

SANDHI FORMS IN BRAZILIAN PORTUGUESE/ENGLISH INTERPHONOLOGY – FOCUS ON LISTENING COMPREHENSION

FORMAS SANDHI NA INTERFONOLOGIA DO PORTUGUÊS DO BRASIL/INGLÊS – FOCO NA
COMPREENSÃO ORAL

SANDHI TONAL EN LA INTERFONOLOGÍA DEL PORTUGUÉS BRASILEÑO/INGLÉS –
ENFOQUE EN LA COMPRESIÓN AUDITIVA

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ABSTRACT: This study aimed at investigating listening comprehension of sandhi forms (assimilation, linking and contraction.) in Brazilian Portuguese/English Interphonology. Fifty-two Brazilian learners of English, aged 15 to 50 years old at a minimum B1 level of English proficiency, answered two listening tasks, one with and another without sandhi forms, and filled up a questionnaire about the frequency they watched movies in English, with and without subtitles, and listened to songs in English paying attention to their lyrics. The data collected were quantitatively and qualitatively analyzed. Results indicated that sandhi forms tend to cause listening comprehension difficulties for the Brazilian learners of English who participated in the study, especially when there were content words involved and the sandhi form had a minimal pair. Even though participants used to watch movies and series in English with subtitles, both in English and in Portuguese, a better performance was observed among those who consumed contents without them. **KEYWORDS:** Listening comprehension. Sandhi forms. Brazilian Portuguese/English Interphonology.

RESUMO: Este estudo teve como objetivo investigar a compreensão auditiva das formas sandhi (assimilação, ligação e contração) na Interfonologia do Português Brasileiro/Inglês. Cinquenta e dois alunos brasileiros de inglês, com idades entre 15 e 50 anos, e um

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nível mínimo de proficiência em inglês B1, responderam a duas tarefas de escuta, uma com e outra sem formas sandhi. Posteriormente, preencheram um questionário sobre a frequência com que assistiam filmes em inglês, com e sem legenda, e também sobre a frequência com que ouviam músicas em inglês, prestando atenção nas letras. Os dados coletados foram analisados quantitativa e qualitativamente. Os resultados indicaram que, nos alunos brasileiros de inglês que participaram do estudo, as formas sandhi causaram dificuldades de compreensão auditiva, especialmente quando envolviam palavras de conteúdo e a forma sandhi tinha um par mínimo. Embora os participantes assistissem a filmes e séries em inglês, com legendas tanto em inglês quanto em português, observou-se melhor desempenho entre aqueles que consumiam conteúdos sem legendas.

PALAVRAS-CHAVE: Compreensão auditiva. Formas Sandhi. Interfonologia Português Brasileiro/Inglês.

RESUMEN: Este estudio tuvo como objetivo investigar la comprensión auditiva de las formas sandhi (asimilación, enlace y contracción) en la Interfonología del Portugués Brasileño/Inglés. Cincuenta y dos estudiantes brasileños de inglés, con edades entre 15 y 50 años y, un nivel mínimo de competencia en inglés B1, respondieron a dos tareas de comprensión auditiva, una con formas sandhi y otra sin ésta. Luego, rellenaron un cuestionario sobre la frecuencia con la que veían películas en inglés, con y sin subtítulos, y también sobre la frecuencia con la que escuchaban canciones en inglés, poniendo atención a las letras. Los datos recopilados se analizaron tanto cuantitativa como cualitativamente. Los resultados indicaron que, en los estudiantes brasileños de inglés que participaron del estudio, las formas sandhi provocaron dificultades en la comprensión auditiva, especialmente cuando involucraron palabras de contenido, y la forma sandhi tenía un par mínimo. Aunque los participantes vieron películas y series en inglés, con subtítulos tanto en inglés como en portugués, se observó un mejor desempeño entre los que consumieron contenido sin subtítulos.

PALABRAS CLAVE: Comprensión auditiva. Formas Sandhi. (Inter-)Fonología Portugués Brasileño/Inglés.

1 INTRODUCTION

For over five decades already, Communicative Language Teaching approaches have increasingly put emphasis on oral language skills (GILBERT, 1987; ANDERSON; LYNCH, 1988; BROWN, 1990; NUNAN, 2002; HELGESEN, 2003; CELCE-MURCIA, 2014) because great part of English learners around the world aim at developing their speaking proficiency (RICHARDS; RENANDYA, 2002). Even though listening has been considered by some people just a means to achieve good speaking skills and not a skill itself (RICHARDS; ROGERS, 1995), we depend on listening skills alone most of the time – for instance, when attending a lecture, watching a movie or the news, listening to songs, or even following orders.

