 8 words containing vowel insertion occurred in the learner data collected for the three studies: 6 words for the first and second studies, and 2 for the third study. The listeners heard the samples once and were asked to carry out tasks. In one of the tasks, they were required to write down what they had heard. After the tasks, the listeners were asked to explain, if possible, how they had been able to recognise the words they had written down. This question was asked as an attempt to find the probable factors which might have influenced their transcriptions. The analysis and discussion here focus on the listeners' orthographic transcriptions of the 8 words containing vowel insertion, produced in the 6 samples. Factors related to the listeners' comments are presented in the analysis.

Considering that 25 listeners took part in the first study, and 6 words containing vowel insertion are included in the study, a total of 150 transcriptions of the target words were provided by the listeners. In the second study, 12 listeners provided 72 transcriptions of the 6 target words containing vowel insertion. In the third, 8 listeners provided 16 transcriptions of the 2 target words. Therefore, 238 transcriptions of the 8 words containing vowel insertion are analysed here.

2.2 Occurrences of vowel insertion in the three studies

Three kinds of vowels are inserted in the 8 words occurring in the learner data of the three studies. One of them is the vowel [i], referred to here as the full [i] vowel, produced after the velar plosive /k/ in [tɔuki], the labial-dental fricative /v/ in [kspɛsivi], the alveolar plosive [d] in [ʔidi] and the alveolar plosive /t/ in [ʔifti]. The other vowel is [i], referred to here as the reduced [i] vowel, added after the velar plosive [k] in [ʔwɔuki], and the alveolar plosive /t/ in [bɛstʔ]. The third vowel is [ə], added in word-final position after the alveolar plosives /t/ in [ʔɣeitə], and /d/ in [fudə]. Thus, considering the occurrences of vowel insertion in the learner data, the vowels inserted can be organised into three categories, as shown in Table 1:

Table 1

Types of vowels inserted

Full [i] vowel	Reduced [ɪ] vowel	[ə] vowel
[ˈtɔuki] [ɛkˈspɛsivi] [ˈɪidi] [ˈgifti]	[ˈwɔukɪ] [ˈbestɪ]	[ˈgɔɪtə] [ˈfudə]

As can be seen, the inserted full [i] vowel has the highest frequency of occurrence, added in 4 words, followed by the [ə] vowel and the reduced [ɪ] vowel, occurring in 2 words each.

2.2 Concept of intelligibility

Various definitions of intelligibility have been proposed for some decades by different scholars. Owing to such an existing diversity of definitions, it is important to define what the term intelligibility encompasses here. I follow the definition proposed by Smith and Nelson (1985): intelligibility is “word/utterance recognition” (p. 334). The choice of this concept is justified by the type of data collection adopted in the three studies: the samples presented to the listeners are isolated from the situational context in which they were originally produced. Thus, factors related to discourse and pragmatics were not included.

2.3 Variables involved in intelligibility measurement

Variables related to both learners and listeners are involved in the measurement of intelligibility. One listener variable is relevant here: listener familiarity with a particular foreign accent. In studies carried out by Gass and Varonis (1984), Smith and Bisazza (1982), and Derwing and Munro (1997), listener familiarity with a particular foreign accent was reported as having facilitated listeners' comprehension of non-native speech. Out of the three groups of listeners who took part in the three studies which provide empirical

data to answer the question posed in this article, one group, included in the first study, was unfamiliar with the way Brazilians pronounce English words. The listeners who participated in the second and third studies lived in Brazil, and reported having familiarity with the prototypically Brazilian accent. Further discussion on the effect of listener familiarity on the comprehension of words containing vowel insertion is shown in the analysis.

