

*Full Length Research Paper*

## Exploring sources of phonological unintelligibility in spontaneous speech

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Accepted 2 April, 2013

**The aim of this case study is to extend the work of Jenkins (2000, 2002) in identifying aspects of speech which decrease intelligibility in spoken interactions between non-native English speakers. Two native Hindi speakers and one native Spanish speaker (the first author) were recorded engaging in a two-hour spontaneous conversation in English. Speech transcripts from only four separate episodes of communication breakdown were analyzed for aspects of speech which caused unintelligibility. Data analyses revealed that substitutions of individual sounds and deviations of lexical stress were the factors which affected intelligibility the most. Implications for researching and teaching English as a Lingua Franca (ELF) are discussed.**

**Key words:** Intelligibility, second language, non-native speakers, Lingua Franca Core, English as a Lingua Franca.

### INTRODUCTION

In our time communication in English is not restricted to interactions only between native speakers (NSs) and native speakers of other languages. English is most commonly used around the world as a LF (lingua franca) in interactions between non-native speakers (NNSs). Graddol (2006) suggests that in the next 10 to 15 years or so this last use of English -often referred to as ELF (Seidelhofer, 2001, Jenkins, 2000, 2007; Walker, 2010)- will be used by more than 2 billion NNSs. This prevalent use of English generates particular interactional challenges such as the attainment of global intelligibility of NNSs whose first languages (L1s) are different (Jenkins, 1998, 2000, 2007; Luchini, 2004a, 2008; Dauer, 2005, Smith and Nelson, 2006; Walker, 2001, 2010).

In this context, intelligibility is understood not only as the production and recognition of the formal properties of

words and utterances but also as the ability to produce and perceive phonological form. This last aspect is a vital requirement of ELF success at both locutionary and illocutionary levels (Derwing and Munro, 2005; Smith and Nelson, 2006; Jenkins, 2000). The great majority of this research has used native speakers of English as the frame of reference for the acceptability and intelligibility of NNSs' speech. However, it is essential to investigate how intelligible NNSs are to each other, since English is most often spoken between NNSs.

The purpose of this study is therefore to evaluate how intelligibility between NNSs is affected by particular L2 phonological variations in NNS speech. This study is framed in the context of Jenkins' LFC (Lingua Franca Core) (2000), a set of "phonological features which... regularly cause unintelligibility" between NNS (p. 123).

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The overall goal of this study is to extend the work of Jenkins (2000, 2002) in identifying a set of speech sounds and syllabic and prosodic elements which are essential for mutual intelligibility between NNSs.

In the first part of this paper, we explain the necessity of developing a LFC; previous research on the LFC will also be described. The second section sets forth the methodology of the current case study. Next, the findings from analyses of the NNS interaction will be presented, and finally, some areas for further investigation in research and pedagogy will be suggested.

## EMPIRICAL BACKGROUND

### Communication between non-native speakers

The English language has swiftly spread geographically around the world over the past few decades. English is taught and learned in many countries because -as it has become the lingua franca of our times- it has a wide range of implications for communication within particular domains of interest such as commerce (Ehrenreich, 2009; Pullin, 2009), higher education (Björkman, 2010; Smit, 2010), school settings (Sifakis and Fay in press), and tourism (Smit, 2003).

At one time, international communication in English happened primarily between native speakers and non-native speakers. However, this is no longer the case. Currently, most interactions in English are likely to be between speakers who do not speak English as their first language (Jenkins, 2006; Rajadurai, 2005; Seidlhofer, 2001; Seidlhofer, 2009b). Duszak and Lewkowicz (2008) warn that the use of ELF is not inevitable or value-free, but is a conscious choice which can have disadvantages for a given community of speakers. Nonetheless, at present the most frequent use of English is between non-native speakers. Jenkins (2000, 2006) and others (Kachru, 1992: 52-53; Pitzl, 2005: 51) contend that because NNSs most often speak English to each other, it is not reasonable or useful to expect their speech, including their pronunciation, to correspond to native speaker norms. However, it is important that NNSs remain intelligible to each other even if their accents do not resemble those of native speakers. Jenkins (2000: 2) states, therefore, that people who teach, learn, or use ELF (that is to communicate with both native and non-native speakers) need to know how particular phonological features affect mutual intelligibility between NNSs. For example, some aspects of speech, such as the use of a 'clear' /l/ (*lamp*) as opposed to a 'dark' /l/ (*full*), may not affect intelligibility between NNSs in any discernible way. A LFC, a set of phonological features which are known to influence mutual NNS intelligibility, would allow users, teachers, and learners of ELF to focus their attention on those aspects of speech which are most tied to intelligibility. Work on the development of this core

was initiated by Jenkins (2000). A non-linguistic factor which may affect intelligibility between NNSs (as well as NSs) is listeners' attitudes about the acceptability or irritation factor of particular aspects of speech (cf. Fayer and Krasinski, 1987; Lindemann, 2002, for discussions of this relationship).

### Jenkins' Lingua Franca Core

Jenkins (2000) recorded and analyzed interactions between NNSs over several years in her English as a second language classes and in social interactions. She targeted what she called "problematic discourse" (p. 132), focusing on problems caused by speakers' phonological production. Jenkins identified three main categories: individual sounds (segments), nuclear stress, and articulatory setting. We will first describe her findings on segments (pp. 136-146). She found that when most consonants were substituted by another consonant or deleted, there was a loss of intelligibility. The exceptions to this were /θ/ and /ð/, which Jenkins found could be replaced, with little to no loss of intelligibility, by other consonants. Jenkins advised that NNSs learn to approximate (not necessarily reproduce) most consonant sounds in English. She also observed that when NNSs deleted any consonant in a word-initial consonant cluster, intelligibility was severely reduced. For vowels, Jenkins noted that the qualities of vowels differ across English dialects (e.g. "here" – Most American English dialects - /hir/ and Southern American English - /hiə/). Therefore, Jenkins did not suggest that NNSs follow one particular speech model, for example, General American English, in their production of vowels. She suggested only that NNSs be consistent in their production of given vowels and that they adhere to typical English patterns in vowel length, such as shortening a vowel before a fortis consonant (That is, generally, voiceless stops such as /p/ or /k/).

