

Fuchs, Robert. 2016. *Speech Rhythm in Varieties of English. Evidence from Educated Indian English and British English*. Cham: Springer International Publishing. 216 pages.

A number of comparative studies have looked at differences between phonological and grammatical features in British and Indian English. Yet, we still do not know much about differences between British English and Indian English prosody, such as differences in rhythmic patterns. Over the last twenty years or so many studies have looked at how speech rhythm may differ in varieties of English. Several varieties of English have been investigated. One finding is that rhythmic patterns in contact varieties of English may be different from those of British and American English (e.g. Deterding, 2001; Thomas & Carter, 2006; Torgersen & Szakay, 2012). The assumption is that Inner circle varieties, in line with Kachru's model, like British and American English, are stress timed but that Outer circle varieties are syllable timed due to language contact in the Outer circle, because the languages in contact with English generally have a syllable timed rhythm. Examples of such languages are Mandarin and Spanish. This is often caused by differences in vowel phonology: there is reduced amount of vowel duration in stressed and unstressed syllables (Torgersen & Szakay, 2012). British and American English have a larger durational difference between vowels in stressed and unstressed syllables.

In *Speech Rhythm in Varieties of English* Robert Fuchs investigates rhythmic patterns in British and Educated Indian English. The book is a reworked version of his doctoral thesis and therefore includes quite a bit of technical detail, but is fairly easy to read and the discussion is balanced between introductory chapters, results and discussion. The book includes a very comprehensive overview of existing studies of speech rhythm in varieties of English. He describes in great detail the rhythm metrics which have been devised to investigate differences in rhythmic patterns and clearly explains what motivated the rhythm metrics, how they work and also the criticisms of them. Fuchs argues, which is the main criticism of the metrics, that we need to take several different aspects of rhythm into consideration when comparing speech rhythm in different varieties. Most comparative studies only have investigated a single variable—in most cases vowel duration—which as we saw above often is the cause of the purported rhythmic differences between varieties

of English. Fuchs argues that studies may give different results if additional variables like loudness, duration of consonants and syllables are examined. Some studies which have found differences also have analyzed a small number of speakers. Fuchs then discusses the role of production and perception in speech rhythm and points out that comparative studies need to take both into consideration.

The book includes a very detailed description of the theoretical background for measuring speech rhythm, what elements of the speech signal that can be measured for speech rhythm and the different existing metrics. This part is perhaps a bit too detailed in places, which makes it unnecessary complex. In his own investigation, Fuchs carries out measurements of several acoustic elements such as duration, loudness, sonority etc. using the metrics he has described. These also include measurements of vowel and consonant durations. Using the metrics normalized PVI for vowel duration and Varco for vocalic durations he finds that Educated Indian English is more syllable timed than British English. He also considers these metrics the most reliable. However, measuring syllable durations with these two metrics he only finds very small differences between the two varieties, which shows that choice of metric can give different results. Measuring other elements of the speech signal such as loudness and sonority did not provide very different results.

Here is an overview of the content of the different chapters of the book:

Chapter 1 motivates the investigation pointing out that varieties of English in the Outer circle (following Kachru's model) are apparently more syllable-timed than Inner circle varieties. Whereas many studies have investigated grammatical features and lexis of Outer circle varieties, there are hardly any studies of segmental and suprasegmental features in these varieties. British English and Indian English are therefore worthy of investigation for speech rhythm.

Chapter 2 describes the English language in India from a historical perspective and its position today with emphasis on phonological features. It is pointed out that there is a paucity of acoustic studies of Indian English and of suprasegmental investigations specifically. Nevertheless, there are claims that Indian English is syllable-timed, like other contact varieties of English, but this has not yet been empirically investigated.

Chapter 3 includes a very detailed review of the nature of speech rhythm and of studies on speech rhythm. The type of variability that is involved in distinguishing between types of rhythmic structures includes the duration of vocalic and consonantal elements, duration of syllables, loudness, intensity, fundamental frequency, voiced durations and sonority. All of these are discussed. Fuchs points out that not just one of the variables are involved in characterizing a variety as stress or syllable timed, but several.