3 Results

3.1 Listeners' recognition of words containing vowel insertion

The listeners' orthographic transcriptions of the 8 words containing vowel insertion were divided into two categories: (1) correct; and (2) incorrect. The first includes transcriptions in which the target word was written correctly. The second focuses on transcriptions in which the target word was either written differently from the learners' intended word, or the space for such a word was left blank. The groups of listeners were also divided into two categories: (1) unfamiliar listeners, which comprised a total of 25 listeners, participating in the first study; and (2) familiar listeners, comprising 20 listeners: 12 who took part in the second study, and 8 who participated in the third study. The words containing vowel insertion are presented and discussed here considering the type of vowel inserted (see Table 1), the category they belong to, as being either correct or incorrect, and the group of listeners who recognised them, either unfamiliar or familiar. Comments regarding the words written differently from the learners' intended words are made.

3.2 The inserted full [i] vowel

Table 2 summarizes the results of the listeners' transcriptions of the words containing the inserted full [i] vowel:

Table 2

Listeners' transcriptions of words containing the inserted full [i] vowel

Words with the inserted full [i] vowel	Talk		Expensive		Read		Gift		Total number
	corr ^d	incorr	corr	incorr	corr	incorr	corr	incorr	
Categories									
unfamiliar listeners (1 st study)	5 20%	20 80%	16 64%	9 36%	18 72%	7 28%			75 = 63%
familiar listeners (2 nd study)	5 42%	7 58%	9 75%	3 25%	5 42%	7 58%			36 = 30%
familiar listeners (3 rd study)							5 63%	3 37%	8 = 7%
Total	10	27	25	12	23	14	5	3	119

As can be seen, out of the total number of transcriptions provided by the listeners in the three studies, which is 238 (see method), 119, equivalent to 50%, comprise words containing the inserted full [i] vowel. A higher number of incorrect transcriptions was found for the word *talk* in the two groups of listeners: out of the 25 unfamiliar listeners, 20, equivalent to 80%, wrote it incorrectly, and out of the 12 familiar listeners, 7, equal to 58%, wrote it incorrectly. Unlike *talk*, the word *expensive* was written correctly by the majority of listeners in the two groups: a total of 25 correct transcriptions, 16 by the unfamiliar listeners and 9 by the familiar ones. The word *gift* was also written correctly by the majority of listeners, 5, equivalent to 63%. The percentage of correct transcriptions for the word *read*, however, was different in the two groups: whereas 72% of the unfamiliar listeners understood it correctly, 42% of the familiar listeners wrote it correctly.

Talk [ˈtɔuki] was produced in sample 1 “You talk about food all day” as [juˈtɔukiəˈbautˈfudəɔudei], and was included in the first and second studies. Out of the 25 unfamiliar listeners taking part in the first study, 5 wrote it correctly, and the remaining 20 incorrectly – 8 wrote it differently from the learners’ intended word, and 12 left the space blank. As sample 1 contained words other than *talk* which also contained features of mispronunciation, there were instances of transcriptions which were either too dissimilar or contained words which sounded completely different from the learners’ intended words. It was impossible to interpret the feature of mispronunciation the listeners might have picked up to write the transcription. A few do not make any sense: “you vodka waltz all day”, “you pick him up from work”. Some listeners stated that they wrote what they had heard. As none of them made fun of the learners’ speech or frowned, these transcriptions are likely to indicate that they really had difficulty in understanding the learners’ words. Instances of transcriptions in which the space was left blank include “you ...food”, “you about food all day”.

Out of the 12 familiar listeners taking part in the second study, 5 wrote it correctly, and 7 incorrectly – 3 wrote it differently from the learners’ intended words, and the remaining 4 left the space blank. Instances of transcriptions include “Do you ...”, “you all heard about ...”, “you want here want food all day”.

The word *expensive* [ɛkˈspɛsivɪ] was pronounced in sample 2, “I think it’s expensive” as [aifɪ kɛkˈspɛsivɪ], and, as with *talk* [ˈtɔuki], was included in the first and second studies. Out of the 25 unfamiliar listeners, 16 wrote it correctly, and the remaining 9 incorrectly: 5 wrote it differently, and 4 left the space blank. Three words and 2 sequences of words were written instead of *expensive*, each by 1 listener, such as *painfully*, *explain to him*, *explain to me*, *expenses* and *sometime*. Except for *sometime*, the remaining 4 are likely to have been written to replace *expensive*. Although 2 features of mispronunciation are found in *expensive* - nasalization of [ɛ] and omission of the nasal /n/, and insertion of [i] after the voiced labio-dental fricative - it is possible that the listeners might have picked up the inserted vowel as a phonetic