In terms of suprasegmental aspects of speech, Jenkins identified nuclear stress and word (thought) groups as important aspects of the LFC (pp. 153- 156). Nuclear stress highlights the part of an utterance which is key for the listener, that part which gives new or important information. Word groups are "a discrete stretch of speech which forms a semantically and grammatically coherent stretch of discourse" (Celce-Murcia et al., 1996: 175). Jenkins noted that when NNSs were unintelligible because of their intonation, inappropriate placement of nuclear stress was almost always the source of the problem. Because appropriate placement of nuclear stress also requires speakers to pause their speech at appropriate boundary points, Jenkins included word groups (also called thought groups) in the LFC. Unlike numerous other pronunciation researchers, Jenkins recommended that teachers not spend a great deal of time and effort teaching most suprasegmental aspects of English because they may be either unimportant for

intelligibility, unteachable, or both. These aspects include the reduction of function words such as “is” or “to”, lexical stress, and stress-timed rhythm (with stressed syllables being produced at roughly equal intervals of time).

Jenkins’ final category for the LFC was articulatory setting, which is the overall posture and positioning of the tongue, lips, jaw, and other articulators. Particular languages may have different articulatory settings (e.g., tenseness of jaw, position of tongue and lips). Jenkins did not identify particular instances of unintelligibility due to articulatory setting, but stated that articulatory setting greatly influences the production both of individual sounds and of suprasegmentals such as nuclear stress.

These three categories of individual sounds, nuclear stress, and articulatory settings were the focus of Jenkins’ LFC. Jenkins (2000, p. 123) believed these categories were “essential in terms of intelligible pronunciation” between NNSs, and should be the main focus for teachers who wish their NNS students to be more intelligible to other NNSs.

In addition to the three categories of the LFC, Jenkins stressed that speakers of ELF need to be able to accommodate to their interlocutors (p. 166). This accommodation should be both receptive (speakers tolerating and adjusting to a given interlocutor’s speech) and productive (speakers modifying their pronunciation to the degree necessary to ensure intelligibility for listeners). Jenkins suggested that these accommodation skills should also be taught to NNSs who used or would use ELF.

Although the LFC was a groundbreaking development in research on ELF, Jenkins never meant the proposed set of features to be the conclusive and unchanging core for pronunciation of ELF. The LFC was derived from interactions between NNSs (Jenkins did not provide the total *n*) studying English in one English-speaking country, who were of intermediate proficiency or above. In order to refine the LFC, it is important to include a wider range of participants and environments for language learning and use. Teachers who wanted to draw on the LFC for their classes would then be more confident that the elements included in the LFC had been substantiated in numerous environments with numerous NNSs. Jenkins herself called for researchers to empirically investigate whether the elements of her LFC were indeed essential to intelligibility between NNSs (Jenkins, 2000: 235).

### **Other research on communication between non-native speakers**

Previous to Jenkins’ seminal 2000 publication, a number of researchers had analyzed breakdowns in communication between non-native speakers (Firth, 1996; Varonis and Gass, 1985; Wagner, 1996). These researchers used the framework of Conversation Analysis to analyze episodes of communication breakdown. They

analyzed the interactional moves made by NNSs during and after communication breakdowns. This research provided detailed evidence of how NNSs strategically made interactional modifications in order to prevent or repair communication breakdowns. However, the research did not focus on phonological features which may have contributed to unintelligibility between NNSs. Following Jenkins’ call for further research on the LFC, a few researchers have explored intelligibility between NNSs, with reference to the LFC.

Using a dictation task, Osimk (2009) examined NNS listeners’ understanding of English words which contained different realizations of the segments /r/, /θ/ and /ð/, and aspirated consonants such as /p, t, k/. These words were read aloud by NNSs of different L1s. In a finding fully congruent with Jenkins’ LFC, she observed that plosives produced with a longer voice onset time (VOT) were more frequently recognized as aspirated consonants than were plosives with relatively shorter VOT. She also found that when /θ/ and /ð/ were produced as /s/ and /z/, those words were generally less intelligible than words with other realizations of /θ/ and /ð/, regardless of the listener’s L1. This finding did not fully support Jenkins’ suggestion that /θ/ and /ð/ could be substituted by other segments with no loss of intelligibility. Osimk also found that, overall, listeners found words with a non-rhotic realization of /r/ more intelligible than words with rhotic realizations. Jenkins, though, had suggested that LFC speakers use a rhotic pronunciation of /r/ because the match between orthography and speech is more consistent than for non-rhotic /r/.

Pitzl (2005) investigated unintelligibility between NNSs in business contexts. She found that some phonological features in the LFC seemed to cause intelligibility problems in the conversations she analyzed (e.g., unstressed words or syllables which should have received nuclear stress) while other features which were not mentioned in the LFC were also causes of unintelligibility (e.g., unreleased final consonants). And as has already been pointed out, Pitzl noted, though, that instances of unintelligibility were also attributable not just to speakers’ pronunciation, but also to the nature of their interactional moves and their use of lexis and grammar.