In second language learning, “listening is the Cinderella skill, all too often being overlooked by its elder sister – speaking” (NUNAN, 2002, p. 238); however, some researchers claim that listening comes first and is of great importance for speaking in that it provides input which is fundamental for learning (NUNAN, 2002). In the area of teaching English to learners who are nonnative English speakers, textbooks often do not represent a proper sample of the English which is actually spoken in the real-world. Natural speech is not written language spoken aloud (LAM, 2002), it is a process of many changes, (LADEFOGED; JOHNSON, 2015) in which phonological processes (such as reductions) may result in what we call sandhi forms (ERNESTUS; WARNER, 2011; KHAGHANINEZHAD; JAFARZADEH, 2014). Sandhi forms may hinder listening comprehension, especially when the listener is a nonnative English speaker (HENRICHSEN, 1984; YANG; CHANG, 2013; WONG et al., 2017). They are a type of phenomenon that may be present in speaking and not in writing since speaking and writing are different forms of language manifestation with unique characteristics and different relations within each linguistic system.

Sandhi forms (assimilation, linking, and contraction) are challenging for Brazilian learners of English. Even so, there is a small number of studies carried out towards investigating the interference of sandhi forms in Brazilian Portuguese (BP)/English (E) interphonology (for instance, listening: PERUCCI, 2005; production: WATKINS, 2001). Thus, this study aimed at verifying whether sandhi forms may hinder comprehensibility of English for Brazilians learners. In order to reach the goal, two research questions were proposed:

- (a) Do BP learners of English comprehend a spoken sentence containing sandhi forms in English?

(b) Do BP learners of English with greater amount/frequency of exposure to English through authentic movies and songs comprehend sandhi forms better than students with less exposure?

Our hypothesis is that sandhi forms may impose difficulties for comprehension and that the more learners are exposed to spoken English, the better their listening comprehension of sandhi forms will be.

2 SANDHI FORMS AND LISTENING COMPREHENSION IN ENGLISH

The goal of effective communication has remained challenging in the English language teaching context. Sandhi forms are examples of what needs to be addressed when aiming at understanding and being understood regarding spoken English. To guide this study, we revised the literature on (a) English as an international language; (b) sandhi forms; and (c) listening comprehension.

2.1 ENGLISH AS AN INTERNATIONAL LANGUAGE

The teaching of English has been referred to as: (1) English as a second language (ESL) or (2) English as a foreign language (EFL). However, globalization has come and has added another perspective in the world's relation with English. Some of the changes which affected the presence of English in our lives are (1) the fast communication of news, scientific breakthroughs, technological innovations which have not allowed time for translations before it reached the reader; (2) the movies and TV shows which have become more rapidly available without time for dubbing; (3) the online instant communication which has become so natural allowing people from different first languages to use English as the common language; and, (4) the transportation which has become cheaper and faster allowing people to study, work or just spend time abroad bringing together people who share only English as a common language (MCKAY, 2002; CELCE-MURCIA, 2014). This spread of English resulted in what we call English as an international language (EIL) (FIELD, 2002; CELCE-MURCIA, 2014). Understanding the English language in this new context is to recognize a new set of speakers for it; today only one out of four users of the English language is a native speaker (MCKAY, 2012).

The role of pronunciation in promoting intelligibility in communication among nonnative speakers has been recognized as an important feature of EIL (JENKINS, 2004). "Viewing pronunciation in terms of how it serves the listener highlights the role pronunciation plays in spoken interaction" (GOODWIN, 2014, p. 136). Since nonnative speakers of English interact in English, some researchers claim that the intelligibility goal has long replaced learner's willingness for a native-like accent (CELCE-MURCIA, 2014). However, the dream of sounding like a native speaker remains a reality among students of English. The language teacher needs to promote the setting of realistic and more advantageous goals such as being intelligible to others and properly understand what other speakers are saying.

Accented speech may require more effort to be recognized (MUNRO; DERWING, 1995) and for effective communication, speech statements must be intelligible for both speakers and listeners (MUNRO; DERWING, 2011). In order to understand a heavily accented speech, listeners must be free of prejudice since "any bias or judgmental attitude on the part of the listener could act as a formidable barrier to intelligibility" (RAJADURAI, 2007, p. 90); however, it may not always be enough (GOODWIN, 2014). Difficulties in listening comprehension are natural and they happen within our own first language mainly due to dialects and idiolects. Therefore, exposure to varieties of English and understanding of common phonological rules such as sandhi forms are important for learning and communication.