clue to write *painfully*, *explain to him*, and *explain to me*. The reason might have been the presence of the vowel [i] in the final syllable of *painfully* and *me*, and also in *him*. As to *expenses*, the listener might have associated this word with the first syllable of *expensive* pronounced as [ɛks], and which contains one feature of mispronunciation [ɛ] instead of /ɪ/. Possibly, owing to the listener's difficulties in recognising the final syllables of *expensive*, and because of the occurrence of vowel insertion, the word guessed was *expenses*. Since the pronunciation of *sometime* does not approximate to any of the words produced in Sample 2, it is impossible to deduce which of the learners' intended words it replaces.

Out of the 12 familiar listeners, 9 wrote *expensive* correctly, and the remaining 3 left the space blank. One of the listeners who wrote it correctly, listener 5, made the following comment⁵:

I know how they say ... I know what they say, because they say speak [spi:ki] and things like that. I know... when they say good [ˈgʊdi], so I know that that's good [gʊd]

This confirms results of studies carried out by Gass and Varonis (1984), Smith and Bisazza (1982) and Derwing and Munro (1997), previously mentioned, which provide evidence that listener familiarity with a particular foreign accent is one variable facilitating listeners' comprehension of non-native speech.

The word *read* [ˈri:di] in "eh we don't have time to read" [ɛwidʒũthævɛɪtɪmtuˈri:di] was pronounced in sample 4, and occurred, as with *talk* and *expensive*, in the first and second studies. Out of the 25 unfamiliar listeners, 18 wrote it correctly and 7 wrote it differently from the learners' intended word. The 7 listeners wrote "read the". All of them confirmed the pronunciation of the article as [ði]. There is, thus, clear evidence that the vowel [i] added after the alveolar plosive was picked up, and the 7 listeners wrote an extra word ending with this vowel. The transcription written by the 7 listeners was similar: "we don't have time to read the".

One of the listeners, listener 8, who wrote “we don’t have time to read the”, when told that the learner had produced *read* [ˈɛri:udi], expressed surprise, and stated:

read [ˈri:di]? I I heard read [ri:d], not read [ˈri:di]. Did did she say read [ˈri:di]?

This comment confirms not only his transcription “read the”, the inserted full [i] vowel being heard as an additional word, but also his naivety in relation to the Brazilian way of pronouncing English words. A comparison can be made between this unfamiliar listener’s comment and the one previously mentioned made by one of the familiar listeners, listener 9, who stated that he knows what Brazilian speakers mean when they produce [ˈspi:ki] and [ˈgodi]. The two comments illustrate the difference related to the familiarity with the prototypically Brazilian accent that listeners who took part in the first and second study have.

Out of the 12 familiar listeners, 5 wrote *read* correctly, and 7, as with the unfamiliar listeners, added the article *the*, showing that the vowel [i] added after the alveolar plosive was also picked up. The transcription written by the 7 listeners was similar to the one written by the 7 unfamiliar listeners: “we don’t have time to read the”.

The word *gift* [ˈgifti], pronounced in sample 6, occurred in the third study. Out of the 8 familiar listeners, 5 wrote it correctly and 3 incorrectly: 1 wrote it differently from the learners’ intended word, and 2 left the space blank. The transcription which includes the word written differently was “I know that it was the best beauty”. A phonetic clue which might have influenced this listeners’ perception of the word *beauty* instead of *gift* is the final syllable [ti], resulting from the insertion of the full [i] vowel.

3.3 The inserted reduced [ɪ] vowel

Table 3 summarises the results of the transcriptions involving words with the inserted reduced [ɪ] vowel. As can be seen, out of the 238 transcriptions provided by the listeners in the three studies, 45,

equivalent to 19%, comprise words containing the inserted reduced [ɪ] vowel. Although unfamiliar with the way words in English are pronounced by Brazilian learners, nearly all of the unfamiliar listeners, 22, equivalent to 88%, understood *walk* correctly, and all of the familiar listeners wrote it correctly. The word *best* was also written correctly by all of the listeners participating in the third study.