Deterding and Kirkpatrick (2006) found that some communication breakdowns in conversations between NNS-NNS English teachers were due to lack of lexical knowledge or simply lack of attention on the part of the listener. However, whenever pronunciation was implicated in a communication breakdown, the production of individual sounds was always the source of the unintelligibility, whether a sound was substituted, deleted, or added. All of the sounds involved had been included by Jenkins in her LFC. In other research, Pickering (2009) analyzed interactions between NNSs doing a paired “spot the difference” task, focusing particularly on instances of unintelligibility which were related to

intonation. Like Jenkins (2000), Pickering found that misplaced nuclear stress seemed to be behind some of the intelligibility problems noted in the interactions (p. 244). In the excerpts shown in Pickering, intelligibility problems additionally arose from substituting one consonant for another (e.g., “hap” instead of “half”). These segmental substitutions were also included in Jenkins’ LFC.

Luchini (2008) investigated unintelligibility between NNSs doing a paired problem-solving task. The NNSs completed the task and then, as a pair, were asked to speculate why communication was impaired in particular instances. Luchini also analyzed transcripts of the recorded interactions. Overall results showed that segmental substitutions, especially when combined with deviations of nuclear stress, were the main reason that NNSs were unintelligible to each other. Again, these results reflect some of the same phonological features Jenkins included in her LFC.

For his part, Zoghbor (2011) addressed many EL teachers’ concern, who argue that aiming at native-like pronunciation is necessary or even desirable, while remaining skeptical about the teachability of the LFC (Jenkins, 2007). This researcher dealt with this teachers’ concern in the light of Jenkins’ LFC and addressed its potential implications and its extent and function within and beyond classroom settings.

It is worth noting that Jenkins’ LFC is by no means universally accepted. Researchers such as Berns (2008), Dauer (2005), Trudgill (2008), and Gibbon (2008) have critiqued the LFC in terms of its rationale and content. For example, Gibbon (2008: 447-450) states that the undeniable influence of ELF speakers’ diverse L1 phonological systems means there is little to no possibility of a core set of phonological features which are intelligible to every potential ELF speaker. Osimk (2009), however, has found that when segments such as /θ/ and /ð/ were produced by NNSs in certain ways (that is as /s/ and /z/) words with those particular substitutions were relatively less intelligible to NNS listeners than words with other substitutions for /θ/ and /ð/. This was true regardless of the listeners’ L1s.

Apart from the investigations mentioned above, there are not very many studies in which NNS intelligibility has been *empirically* investigated with reference to the LFC. The aim of the current paper, therefore, is to explore whether unintelligibility between NNSs is indeed associated with the phonological features which comprise the LFC, and thus, to provide further information on the significance of Jenkins’ LFC for spoken communication between NNSs.

## METHOD

### The case study

Altman (1976) describes a case study as an “instance in action”

(cited in Nunan 1992: 75) where the researcher usually observes particular characteristics of an individual unit in the context in which it occurs. The main purpose of case studies is to explore what constitutes the life cycle of this unit with the intention of establishing generalizations about the wider population to which it belongs (Hitchcock and Hughes, 1995).

Some researchers claim that the construct validity and reliability of case studies may be easily threatened because as a method they often fail to develop an adequate operational set of measures and because they feed in subjective judgments to collect data. Some others, however, suggest that case studies are valuable as a method in that they are strong in reality and consequently likely to appeal to practitioners. They also say that case studies allow to make generalizations from a case or from an instance to a class, a variety of perspective can be gathered which may offer support to a wealth of diverse interpretations, and lastly, case study data are usually more accessible than conventional research accounts, and therefore capable of serving multiple audiences (in Nunan, 1992).

In this instance, the event under analysis is a conversation in English between two male L1 Hindi speakers and one male L1 Spanish speaker (the first author).<sup>4</sup>

One innovative aspect of this case study is that to date, no published research has investigated the pronunciation of ELF between speakers of these two L1s, Hindi and Spanish. The purpose of this work is to explore some sources of phonological unintelligibility that took place in a spontaneous conversation between these three NNSs. The speech data emerged from a two-hour taped verbal interaction between the interlocutors. After the recording session, these data were transcribed, analyzed and later interpreted. For the purpose of this work, only four extracts will be selected and analyzed. Jenkins’ perspective of LFC (Jenkins, 2000) will be used as a framework to identify and later analyze breakdowns in communication caused by phonological variations. Based on the findings obtained, some implications for researching and teaching ELF will be later discussed.

### Context and participants

The conversation took place at a private college in the state of Punjab in India. The two L1 Hindi speakers, both aged 23, were students at the college, while the L1 Spanish speaker, aged 37, was participating in an international conference held at the college. The Hindi speakers have been given the pseudonyms Sudhir and Anil. At the time of the conversation, they were enrolled as first-year Master’s students in an English-medium administration program. Even though their post-graduate programs were not in English teaching or literature, most students at the college were required to pass several advanced courses such as linguistics and literature in English. The L1 Spanish speaker had been teaching English in post-secondary institutions in Argentina for 15 years.

### Data collection

The three participants held an unstructured two-hour conversation which was recorded. The first author (a near-native speaker of English) later transcribed the two-hour recording in Standard English orthography. He then listened to the recording again and added phonetic transcription and information about stress placement at places in the transcript where an interlocutor had explicitly indicated non-understanding of another interlocutor.

To date not very many investigations include a researcher as participant. It was thought that this original incorporation would allow the researchers to have an interesting insider’s viewpoint of what they initially wished to explore. However, such an individual stance may impose some limitations on the results obtained as the scope of the research relies exclusively on only one version of the

accounts analyzed. This issue of researcher as participant will be resumed in the upcoming sections.