2.2 SANDHI FORMS

"The word sandhi came from Sanskrit and it means 'placing together' [...] sandhi is used to refer to the differences in pronunciation of words and endings that depend on the environment in which they occur" (PRATOR; ROBINETT, 1972, p. 189). Sandhi variation is "a phenomenon which reduces the overt markedness, or perceptual saliency, or morphemes" (HENRICHSEN, 1984, p. 103). This saliency is better understood in the difference between function and content words, the latter carries meaning which requires emphasis through stress whereas the former, in order to keep the rhythm of the stress-timed language, is unstressed. An unstressed function word combined with any other word (function or content) results in an external sandhi form as in 'can't have' /kæntəv/ and 'should've' /ʃədəv/. It is a linguistic phenomenon which refers to a set of sound changes that may occur at word boundaries

irrespective of the formality or situation (ROSA, 2002).

The presence of sandhi forms may be challenging to learners who have little or no previous exposure to them (ROSA, 2002). Even native speakers listening to a word multiple times may not be sure about the reduced speech in many casual situations although the meaning of the overall utterance may be understood (ERNESTUS; WARNER, 2011).

One of the few studies focusing on sandhi forms in BP/E interphonology is Perucci (2005) in which the author investigated the effect of instruction on the listening comprehension of word-boundary sandhi forms by Brazilian learners of English. For the present study, the categories adopted were assimilation, linking and contraction. The descriptions of these categories of sandhi forms are displayed in Table 1.

Sandhi Forms	Description	Examples
1. Assimilation	“A sound changes so that it becomes more similar to neighboring sounds” (WONG et al., 2017, p.9).	have to /hæftə / (devoicing)
2. Linking (Liaison or Juncture)	“Two or more words being linked and pronounced as one” (WONG et al., 2017, p.9).	g <u>o</u> ng out /gənaʊt/ c <u>a</u> tch it /kæftɪt/ a <u>t</u> ten /ætən/
3. Contraction	“A type of elision (deletion of sounds) that appears in written forms and involves fixed grammatical patterns” (WONG et al., 2017, p.9).	can't have/ kəntəv/ sh <u>o</u> uld've /ʃʊdəv/ do you /du:iə/ give him /gɪvɪm/

Table 1: Categories of sandhi forms

Font: the authors

Assimilation is a tendency that neighboring sounds **have to** change some features and become more similar to each other. For instance, phonological processes such as voicing and devoicing are very common in English within words and across word boundaries. Linking is another frequent phonological process in connected speech because syllables ending in consonants are very common in English. When the following words begin by the same consonant sound which ended the previous word or by a vowel, both words are produced in a row as if they were only one. Finally, contraction is produced by the deletion of sounds between words which commonly go together for grammatical reasons, such as verbs followed by object pronouns, as in 'give him' /gɪvɪm/.

Sandhi forms make the pronunciation of two words sound different from the pronunciation of the addition of both words in isolation. Therefore, it is reasonable to consider that sandhi forms may pose difficulties to listening comprehension.

2.3 LISTENING COMPREHENSION AND SANDHI FORMS

The processing of listening is essentially a matter of data processing and interpretation of acoustic signals (KENT; READ, 2002). As Goh (2014) puts it, “listening is not just hearing. It is an active process...” (p. 73) and “understanding is the result of active construction occurring at all levels of text... and context” (GOH, 2014, p. 73). Goh (2014) claims that the knowledge of language and the knowledge of discourse and language use support listening comprehension. The author emphasizes the role of this previous knowledge in listening comprehension.

Such previous knowledge may trigger expectations for the listener and listening comprehension is the sum of the listener's input and expectations (HENRICHSEN, 1984). As “perceptual saliency of the input is reduced – as in sandhi forms – the challenge for learners is significantly increased” (ROSA, 2002, p. 53) because listeners have more difficulty in recognizing a word or phoneme when its

borders are not defined (ERNESTUS; BAAYEN; SCHREUDER, 2002).

The principle of economy of effort is followed by the speakers and their organs that, rather than rearticulate the sounds in new positions, join the traces to save time and energy (CLAREY; DIXSON, 1963) resulting in sandhi-forms. Even though sandhi forms may be triggered by suprasegmental features such as rhythm and intonation, the reduction results in changes and deletions of segments, that is, individual phonemes. Watkins (2001) states that the characteristics of individual phonemes overlap and change according to the environment with fluent speakers being able to recognize words in connected speech because they categorize well allophonic variations. Flege (1995) mentions that “nonnative listeners often do not perceive L2 sounds the same way native speakers do” (p. 234) especially if they are not fluent for having limited exposure to English which is more problematic when restricted to the classroom.