Walk [ˈwɔ:kɪ], in “in the evenings I I walk” [ɪdiˈivəniŋzaia iˈwɔ:kɪ], is pronounced in sample 3, occurs in the first and second studies, and contained three features of mispronunciation: (1) spelling pronunciation, < l > pronounced as [u] ⁶; (2) the vowel /ɔ:/ pronounced as [ɔ]; and (3) insertion of the reduced [ɪ] vowel. Out of the 25 unfamiliar listeners, only 3 wrote it incorrectly, that is, differently from the learners’ intended words: two listeners wrote *work*, and 1 *woke* instead of *walk*. The sound [ɔu], thus, was heard as [ɜ:] by those who wrote *work*, and as [ɔu] by the one who wrote *woke*. The particular listener who wrote *woke* might have picked up the [u] sound produced for < l >. Although the reduced [ɪ] vowel was inserted, there is no evidence of its interference.

Table 3

Listeners’ transcriptions of words containing the inserted reduced [ɪ] vowel

Words with inserted reduced [ɪ] vowel	Walk		Best		Total number
	correct	incorrect	correct	incorrect	
Categories					
unfamiliar listeners (1 st study)	22 88%	3 12%			25=55%
familiar listeners (2 nd study)	12 100%	0			12 = 27%
familiar listeners(3 rd study)			8 100%	0	8 = 18%
Total	34	3	8	0	45

All of the familiar listeners taking part in the second study understood *walk* correctly. In addition to having written *walk* correctly, one of the listeners, listener 7, perceived the reduced vowel, and provided the following comment:

that's one thing that's really hard to understand ... they say ['wɔ:kɪ], they put the i at the end ... erm English is really ... erm a stopped language, ... so ... erm for example, in English if I want to ask someone to repeat the words did [dɪd] ...you... understand, they will repeat that perfectly. did [dɪd]... you ...understand, ...so that we can understand, when we stop, we only say did [dɪd]...did[dɪd] you understand, so you don't only ... you stop, but you don't pronounce the i ... at the end of the words ...and so that helps in the fluency. when when they say ['wɔ:kɪ] it will be difficult to say the the next words. when they say [wɔ:k], it's more fluent

Two aspects of this listener's comment are relevant. The first is the way she describes the English language as being a stopped language, since it does not allow the insertion of the [i] vowel at the end of words. In my own interpretation, this listener describes English as a "stopped language" in the sense that speakers of English need to stop for some seconds the flow of their speech when pronouncing a consonant in word-final position, so as not to allow the insertion of an [i] vowel. In the example she mentions, the alveolar plosive [d] in the words *did* and *understand* does not allow the production of an [i] vowel after it. The speakers' stoppage after producing such a consonant avoids the production of the vowel. This listener is, in fact, struggling to describe the notion of (C)VC syllables, and lacks the words to do so.

The second aspect refers to the relationship she makes, between the absence of the [i] vowel at the end of words and the improvement in the speaker's fluency. This comment is in line with Baptista's (2001) statement that "when Brazilian learners add an extra [i] to the end of

English words, it interferes with the natural rhythm of English, making their speech difficult to understand" (p. 226).

The word *best* ['bɛst̩], in "eh I know that it was the best gift" [ɛainoudɛtɪtwɔzdeɪ'bɛst̩'gɪfti], is pronounced in sample 6, occurs in the third study, and was understood correctly by all of the 8 listeners. The insertion of the reduced [ɪ] vowel added after the alveolar plosive /t/ in *best* ['bɛst̩] does not seem to have caused problems to the 8 familiar listeners.