A balanced English-Spanish bilingual, an instructor with 35 years' experience teaching English phonology, checked the transcripts against the entire recording, making changes where she disagreed with the original transcript. The two instructors (the first author and the balanced bilingual) then discussed the differences in the transcript, revisiting various points in the recording until they reached consensus.

## RESULTS AND ANALYSIS

In this section, we present the four episodes selected from the two-hour conversation between the three interlocutors. In these episodes, one interlocutor (the first author) had signaled non-understanding of another interlocutor. In terms of the sources of unintelligibility, the four episodes are representative of other episodes of unintelligibility which stemmed from interlocutors' pronunciation. Interlocutors' production of selected italicized words is transcribed phonetically with the International Phonetic Alphabet (IPA). Nuclear stress placement in selected phrases is indicated with a superscript accent mark (ˈ) before the stressed syllable.

A: Anil, an Indian male student (L1: Hindi)

P: Argentinean male teacher of English, the first author (L1: Spanish)

S: Sudhir, Indian male student (L1: Hindi)

### Episode 1: Learning English

A: I want to become an ISA officer. ISA - mean to say - Indian administrator service. It is necessity. It is essential to us our English should be strong. Due to *backward*

[bəkˈgwar]

area, my English was very weak.

P: Due to?

A: *Backward*.

[bəkˈgwar]

P: Oh! You mean in the countryside? Ah, O.K.?

A: Yeah! Due to countryside, there is no facility for education and there is no *environment* of English.

[ənˈgwærɪmənt]

P: There is no...?

A: *environment*

[ənˈgwærɪmənt]

P: Oh! *Environment*.

[ənˈvajənmənt]

A: There is no *environment* of English/ that is why I had to leave my home and came to Chandigarh

[ənˈgwærɪmənt] (*place name*).

There were two points in this episode when one interlocutor (Anil) was unintelligible to another (P). In the first instance, P was unable to understand Anil's

production of '*backward*'. P later reported that he had understood everything preceding and following '*backward*', but had not understood the word itself, most likely because of vowel reduction and the unorthodox placement of lexical stress. The first syllable was unstressed and the vowel had been reduced, while the second syllable had been stressed and the normally reduced vowel /ə/ had been produced with its full vowel quality /a/. The sound /d/ had also been deleted at the end of the second syllable. P elicited another production of the word from Anil, who again stressed the second syllable and reduced the first syllable. However, P was able to recognize the word, even with the unorthodox lexical stress. The second instance of unintelligibility occurred when Anil produced the word '*environment*', but substituted the /v/ sound with the two sounds /g/ and /w/. The substitution of /w/ for /v/ is a common feature of Indian English (Nihalani et al., 1979).

P elicited the word again from Anil, who once more substituted /v/ with /g/ and /w/. P then identified the word and produced it without segmental substitutions. Anil then repeated his original phrase, again substituting /v/ with /g/ and /w/.

### Episode 2: After Death

S: When we die, is it so that to be actually stop existing. After that, is so that to be go to some other worlds, or transmigration. You can say transmigration of soul that we continue, so I think that some sort of *power* that there is some sort of *power*

[ˈbawə] [ˈbawə]

that controls this universe.

P: Sort of? Bar?

S: *Power, power*.

[ˈbawə] [ˈbawə]

A: *Power / Power*

[ˈpʰawə] [ˈpʰawə]

P: *Power? Ah, power!*

[ˈpʰawə] [ˈpʰawə]

S: There is some sort of *power* that is controlling this universe that is actually

[ˈpʰawə]

influencing this universe and controlling it, but, according to me, we can't be sure that this is god or this is not god.

In this exchange, the communication breakdown occurred with the word '*power*'. Sudhir had substituted the phoneme /p/ with the phoneme /b/ ([ˈbawə]). P could not confidently identify the word and checked his understanding by repeating what he believed had been said. Sudhir again produced the word with the same substitution. Anil then intervened by repeating the word using the aspirated allophone [pʰ] ([ˈpʰawə]) and so P was able to successfully identify the word, thus confirming that it was the lack of aspiration which had made

the word unintelligible to him. In this episode, Anil made a reactive move towards a mutually acceptable pronunciation of the word 'power', accommodating to P in order to ensure maximum intelligibility in the conversation. Sudhir also accommodated to a mutually acceptable pronunciation, but only after he had heard P's production of the word.

### Episode 3: Sati Partha<sup>1</sup>

A: Nowadays, it has totally finished, totally end.  
 P: Arranged marriages?  
 A: No, no, no! It is another incident. 20 year ago, 50 year ago, it was a tradition in India. Nowadays, it is doing very short, very less.  
 P: What?  
 A: I am telling to you. If you are my husband and I am your wife, if you died, I would have to *burn* myself with you.  
 [ˈbɑːn]  
 P: To what?  
 A: To *burn* in your *fire*.  
 [bɑːn] [ˈkwajə] [ˈkwajə]  
 P: *Burn*? Die?  
 [bɔːn]  
 A: Yeah! With your *fire*! With you in your *fire*. I would have to *burn* myself. It is called  
 [ˈkwajə] [ˈkwajə] [ˈbɑːn]  
 sati partha.  
 P: Parta? Depart? Go away?  
 S: Tradition!  
 A: No! No, no, no.  
 P: Tradition?  
 A: If you died, I would have to *burnt* myself with you. In the *fire*, while alive.  
 [ˈbɑːnt] [ˈkwajə]  
 Sacrifice myself with you.  
 P: Why?  
 S: The wife is too much devoted to her husband. She can't live without her husband.