3 METHOD

Fifty-two Brazilian learners of English from the south of Brazil, 19 male and 33 female, participated in the study. They were from different fields of activities, such as students, engineers and teachers with ages ranging from 15 to 50 ($M= 21$). All of them had a minimum B1 level of proficiency in English. Twenty-two participants could also speak other languages: Spanish (15), Korean (1), Arabic (1), French (2) and Italian (3). Two of them had lived in an English-speaking country (one in New York for one year and another in California for two years).

The data collection instruments consisted of two listening tasks (task 1 and task 2) and a background questionnaire. The listening tasks aimed at verifying the interference of sandhi forms in comprehension and were based on Perucci (2005). Some of the questions were even copied from Perucci (2005, p. 8-9) who adapted from Rogerson and Gilbert (1990, p. 44). The prompts for the listening task were recorded twice. The first time it contained sandhi forms (Task 1) and the second time it did not contain any sandhi forms (Task 2). There were ten trials (3 questions and 7 statements) and after listening to each trial, learners had to choose the best answer between two alternatives and mark it on the answer sheet.

Two female talkers recorded the listening tasks, a native speaker (NS) who was a sixteen-year-old student from the city of Libby in Montana in the U.S.A. and a forty-year-old nonnative speaker (NNS) with a doctoral degree in English phonetics and phonology from Brazil who had passed by a native speaker in a previous controlled test in the judgment of an American and, thus, in such a controlled situation did not represent any limitations to the study. The native talker recorded Task 1 (with sandhi forms) and the nonnative talker recorded Task 2 (without sandhi forms).

The nonnative talker was invited to record Task 2 because the native talker was not able to read the trials without producing sandhi forms even after several trials. The nonnative talker managed to control her speech, avoiding the production of sandhi forms after a few attempts. The sandhi forms presented in the listening tasks are displayed in Table 2. An example of a trial from the listening tasks is displayed in Table 3.

1. Assimilation – have to /hæftə/ (devoicing)
2. Linking (Liaison) – gone out /gənaʊt/; catch it /kæʃɪt/; at ten /ætən/; fine you /faɪnə:/; does it /dʌzɪt /; soup or /su:pər/; both of /boʊθəv/
3. Contraction – is he /ɪzi:/; give him /gɪvɪm/; call her /kɔ:lər /; can't have/ kəntəv/; should've /ʃʊdəv/; do you /du:iə/; saw you /sɔ:iə/; fine you /faɪnə:/; does it/ dʌzɪt /; soup or /su:pər/; both of /boʊθəv/

Table 2: Sandhi forms present in the listening tasks

Font: the authors

1. Q: Is he busy this afternoon?
 a) Yes, very easy.
 b) Yes, very busy.

Table 3: Example of a trial from the listening tasks

Font: Perucci's (2005) adaptation from Rogerson and Gilbert (1990)

A questionnaire was designed with Google Forms and a link was sent to all participants by e-mail or WhatsApp and participants answered it online. The questionnaire had 40 close and 9 open questions accessing biographical information as well as information on self-perception and habits. Just the relevant questions for this study (4) were considered in this discussion. The questions concerning habits analyzed in the present study were:

- a) How often do you watch movies, series or sitcoms in English without subtitles?
 b) How often do you watch movies, series or sitcoms in English with subtitles in English?
 c) How often do you watch movies, series or sitcoms in English with subtitles in Portuguese?
 d) How often do you listen to songs in English trying to understand the lyrics?

There were 5 possible answers for the questions: never, almost never, sometimes, quite often and always. When participants answered the questions selecting the alternatives: sometimes, quite often and always, we considered that there was exposure to spoken English through those activities. Percentages regarding exposure and the number of misperceptions were considered in the analysis of the results.

4 RESULTS AND DISCUSSION

As mentioned in the introduction, the present study aimed at investigating whether sandhi forms may hinder comprehensibility of English for Brazilian learners. The presentation of results and discussion in the following sessions are organized by the research questions presented in session 1.

4.1 COMPREHENSION OF SPEECH CONTAINING SANDHI FORMS

In order to answer the research question “Do BP learners of English comprehend a spoken sentence containing sandhi forms in English?” a task aimed at verifying learners’ comprehension of sentences with and without sandhi forms was developed. The task elucidated whether participants would have more difficulty to comprehend English with or without sandhi forms.

4.1.1 Testing the influence of number of listening times

To test the influence of the number of listening times, 23 out of the 52 participants listened to the task containing sandhi forms twice. Two alternative answers were given, and the participants needed to choose the best option to answer the sentences. Twenty-three participants was considered a good number to be assigned to Task 1a – Task 1b test condition in that it comprised almost half of the original sample and was enough to account for individual differences. Results from both Task 1a (First attempt) and Task 1b (Second attempt) for the 23 participants are displayed in Table 4.