A relevant aspect to be pointed out here is that the words *best* ['bɛst̩], containing the reduced [ɪ] vowel, and *gift* ['gɪfti], which contains the full [i] vowel previously mentioned, are produced in the same sample, which is sample 6. Whereas *best* ['bɛst̩], was understood correctly by all of the 8 listeners who took part in the third study, *gift* ['gɪfti], was misunderstood by 3 listeners. This may illustrate the difference in intelligibility of words containing the reduced [ɪ] vowel and the full [i] vowel.

3.4 The inserted [ə] vowel

Table 4 summarises the results of the transcriptions involving words with the inserted [ə] vowel. As can be seen, out of the 238 transcriptions, 74, equivalent to 31%, comprised words containing the inserted [ə] vowel. The majority of listeners in the two groups misunderstood *food*, with nearly similar rates of misunderstanding, 76% of the unfamiliar listeners, and 75% of the familiar listeners. The word *great* was understood differently in the two groups: while the majority of the familiar listeners understood *great* incorrectly, equal to 83%, the unfamiliar listeners obtained a rate of correct comprehension higher than 50%.

The words *food* ['fuːd̩ə] and *great* ['grɛɪt̩ə] were heard by the 25 unfamiliar listeners in the first study, and by the 12 familiar listeners in the second study.

Food ['fuːd̩ə] was produced in sample 1 "you talk about food all day". Nineteen unfamiliar listeners misunderstood it: 8 wrote it differently from the learners' intended word, and 12 left the space blank.

As sample 1 contained words other than *food* ['fuɔ̃dɔ] with features of mispronunciation, it was impossible to interpret the feature of mispronunciation the listeners might have picked up to write their transcriptions of sample 1. A few do not make any sense: "you book holiday", "you took him up all day".

Table 4

Listeners' transcriptions of words containing the inserted [ə] vowel

Words with the inserted [ə] vowel	Food		Great		Total
	Correct	incorrect	Correct	incorrect	
Categories					
unfamiliar listeners (1 st study)	6 24%	19 76%	14 56%	11 44%	50 = 68%
familiar listeners (2 nd study)	3 25%	9 75%	2 17%	10 83%	24 = 32%
Total	9	28	16	21	74

Nine familiar listeners misunderstood *food* ['fuɔ̃dɔ]: 2 wrote it differently, and 7 left the space blank. Instances of transcriptions include "you ...all day", "you talk about all day".

The word *great* ['gɾeitə] was produced in sample 5, "A great production of agriculture" [a'gɾeitəpɾɔ'duʃənɔva'gɾikɔtʃɐ]. Eleven unfamiliar listeners misunderstood it: 4 wrote it differently and the remaining 7 left the space blank. It was written as *greatest* by 3 listeners, and *grateful* by 1. The insertion of schwa in *great* is interpreted as having influenced the listeners' perception for two main reasons: (1) a syllable is added to *great*; and (2) this syllable contains schwa, just as *greatest* [gɾeitəst], and *grateful*, [gɾeitʰ] or [gɾeitʰʊ] (Roach, Hartman

& Setter, 2003). The transcriptions written were “our greatest pollution of rivers” and “I’m grateful to”.

Ten familiar listeners misunderstood *great* [gɹeɪtə]: 2 wrote it differently, and the remaining 8 left the space blank. One of the transcriptions is “rated the ...”. Here, as with the words *greatest* and *grateful* written by the 4 unfamiliar listeners, the insertion of schwa in *great* is interpreted as having influenced the listeners’ perception of *rated* (Roach, Hartman & Setter, 2003).

As shown in Tables 2, 3 and 4, different numbers of correct and incorrect transcriptions were found of words containing the three types of vowels inserted. Table 5 shows the total number of correct and incorrect transcriptions, considering the type of vowel inserted.

As can be seen, out of the 119 transcriptions comprising words with the inserted full [i] vowel, 63, equivalent to 53%, were correct, and 56, equal to 47%, were incorrect. There was, thus, a higher number, although not much higher, of correct transcriptions of words containing the inserted full [i] vowel. Out of the 45 transcriptions comprising words containing the inserted reduced [ɪ] vowel, 42, equivalent to 93%, were correct, and 3, corresponding to 7%, were incorrect. There was, thus, a much higher number of correct transcriptions of words containing the inserted reduced [ɪ] vowel. Out of the 74 transcriptions comprising words containing the inserted [ə] vowel, 49, equivalent to 66%, were incorrect, and 25, equal to 34%, were correct. There was, thus, a much higher number of incorrect transcriptions of words containing the inserted [ə] vowel.