In this episode, P signaled non-understanding of the word 'burn', which Anil had pronounced as /bɑːn/. Anil then pronounced 'burn' again with the same vowel substitution, but provided more context for the word by including the semantically related word 'fire'. However, when pronouncing 'fire', he substituted the phoneme /f/ with the two phonemes /k/ and /w/. P ventured a guess as to the initial word, correctly guessing 'burn', but misidentified the second related word as 'die'. Anil continued to explain the practice of *sati partha* without modifying his pronunciation of either problematic word,

<sup>1</sup>Sati (widow burning) was a tradition, practiced by some upper-caste Hindu communities, in which a recently-widowed woman would immolate herself on her husband's funeral pyre. This was seen as "the duty of [any] virtuous wife" (Mani, 1998, p. 1) and was thought by some to ensure that both she and her husband would live on in the afterlife (Mani, 1998).

with P eventually understanding several turns later that Anil was talking about widows being burned alive.

### Episode 4: Falling in Love

A: ...After three year, I would get PhD.  
 P: OK. And, what do you want to do? Do you want to marry this girl? Or somebody else?  
 A: Yeah. Actually, main thing is that she can't live without me.  
 P: She can't live without you?  
 A: Yeah, is reality.  
 P: And... can you live without her?  
 A: No! That's impossible.  
 P: You need her? You are in love with her?  
 A: You can say... I am a body, and she is my *breath*.  
 [brɛt]  
 P: She is what?  
 A: She is *breath*, she is air. Oxy...  
 /brɛt/  
 S: She is the thought! She is oxygen!  
 P: Oh! She is your air! *Breath*!  
 /brɛθ/  
 A: Yeah! I can't live without her.

In this episode, Anil's substituted one consonant for another. That is, he used the alveolar plosive /t/ in final position in place of /θ/ in pronouncing 'breath'. This substitution process may also have brought about, along with it, a change in the quality of the preceding vowel /ɛ/. As a result of this complex phonological process that involved substitution and vowel quality change, P could not recognize the word at stake. In view of this breakdown in communication, Anil repeated the problematic word a few times. Later on, he also supplied semantically related words. Sudhir intervened as well, supplying metaphorically and semantically related words ('*thought*, *oxygen*'). After this repetition and paraphrasing, P was able to correctly identify the word as 'breath'. In this episode, neither L1 Indian interlocutor adjusted their pronunciation of the problematic word. Instead they supplied semantic clues that helped P identify the word as such.

### DISCUSSION

It is noteworthy that in all four episodes presented, it was the same speaker (P) who had difficulty understanding the other interlocutors. This may be because P, Anil, and Sudhir had different types of experiences interacting in English, leading to different abilities to accommodate to each other's speech. Jenkins (2000: 182-183) notes a number of conditions which encourage receptive or productive accommodation. The conditions for receptive accommodation are, briefly, motivation to understand, experience with different NNS accents, experience with

the speaker's accent, lack of concern about being negatively influenced by the speaker's production, and readiness to show non-comprehension. The conditions for productive accommodation are high awareness of the necessity for intelligibility, appreciation of the listener's challenges in using non-linguistic context in understanding speech, effortless production of the target phonological item, and a lack of processing overload, allowing the speaker to attend to his pronunciation.

P, an L1 Spanish speaker, typically spoke English with L1 Spanish speakers (his students and colleagues). In addition, he had had extensive interaction with native speakers of North American and British English but also non-native speakers of English whose L1s were usually European languages (e.g., French, Spanish, German). However, he had very little experience interacting in English with L1 Hindi speakers. In his interactions with non-native speakers, P was accustomed to modifying his speech in order to increase speakers' understanding. These modifications could include slowing his speech or minimizing segmental and suprasegmental differences from a model of North American English. In contrast to P, Anil and Sudhir's interactions in English with non-native speakers had previously been only with speakers of L1s from the Indian sub-continent.

P's receptive and productive accommodation skills were well-practiced in interactions with other NNSs. All the conditions for receptive accommodation existed for P except experience with the two speakers' L1 Hindi accents. The fact that P was the only participant who had difficulty understanding his interlocutors may be partly due to this lack of experience interacting with L1 Hindi speakers. However, another reason may be Anil and Sudhir's lack of experience talking to diverse non-native speakers. This may have led to periodic difficulties in producing or modifying speech so that it was intelligible to an NNS listener (P) unfamiliar with their accents. In contrast, P's ability to slow his speech and approximate a well-known model of native speaker English (General American) may have heightened his intelligibility to a degree that Anil and Sudhir did not have any difficulties understanding him.

Of the four episodes presented, all four involved substitutions of individual sounds (consonants and vowels), while one also involved a combination of misplaced lexical stress and sound deletion. These results partially reflect the phonological features in Jenkins' LFC, which include the production of individual sounds. However, Jenkins specified that accurate production of dental fricatives, such as the one in '*breath*' is "not necessary for intelligible...pronunciation" (2000, p. 138). It may be that Anil's metaphorical, as opposed to literal, use of '*breath*', served to make the word semantically less predictable to P. He thus required a canonical pronunciation of '*breath*' in order to recognize it, and the substitution of /θ/ with /t/ served to make the word unintelligible to him. The effect of NNS speakers using non-prototypical word meanings on the understanding of NNS listeners has yet to be

explored in depth, though Seidlhofer (2009a) and Pitzl (2010) have examined the use of idiomatic expressions among NNSs.