PROMPTS		MISPERCEPTIONS IN Task 1A	MISPERCEPTIONS IN Task 1B
1. <u>Is he</u> busy this afternoon?	N	01	03
	%	4.34%	13.04%
2. <u>Give him</u> a call.	N	12	10
	%	52.17%	43.47%
3. I <u>should've gone out</u> .	N	09	15
	%	39.13%	65.21%
4. Please, <u>catch it!</u>	N	06	06

	%	26.08%	26.08%
5. <u>Does it have to?</u>	N	06	07
	%	26.08%	30.43%
6. <u>Call her at ten?</u>	N	12	14
	%	52.17%	60.86%
7. <u>Do you want soup or salad?</u>	N	15	16
	%	65.21%	69.56%
8. I <u>saw you</u> dancing.	N	0	0
	%	0	0
9. I'll <u>have to fine you</u>	N	12	07
	%	52.17%	30.43%
10. You <u>can't have both of them</u>	N	10	08
	%	43.47%	34.78%
TOTAL	N	83	86
	%	36.08%	37.39%

Table 4: Misperceptions in Task 1a and Task 1b for the 23 participants.

Font: the authors

The results indicated that listening to Task 1 for a second time did not promote fewer misperceptions. Results from the second listening (Task 1b with 86 misperceptions = 37.39%), in fact, were slightly worse with three more misperceptions than the first listening time (Task 1 A with 83 = 36.08%). We are going to consider total results for the comparison. Even so, it is reasonable to point out that for two prompts there was a considerable difference between Task 1a to Task 1b. For prompt nine there was a clear improvement (approx. 21%) in listening comprehension and for prompt three there was a clear reduction (approx. 26%) in accurate comprehension. For all other prompts the differences were not considerable or were absent. The reason for investigating the influence of the number of times listening to the same task is to verify whether different scores when listening to the sentences with and without sandhi forms are not due to a task effect. Since there was no improvement from the first to the second time listening to Task 1, possible differences in performance when listening to Task 1 (with sandhi productions) compared to Task 2 (without sandhi productions) may not be due to the fact that Task 2 is the second task listened to. Thus, having verified that the number of times listening does not interfere with the total score, data from all 52 participants considering Task 1a and Task 2 are going to be discussed.

4.2 LISTENING COMPREHENSION WITH AND WITHOUT SANDHI FORMS

As mentioned in the method session, Task 1a corresponds to the first task listened and it contained sandhi forms in all prompts whereas Task 2 corresponds to the last task listened and it contained no sandhi forms. The prompts for both Task 1 and Task 2 are shown in Table 4. There were ten trials for each task.

Only 1 participant (1.92%) had a perfect score in Task 1a. This participant maintained the good result in Task 2. The participant was the oldest test taker, a 50-year-old male English teacher who had worked in a language school for thirty years. 10 participants (19.23%) made only one mistake in Task 1a; one of them was distracted by a noise at the exact time when the mistake was made and got a perfect score in Task 2. The participant was a nineteen-year-old female, a college student who holds a CAE certificate. Other scores in Task 1a were distributed as follows: 7 participants (13.46%) made two mistakes; 6 participants (11.54%) made three mistakes; 11 participants (21.15%) made four mistakes; 9 participants (17.30%) made five mistakes; 7 participants (13.46%) made six mistakes; and 1 participant (1.92%) made seven mistakes. The score range in Task 1a was 0 to 7 mistakes (out of 10 possible mistakes). 11 participants (21.15%) had perfect scores in Task 2. Other scores in Task 2 were: 18 participants (34.61%) made one mistake; 12 participants (23.08%) made two mistakes; 5 participants (9.61%) made three mistakes; and 6 participants (11.54%) made four mistakes. The score range in Task 2 was 0 to 4 mistakes.

P20 who had lived in New York for one year and P13 who had lived in San Diego for two years made three and two mistakes respectively in Task 1a. Both are teachers of English in Brazil and did not obtain perfect scores in Task 2 either.

Considering each sentence, the range of misperceptions was 4 to 30 in Task 1a and 1 to 28 in Task 2. Results per sentence are shown in Table 5.