Table 5

Number of correct and incorrect transcriptions of the three vowels inserted

Vowel inserted	No. of words transcribed correctly	No. of words transcribed incorrectly	Total number of transcriptions
full [i] vowel	63 = 53%	56 = 47%	119 = 50%

reduced [i] vowel	42 = 93%	3 = 7%	45 = 19%
[ə] vowel	25 = 34%	49 = 66 %	74 = 31%
Total	133 = 56%	105 = 44 %	238 = 100%

4. Final considerations

This article is an attempt to answer the following question: Is vowel insertion in the speech of Brazilian learners of English likely to be a source of unintelligibility? Although acknowledging that the data presented here is limited, it is now possible and appropriate to provide an answer to such a question.

Although, out of the 238 transcriptions of words containing vowel insertion, 133, equivalent to 56%, were written correctly, there were words written incorrectly: 105 transcriptions, equivalent to 44%. Considering this result, I can answer the question posed in this article, and argue that vowel insertion is likely to be a source of unintelligibility, as there are listeners, even listeners familiar with the way Brazilians pronounce English words, who are likely to misunderstand words containing vowel insertion produced by Brazilian learners of English. However, considering that three types of vowels are inserted and identified in the learner data of the three studies previously discussed, and the number of correct and incorrect transcriptions varied according to the type of vowel inserted, I argue that the category vowel insertion in itself is likely to be insufficient and too broad to provide an answer to the question. Instead, I suggest that it is necessary to specify the type of vowel inserted, as well as the strength with which it is produced. On the basis of the results obtained in the three studies, it is possible to interpret that words in which the [ə] vowel is inserted are more likely to be unintelligible than those containing the full [i] vowel and the reduced [i] vowel. The results obtained here allow me to suggest, considering the type of vowel inserted, an order of intelligibility for

vowel insertion, from the most to the least intelligible vowel inserted in word-final position: (1) the reduced [ɪ] vowel; (2) the full [i] vowel; and (3) the [ə] vowel.

As the data presented in this article is limited, it is suggested here that the order of intelligibility proposed could be further investigated in future studies involving the pronunciation intelligibility of vowel insertion in the speech of Brazilian learners' English.

Notes

1. The listeners were dissimilar from the ones who took part in the second study.
2. Extracurricular courses are open access language courses offered by UFSC. Each English level course lasts one semester, and includes three hours per week.
3. The opportunity to study in Birmingham, England, on a one-year Brazilian Government scholarship - CAPES - gave me the chance of collecting data with the British listeners.
4. 'corr' stands for 'correct; and 'incorr' stands for incorrect.
5. Notation for the orthographic transcriptions of the listeners' comments: a pause ... (three full stops); a stopping fall in tone . (one period); a continuing intonation, (one comma).
6. Spelling pronunciation refers to a pronunciation which is based on the spelling of a word without regard to its historical or traditional pronunciation.

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APPENDIX

Samples of the first and second studies

SAMPLE 1

You talk about food all day

[ju'tɔukiə'baʊt'fʊdəʊdeɪ]

SAMPLE 2

I think it's expensive

[aɪf ɪ ksek'spɛnsɪvɪ]

SAMPLE 3

In the evenings I I walk

[ɪdɪ'ɪvənɪŋzaɪaɪ'wɔʊkɪ]

SAMPLE 4

eh we don't have time to read

[ɛwɪdɔ̃ũthævʔaɪmtu'ɪdɪ]

SAMPLE 5

A great production of agriculture

[a'grɛɪtəpɹə'dʊʃənəvə'grɪkətʃə]

Sample of the third study

SAMPLE 6

eh I know that it was the best gift

[ɛaɪnəʊdɛɪtɹwɔzde'bestɪ'gɪftɪ]