Lexical stress is not included in Jenkins' LFC. Nevertheless, in one episode in the current study, misplaced lexical stress contributed to the unintelligibility of a word. Jenkins notes that in her speech data, intelligibility was rarely impaired by misplacement of lexical stress (2000, p. 41). When lexical stress did play a part in a word's unintelligibility, it was almost always in conjunction with some other deviations in pronunciation. Jenkins particularly points to misplacement of lexical stress which affects the nuclear stress of a phrase. For example, if a speaker puts primary stress on the wrong syllable of a word and that same word, rightly or wrongly, also receives nuclear stress within the phrase or utterance, the listener may be unable to understand not simply the word, but a longer phrase or utterance. However, in Episode 1 when Anil put primary stress on the wrong syllable (the second) in '*backward*', which also received nuclear stress in the phrase "*due to backward area*", P was able to understand the entire phrase except for the word '*backward*' itself. Nevertheless, even though almost all the words in the phrase were understood, P could not figure out what his conversation partner meant. In this instance, the misplaced lexical stress prevented P from recognizing the word; the fact that the word also carried nuclear stress (marking key information) probably reduced the effect of any contextual information P might have used to identify the word.

All in all, our analysis of the four episodes suggests that the sources of unintelligibility partially but not completely matched the phonological features in Jenkins' LFC. As Jenkins claims, deviations in individual sounds were often the reason that words were unintelligible, though one sound specifically excluded from Jenkins' LFC (/θ/) seems to have played a role in the unintelligibility of one word. The word was used with a non-prototypical (metaphorical) meaning; this may have also contributed to its unintelligibility. The role of figurative and idiomatic language by speakers of ELF is an emerging area of research (Pitzl, 2010; Seidlhofer, 2009a) which will hopefully shed light on how intelligibility can be affected by metaphorical or idiomatic language between NNS speakers.

In the same way as metaphorical language, the nature of interlocutors' cultural or pragmatic knowledge may also affect speakers' intelligibility. While analyzing the transcripts of Episode 3, P acknowledged having had no previous familiarity with the term '*sati partha*' or with the extinct tradition of "widow-burning", in which a newly-widowed woman would immolate herself on her husband's funeral pyre. If some of the problematic lexical items (that is, *burn* and *fire*) had been produced with the same segmental substitutions in a context which was more familiar to P, he may have been able to recognize them more easily without the aid of so many clarification requests. Similarly, if P had been familiar with the term

'*sati partha*' before engaging in this conversation, he may have been able to recognize the term, given the conversational context.

The current research study used a case study approach to investigate sources of unintelligibility between NNSs. This approach allowed us to analyze in detail the interaction between interlocutors and specific episodes of unintelligibility. In addition, the first author's participation provided an emic or insider perspective on his comprehension as an interlocutor in an unscripted conversation between speakers of different L1s and cultural backgrounds. The selected episodes of unintelligibility reflect P's experience of the two-hour conversation, in which he was the only interlocutor to have trouble understanding the speech of his conversation partners, who shared an L1 (Hindi). This pinpoints the importance of a LFC, which is meant to highlight aspects of pronunciation which are crucial for intelligibility between different-L1 NNSs.

Because we used a case study approach, analyzing one conversation between three NNS interlocutors, we do not suggest that these results are comprehensive or that they identify all possible sources of intelligibility in NNS spoken interactions. However, the results do partially match the phonological features in Jenkins' LFC. Therefore, for people who teach or learn English for the purpose of communicating not only with NSs, but also with NNSs, this suggests that individual sounds and lexical stress placement may be important to NNSs' mutual intelligibility and should be targeted in self- or classroom instruction. Lexical stress is almost always included in pronunciation syllabi for English learners; however, the production of individual sounds is now often de-emphasized in pronunciation textbooks (Dickerson, 1989; Hewings, 2007; Lane, 1997). Suprasegmentals such as rhythm and nuclear stress, which are thought to be more critical to NNS intelligibility, are usually given higher priority. Nevertheless, the results of the current study suggest that the production of individual sounds is important in NNS intelligibility and should be a focus of teaching and learning English speech (Munro and Derwing 1995; Setter and Jenkins, 2005).

Walker (2010) has written a pronunciation methodology textbook from an ELF approach, outlining the benefits of adopting both this approach and Jenkins' LFC. The teaching techniques and materials described are based on the LFC. Important aspects of Walker's approach include raising learners' awareness of ELF so that native-like speech is not the only pronunciation goal presented to learners, and developing learners' skills in accommodating to other ELF speakers. Recordings of authentic speech from ELF speakers are used in activities to introduce the LFC and improve learners' accommodation skills. In his book, Walker has provided extensive guidance on how teachers could use the LFC to take an ELF approach. This raises the question, if teachers use the LFC while teaching pronunciation to learners, do the learners become more intelligible?

In a study conducted at Shanghai Normal University

with 268 third-year college Chinese students, Luchini (2004b) reported a teaching experience when he decided to integrate a pronunciation component into a spoken English course and evaluate its effectiveness. This pronunciation component was included precisely to enable the learners to adjust their pronunciation and thus become intelligible English speakers, able to function in ELF contexts. Based chiefly on Jenkins' LFC (2000) and on his own language experience in China as a Spanish native speaker, on this occasion, Luchini decided to teach his Chinese students some of the phonological core items, including individual sounds, listed in Jenkins' inventory. The results of his study showed that after being explicitly taught some of these phonological features, almost 80% of the students stated that their pronunciation had improved considerably compared to their pronunciation prior to the course. In addition, over 95% of the students reported greater confidence in their speaking abilities. These results speak to the students' own perceptions of their pronunciation ability. The next step in future research is to investigate instruction which uses features from the Lingua Franca Core, adding *listener-based* measures (e.g., ratings of accentedness, measures of intelligibility) in order to triangulate findings using different data collection methods.