Sentences	Task 1a	%	Order	Task 2	%	Order
1. <u>Is he</u> busy this afternoon?	04	7.69	10	03	5.76	8
2. <u>Give him</u> a call.	21	40.38	4	14	26.92	2
3. I <u>should've gone out</u> .	28	53.84	3	28	53.84	1
4. Please, <u>catch it!</u>	12	23.08	7	04	7.69	6
5. <u>Does it have to?</u>	11	21.15	8	05	9.61	5
6. <u>Call her at ten</u> .	30	57.69	1	12	23.07	3
7. <u>Do you</u> want <u>soup or</u> salad?	30	57.69	1	01	1.92	9
8. I <u>saw you</u> dancing.	05	9.61	9	01	1.92	9
9. I'll <u>have to fine you</u> .	19	36.53	6	08	15.38	4
10. You <u>can't have both of</u> them.	20	38.46	5	04	7.69	6
TOTAL (520)	180	34.61%		80	15.38%	

Table 5: Misperceptions for Task 1a (with sandhi forms) and for Task 2 (without sandhi forms) by sentence

Font: the authors

There were 180 misperceptions (34.61%) when participants tried to understand sentences containing sandhi forms and only 80 misperceptions (15.38%) when participants tried to comprehend the same sentences without sandhi forms. Results showed that the number of misperceptions reduced in more than a half in the absence of sandhi forms. To better understand the improvement that occurred in results when sandhi forms were absent a measure of proportion of room for improvement was calculated as in Bettoni (2008). The measure of the proportion of room for improvement is defined by Task 2 accuracy minus Task 1 accuracy divided by 100 minus Task 1 accuracy: $[(\text{Task 2} - \text{Task 1}) / (100 - \text{Task 1})]$.

This measure aims at analyzing how much of the possible improvement from Task 1 to Task 2 really happened because when the results are very good in Task 1 the possible improvement in Task 2 is very small. Proportion of the room for improvement indexes are displayed in Table 6.

Sentences	Task 1a %	Order	Task 2 %	Order	Proportion %
1. <u>Is he</u> busy this afternoon?	7.69	10	5.76	8	25.10
2. <u>Give him</u> a call.	40.38	4	26.92	2	33.33
3. I <u>should've gone out</u> .	53.84	3	53.84	1	0
4. Please, <u>catch it!</u>	23.08	7	7.69	6	58.32
5. <u>Does it have to?</u>	21.15	8	9.61	5	54.56
6. <u>Call her at ten</u> .	57.69	1	23.07	3	60.01
7. <u>Do you</u> want <u>soup or</u> salad?	57.69	1	1.92	9	96.67
8. I <u>saw you</u> dancing.	9.61	9	1.92	9	80.02
9. I'll <u>have to fine you</u> .	36.53	6	15.38	4	57.90
10. You <u>can't have both of</u> them.	38.46	5	7.69	6	80.01
TOTAL (520)	34.61%		15.38%		55.01%

Table 6: Proportion of the room for improvement for listening without sandhi forms

Font: the authors

Taking this measure, the overall improvement was 55.01% and the measures calculated for each sentence individually show that improvement happened for all but one prompt; even so, there was no increment in the number of misperceptions. The improvement varied from zero to 96.67% across prompts.

The sandhi form which did not make a difference in comprehension (results from Task 1 and Task 2 are the same) was “I should’ve gone out” in which more than a half of the participants could not understand it properly with and without sandhi forms. The possible

answers to this statement were (a) 'Yeah! We missed you.' and (b) 'Why? Was it raining outside?'. Since the minimum proficiency in English required to participate was B1, which corresponds to Intermediate level, we may speculate that some of the participants may have had problems with this sentence even without the sandhi form because of lack of vocabulary or bad use of comprehension strategies. Another reasonable explanation lies in that there was a very short amount of time for reasoning and it may not be long enough to process the sentence and its responses without a previous contextualization since it is a sentence rather vague in meaning and poor in strong content words and the task taking situation was rather artificial. Yet, 24 out of 52 participants managed to choose the accurate answer. However, there are indications that this sentence was an outlier - not behaved as the other sentences in the listening task. Also, in Task 1, there were two sandhi forms – a contraction followed by linking. However, as commented the absence of sandhi forms in Task 2 did not trigger better results.

Taking sentence three (I should've gone out) out of consideration for the reasons aforementioned, the range of proportion of room for improvement varied from 25.10% to 96.67% across sentences. The highest improvement was for sentence seven (Do you want soup or salad?). The second sandhi form in the sentence, "soup or salad", is an example of linking and is often confused even by native speakers with "super salad" when the sandhi form is produced. This phrase is often cited in pronunciation manuals and English course books to illustrate the need for contextualization when connected speech happens. It is often portrayed in a restaurant where waiters and their customers have a hard time communicating. Without the sandhi form, that is, emphasizing "or" or not reducing the vowel, as in Task 2, it is easily understood resulting in the 96.67% index of proportion of the room for improvement obtained.