On a similar vein, Luchini (2012a) has just reported the results of a study in which he evaluated the impact that a consciousness-raising task on ELF had on a group of 21 trainees enrolled in '*Discurso Oral II*', a pronunciation course taught at Universidad Nacional de Mar del Plata, Argentina. After completing this task, his participants revealed some degree of acquisition of explicit phonological knowledge and awareness of how ELF operates in international contexts. Moving one step forward, in a different study, this same author has just compared and reported the results of this last investigation with those coming from another group of pre-service trainees -under a controlled condition- who did not receive this treatment (Luchini, 2012b). Both groups -control and experimental- worked under similar conditions and were homogenous in that they shared some common characteristics. Oral test grades and an evaluative questionnaire were used as instruments for data collection. On comparing both groups' results, it was observed that after having completed the ELF task, the experimental group gained more accuracy in their speech than the students in the control group. It can therefore be claimed that tasks on ELF that promote noticing and consciousness-raising of this type promote pronunciation awareness and phonological accuracy.

## Conclusion

The aim of this study was to explore the relevance of Jenkins' LFC to the intelligibility of spoken interaction between NNSs. Results showed a partial match between the phonological features in Jenkins' LFC and



the sources of unintelligibility in the analyzed episodes, which included the production of individual sounds. However, two phonological features which were specifically excluded from the LFC, the sound /θ/ and the placement of lexical stress, were also found to be sources of unintelligibility.

The results of this study suggest that some of the pedagogical approaches to targeting the sources of unintelligibility between NNESs might need to be re-evaluated. Analyses showed that both segmental and suprasegmental features contributed to unintelligibility between speakers, indicating that in order to promote intelligibility between NNSs, teachers and learners of English should focus on the production of both individual sounds and suprasegmental elements.

Although the findings here reflect some of the findings from Jenkins (2000), there are several limitations to the study which point to the need for further investigations into the LFC. First, although the analysis of the episodes included P's insider perspective after the fact as one of the interlocutors, the analysis did not include S or A's interpretation of the communication. This means that they did not have the opportunity either to corroborate or to challenge P's analysis of the occurrences and the sources of unintelligibility. However, we see the participation of the first author as strength of this study because it allows an insider's perspective on the conversation rather than simply an external observer's interpretation. Unlike Jenkins' original research, few ELF studies include a post-communication phase when all interlocutors are able to comment on the interaction. However, clearly the participation of all ELF interlocutors in the analysis of their communication is a valuable component in ELF research. Another limitation is that the findings about relevant features of the LFC are drawn from a small number of ELF speakers ( $n=3$ ) in one conversation. Additional observational studies of ELF interaction should be conducted with speakers of various L1s in various interactional contexts (e.g., business meetings, social events, service encounters) (see the ELF volume by Mauranen and Ranta, 2010, which includes many such studies). In this way, a more comprehensive and potentially generalizable description can be made of the pronunciation features which are important for ELF intelligibility.

Whether or not a NNES desires to speak with a native-like accent, each speaker expects at the very least to understand and to be understood. It is hoped that future research will help to clarify what is necessary to maintain intelligibility between speakers of ELF.

## REFERENCES

- Berns M (2008). World Englishes, English as a lingua franca, and intelligibility. *World Eng.* 27:327-334.
- Björkman B (2010). Spoken lingua franca English at a Swedish technical university. Unpublished Ph.D. dissertation, University of Stockholm.
- Celce-Murcia M, Brinton D, Goodwin J (1996). Teaching pronunciation: A reference for teachers of English to speakers of other languages. Cambridge: Cambridge University Press.
- Dauer R (2005). The Lingua Franca Core: A new model for pronunciation instruction? *TESOL Quart.* 39(3):543-550.
- Derwing T, Munro M (2005). Second language accent and pronunciation teaching: An empirical approach. *TESOL Quart.* 39:379-397.
- Deterding D, Kirkpatrick A (2006). Emerging South-East Asian Englishes and intelligibility. *World Eng.* 3:391-409.
- Dickerson W (1989). Stress in the speech stream. Illinois: University of Illinois Press.
- Duszak A, Lewkowicz J (2008). Publishing academic texts in English: A Polish perspective. *J. Eng. Acad. Purposes* 7:108-120.
- Ehrenreich S (2009). English as a Lingua Franca in multinational corporations – exploring business communities of practice. In: Mauranen and Ranta (eds.) pp.126-151.
- Fayer J, Krasinski E (1987). Native and non-native judgements of intelligibility and irritation. *Lang. Learn.* 37:177-204.
- Firth A (1996). The discursive accomplishment of normality: on 'lingua franca' English and conversation analysis. *J. Pragmat.* 26:237-259.
- Gibbon D (2008). Navigating pronunciation in search of the Golden Fleece. In: Dziubalska-Kolaczyk K and Przedlacka J (Eds.). English pronunciation models: A changing scene. Frankfurt am Main: Peter Lang. pp.439-465.
- Graddol D (2006). English next. British Council.
- Hewings M (2007). English pronunciation in use: Advanced. Cambridge: Cambridge University Press.
- Hitchcock G, Hughes D (1995). Research and the teacher: A qualitative introduction to school-based research (2<sup>nd</sup> ed.). London and New York: Routledge.
- Jenkins J (1998). Which pronunciation norms and models for English as an International Language? Oxford: Oxford University Press. In *English Lang. Teach. J.* 52(2):119-126.
- Jenkins J (2000). The phonology of English as an international language. Oxford: Oxford University Press.
- Jenkins J (2002). A sociolinguistically based, empirically researched pronunciation syllabus for English as an international language. *Appl. Linguist.* 23:83-103.
- Jenkins J (2006). The spread of English as an international language: A testing time for testers. *ELT J.* 60:42-50.
- Jenkins J (2007). English as a Lingua Franca: Attitude and Identity. Oxford: Oxford University Press.
- Kachru B (1992). The other tongue: English across cultures (2nd ed.). Urbana, IL: University of Illinois Press.
- Lane L (1997). Basics in pronunciation: Intermediate practice for clear communication. New York: Pearson.
- Lindemann S (2002). Listening with an attitude: A model of native-speaker comprehension of non-native speakers in the United States. *Lang. Soc.* 31:419-441.
- Luchini P (2004a). Integrating a pronunciation component into a Spoken-English course at Shanghai Normal University: A case study. In *IATEFL Speak Out!* 2:14-31.
- Luchini P (2004b). Developing oral skills by combining fluency- with accuracy focused tasks: A case study in China. *Asian EFL J.* Online Publication [http://www.asiane-efl.com/june\\_04\\_pl.html](http://www.asiane-efl.com/june_04_pl.html). Hardcover issue: *Asian EFL J.* Press 1: 141-151.
- Luchini P (2008). El inglés como lengua internacional: Factores fonológicos que afectan la inteligibilidad. Proceedings: XV Congreso Internacional de la ALFAL (Asociación de Lingüística y Filología de América Latina) within Project 19: Fonología: Teoría y Análisis. Montevideo, Uruguay.
- Luchini P (2012a). Monitoring the impact that an exploratory task on ELF had on Spanish-L1trainee pronunciation skills. *Speak Out! IATEFL, Pronunciation Newsletter* 46:18-22.
- Luchini P (2012b). An experimental study on ELF pronunciation integrating a language awareness component. *J. Eng. Int. Lang.* 7(2):57-79. <http://www.eilj.com/>.
- Mani L (1998). Contentious traditions: The debate on sati in colonial India. Berkeley: University of California Press.
- Munro M, Derwing T (1995). Foreign accent, comprehensibility and intelligibility in the speech of second language learners. *Lang. Learn.*