The easiest sandhi form to comprehend was "is he". Only 4 participants (7.69%) could not understand it with sandhi form (not producing "h" in "he") and 3 participants remained not understanding it without the sandhi form. It happened probably because none of the words "is" or "he" carry meaning which would impair the two possible alternative answers we proposed (Yes, very easy or Yes, very busy). This prompt was, in fact, copied from Perucci (2005) who adapted the task from Rogerson and Gilbert (1990). Maybe a fill in the blanks task would have returned a different result but would not have given the possibility of contextualization of the sandhi form, which was provided by the answer choices.

Contractions such as "Is he" and "saw you" did not seem to pose problems for most of the participants whereas "soup or salad" (linking), "call her" (contraction), and "both of them" (a combination of assimilation, linking and contraction) seem to be problematic. For the first two cases, when produced with sandhi forms, both sound like other phrases which are common in English speech "super salad" and "color" respectively. Also, for both there was a great improvement in comprehension when the sandhi form was absent – sentence seven "soup or salad" from 30 to only one misperception and "call her" from 30 to twelve misperceptions.

Overall results showed that sandhi forms, irrespective of the category, pose listening comprehension difficulties for Brazilian learners of English especially when there are content words involved and the sandhi form has a minimal pair in English.

4.3 EXPOSURE TO ENGLISH AND COMPREHENSION OF SPEECH WITH SANDHI-FORMS

The second research question "Do BP learners of English with greater amount/frequency of exposure to English through movies and songs comprehend sandhi forms better than students with less exposure?" aimed at investigating whether exposure to English through movies and songs affects comprehension of speech with sandhi-forms. The 52 participants who took the listening task answered four questions about the frequency they (a) watched movies, series and sitcoms in English without subtitles; (b) watched movies, series and sitcoms in English with subtitles in English; (c) watched movies, series and sitcoms in English with subtitles in Portuguese; and (d) listened to songs in English trying to understand the lyrics. There were five possible answers: never, almost never, sometimes, quite often, and always. The data collected from these questions are shown in Table 7.

How often do you...	Never		Almost Never		Sometimes		Quite often		Always		EXP*
	N	%	N	%	N	%	N	%	N	%	
... watch movies... in English without subtitles?	7	13.5	12	23.1	23	44.2	10	19.2	0	0	63.4%

... watch movies... in English with subtitles in English?	7	13.5	14	26.9	18	34.6	12	23.1	1	1.9	59.6%
... watch movies... in English with subtitles in Portuguese?	2	3.8	8	15.4	10	19.2	14	26.9	18	34.6	80.7%
... listen to songs in English trying to understand the lyrics?	1	1.9	1	1.9	2	3.8	13	25.0	35	67.3	96.1%

Table 7: Frequency of exposure to English through movies... and songs

Font: the authors

* EXP was calculated by adding up percentages from SOMETIMES, QUITE OFTEN and ALWAYS.

The answers obtained can help us have a slight idea of the amount of significant exposure to English from movies, series, sitcoms and songs our participants have. We understand that the measure of frequency we provided is very subjective and does not allow for much generalization, though. When questioning participants about songs we decided to add “trying to understand the lyrics” to have a real idea of a meaningful exposure language-wise and not just listening to the melody of the songs. 67.3% of the participants (35) state they always listen to songs in English trying to understand the lyrics whereas only 2 participants state this is not their habit: 1 never and 1 almost never. When adding up the positive frequencies (sometimes, quite often, and always) we found out that 96.1% of participants listen to songs and pay attention to lyrics. Songs really seem to be present in the lives of English learners in general and this information must be used considering pedagogical practices (BETTONI; GALLEGO-CAMPOS; BETTONI, 2017).

Movies, sitcoms and series with or without subtitles seem to be part of participants lives as well in that adding up the positive frequencies for the answers regarding exposure to the audiovisual media, the percentages of participants who answered they have these habits were 59.6% for subtitles in English, 63.4% for no subtitles, and 80.7% for subtitles in Portuguese. 1 participant observed that he could not mark 'always' in any of the movie categories because he watches movies all the time in the three categories randomly according to availability – he stated he only avoided movies when they were dubbed. After questioning a few participants, some of them stated having had the same attitude towards these questions even though they always watched movies and series. Therefore, the addition of the positive frequency categories makes sense and portrays participants' habits. Even so, participants watch movies, series, and sitcoms with subtitles in Portuguese more often than they do with subtitles in English or without subtitles.

The answers regarding frequency of exposure to English in movies and songs were then compared to the results of the perception Task 1a in order to investigate the research question proposed. Participants were divided into three groups according to the number of misperceptions: 0 to 2 misperceptions (18 participants – 34.6%); 3 to 4 misperceptions (17 participants – 32.69%) and 5 to 7 misperceptions (17 participants – 32.69%). No participants had more than 7 misperceptions in Task 1a. The data obtained considering exposure as the addition of the sometimes, quite often and always categories and no exposure as the never category is presented in Table 8. The other data were omitted in order to have a better visualization of the contrasts among the rates of misperception across groups.

Exposure to English	Frequency	0 to 2 misperceptions N = 18		3 to 4 misperceptions N = 17		5 to 7 misperceptions N = 17	
		N	%	N	%	N	%
without subtitles	Never	0	0 %	1	5.88%	6	35.29%
	Almost nev.						
	WATCH	16	78.88%	11	64.69%	6	35.29%
with subtitles in English	Never	1	5.55%	1	5.88%	5	29.41%
	Almost nev.						
	WATCH	10	55.55%	10	58.82%	10	58.82%
with subtitles in Portuguese	Never	2	11.11%	0	0%	0	0%
	Almost nev.						
	WATCH	14	74.76%	16	94.10%	14	82.33%
listen to songs in English	Never	0	0%	0	0%	1	5.88%
	Almost nev.						

LISTEN	17	94.43%	17	100%	16	94.22%
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Table 8: Frequency of exposure to movies and songs and misperception rate

Font: the authors

16 out of 18 participants (78.88%) who had two or fewer misperceptions stated they were exposed to English movies/sitcoms without subtitles. For the group with the worst result (5 to 7 misperceptions), the answers indicated that 6 out of 17 have this habit (35.29%). For the intermediate group, 64.69% have this habit and only 1 of them declared never watching movies, sitcoms, and series in English without subtitles. Therefore, considering this habit, the group that does it had better results in the listening comprehension of speech with sandhi forms. However, we cannot state that by watching movies in English without subtitles one will understand sandhi forms because it may be that the ones who understand sandhi forms feel more comfortable watching movies without subtitles just because they understand English better. It is hard to state which is the consequence and which is the cause, but there is a positive correlation between this habit and performance in the task.

The same cannot be stated regarding watching movies with subtitles in English or in Portuguese, even though 5 participants (29.41%) of the worst performance group (5 to 7 misperceptions) declared never watching movies with subtitles in English whereas only 1 in the intermediate group and 1 of the best performance group stated so. There was no clear relationship between watching movies and such with subtitles in English or listening to songs and trying to understand the lyrics with performance in listening comprehension of speech containing sandhi forms.

5 CONCLUSION

This study aimed at investigating whether sandhi forms may hinder comprehensibility of English for Brazilian learners. In order to investigate our main goal, we designed two research questions: (a) Do BP learners of English comprehend a spoken sentence containing sandhi forms in English? and (b) Do BP learners of English with greater amount/frequency of exposure to English through movies and songs comprehend sandhi forms better than students with less exposure?

We found that our participants who were Brazilian learners of English with a minimum B1 level of English proficiency have difficulties in understanding speech with sandhi forms, but their performance in doing so depends on the nature of the sandhi form, on the existence of a minimal pair for the phrase with the sandhi form (such as “call her” and “color”) and, on the composition of the sandhi forms – when there are content words involved there is a tendency to have more difficulties understanding them.

We also found that our participants who were Brazilians learners of English from a diversity of backgrounds have the habit of listening to songs in English paying attention to lyrics and watching movies in English. Almost 80% of the participants who performed better in the listening comprehension task containing sandhi forms claimed to have the habit of watching movies, series or sitcoms in English without subtitles, whereas only 35.29% of the worst performers have this habit. Two participants lived in the U.S.A. for over a year and, even though both of them had good results (2 and 3 misperceptions), none of them got a perfect score neither with sandhi forms nor without them in the listening task and one of them was not a part of the best performers group.

Comprehension of speech with sandhi forms should also be investigated with tests which involve more contextualization and interaction. Also, variables should be controlled according to proficiency level, years of learning, age of learning and other habits regarding exposure to spoken English. The nature and composition of sandhi forms must be better controlled, so more generalizations can be made. It is possible that some types of sandhi forms may be more problematic than others; however, the present study did not control for this variable.

One of the most important pedagogical implications which can be drawn from the present study is comprehending that learners have to be exposed to as many English varieties as possible. Also, their interest in listening to songs should be explored in the classroom in order to improve both their oral perception and oral production. The habit of watching movies, series and sitcoms, as well as listening to songs in English should be encouraged. Learners should be stimulated to pay attention to sandhi forms such as linking, contraction, and assimilation when they are exposed to spoken English in order to be more prepared to deal with real life

English.

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