- 45:73-97.
- Mauranen A, Ranta E (2010). English as a lingua franca: Studies and findings. Newcastle upon Tyne: Cambridge Scholars Press.
- Nihalani P, Tongue R, Hosali P (1979). Indian and British English: A handbook of usage and pronunciation. Delhi: Oxford University Press.
- Nunan D (1992). Research methods in language learning. Cambridge: Cambridge University Press
- Osimk R (2009). Decoding sounds: An experimental approach to intelligibility in ELF. Vienna English Working Papers 18(1):64-89. Retrieved from [http://anglistik.univie.ac.at/fileadmin/user\\_upload/dep\\_anglist/weitere\\_Uploads/Views/0901final.pdf](http://anglistik.univie.ac.at/fileadmin/user_upload/dep_anglist/weitere_Uploads/Views/0901final.pdf).
- Pickering L (2009). Intonation as a pragmatic resource in ELF interaction. *Intercult. Pragmat.* 6:235-255.
- Pitzl M-L (2005). Non-understanding in English as a lingua franca: Examples from a business context. Vienna English Working Papers 14(2):50-71. Retrieved from <http://www.univie.ac.at/Anglistik/Views0502mlp.pdf>.
- Pitzl M-L (2010). 'We should not wake up any dogs': Idiom and metaphor in ELF. In: Mauranen A and Ranta E (Eds.) English as a lingua franca: Studies and findings. Newcastle upon Tyne: Cambridge Scholars Press pp.298-322.
- Pullin SP (2009). No joke – this is serious!' Power, solidarity and humour in business English as a Lingua Franca (BELF). In: Mauranen and Ranta (eds.) pp.152-177.
- Rajadurai J (2005). Revisiting the concentric circles: Conceptual and sociolinguistic considerations. *Asian EFL J.* 7(4):7.
- Seidlhofer B (2001). Closing a conceptual gap: The case for a description of English as a lingua franca. *Int. J. Appl. Linguist.* 11:133-158.
- Seidlhofer B (2009a). Accommodation and the idiom principle in English as a lingua franca. *Intercultural Pragmatics*, 6:195-215.
- Seidlhofer B (2009b). Common ground and different realities: World Englishes and English as a lingua franca. *World Eng.* 28:236-245.
- Setter J, Jenkins J (2005). State-of-the-Art Review Article. *Lang. Teach.* 38:1-17.
- Sifakis N, Fay R (in press). Integrating an ELF pedagogy in a changing world: The case of Greek state schooling. In: Archibald, Cogo & Jenkins (eds.).
- Smit U (2010). English as a lingua franca in higher education. Berlin: de Gruyter Mouton.
- Smit U (2003). English as a Lingua Franca (ELF) as medium of learning in a hotel management program: An applied linguistic approach. *Vienna Eng. Work. Papers* 12(2):40-75.
- Smith L, Nelson C (2006). World Englishes and issues of intelligibility. In: Kachru B, Kachru Y and Nelson C (Eds.). *The handbook of World Englishes* Oxford: Blackwell pp.428-444.
- Trudgill P (2008). Native speaker segmental phonological models and the Lingua Franca Core. In: Dziubalska-Kolaczyk K and Przedlacka J (Eds.). *English pronunciation models: A changing scene.* Frankfurt am Main: Peter Lang. pp.77-98.
- Varonis E, Gass S (1985). Non-native/non-native conversations: a model for negotiation of meaning. *Appl. Linguist.* 6:71-90.
- Wagner J (1996). Foreign language acquisition through interaction: A critical review of research on conversational adjustments. *J. Pragmat.* 26:215-235.
- Walker R (2001). Pronunciation priorities, the Lingua Franca Core, and monolingual groups. *IATEFL Speak Out! Pronunciation SIG.*
- Walker R (2010). Teaching the pronunciation of English as a lingua franca. Oxford: Oxford University Press.
- Zoghbor W (2011). Teaching the Pronunciation of English as a Lingua Franca: Reducing Skepticism and Increasing Practicality. *Int. J. Hum. Soc. Sci.* 1(8):285-288.