Chapter 4 outlines various measurements of rhythmic structures and describes the metrics that have been devised to examine rhythmic structures, and also how they have been criticized. While many studies have investigated duration of vowels, few studies have investigated perception of rhythm. Fuchs argues that several different features of speech production, not just the duration of vocalic segments, as well as perception, contribute to the rhythmic patterns of a language variety. An investigation of rhythmic patterns should therefore take into account both production and perception elements.

Chapter 5 describes the materials used in the investigation. For British English, recordings of 10 speakers from the DyViS database were used. For Educated Indian English, 20 speakers were recorded by the author in India. The speakers represent different first language backgrounds and they were interviewed using a special protocol to collect data that was unscripted, yet fairly similar.

Chapter 6 presents differences between Educated Indian English and British English rhythmic patterns. Overall, Educated Indian English is more syllable timed than British English. But the results are dependent on the type of measurement: the two varieties are different for vocalic and syllabic durations and some other measurements. The varieties are similar for other measurements like percentage of vocalic durations over total utterance duration. In fact, Educated Indian English is more stress timed in terms of speech rate because Educated Indian English has lower speech rate than British English.

Chapter 7 describes differences in speech rhythm in terms of perception. Listeners' perception of differences in rhythmic patterns versus intonation and segmental differences were tested in two tasks. Listeners found that segmental and intonation differences were more important, or salient, than rhythmic differences when classifying the variety as Educated Indian English or British English.

Chapter 8 provides a summary and conclusion of the whole investigation. The main conclusion is that Educated Indian English is more syllable timed than British English for most variables investigated. Studies of rhythm need to investigate more than one variable for rhythm, i.e. use a multidimensional model of rhythm. Both production and perception aspects need to be included in the model, in particular for comparison of different varieties of English.

Even though the book is very detailed and thorough in the analysis of speech rhythm, there are aspects that could have been discussed in more detail. One example is the use of monophthongs in the FACE and GOAT vowels in Educated Indian English. Fuchs just points out that these are pronounced as monophthongs in Indian English (p. 206), but he does not mention the effect it has on speech rhythm. These vowels contribute to the more equal duration of successive syllables and studies of the vowels in other contact varieties of English have shown that these also contribute to the rhythmic patterns. Work on Multicultural London English has demonstrated that the monophthongal qualities of these vowels have a shorter duration than diphthongal qualities and therefore lead to a more syllable timed rhythm when vocalic duration is entered in e.g. the normalized PVI metric (Torgersen & Szakay, 2012). Another vowel that could have been investigated is schwa, as well as other vowels in unstressed syllables. Lengthening of schwa (and other unstressed syllables) similarly has an effect on normalized PVI: there is a levelling of successive syllable durations. Fuchs does mention that schwa, when realized as the COMMa vowel, may be merged with the vowels in STRUT and NURSE (p. 207).

Fuchs' main contribution to speech rhythm research is applying a multidimensional model for analyzing speech rhythm which incorporates both production and perception data. He stresses that the almost exclusive reliance on production data in speech rhythm research can be criticized because studies have shown, including his own investigation, that a variety can be characterized as both syllable or stress timed depending on what you measure and how you measure speech rhythm. There is also a trading relation between the acoustic parameters: whereas British English uses both increased duration and loudness to signal prominence, Indian English does not. Measuring only one acoustic variable therefore potentially misses relevant information in the speech signal. But speech rhythm may be a variable of less importance to

listeners when classifying speech: Fuchs' study also shows that rhythmic differences contribute less than segmental differences in categorizing differences between varieties.

Fuchs concludes his investigation by suggesting that work investigating differences between varieties of English specifically needs to include production, including different acoustic variables, and perception aspects. I can only agree with this statement—but such work will perhaps be limited to doctoral theses because of the complexity and amount of work needed.

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*References*

- Deterding, D. (2001). The measurement of rhythm: A comparison of Singapore and British English. *Journal of Phonetics* 29: 217-230.
- Thomas, E. & Carter, P. M. (2006). Prosodic rhythm and African American English. *English World-Wide* 27: 331-355.
- Torgersen, E. & Szakay, A. (2012). An investigation of speech rhythm in London English. *Lingua* 122: 822-840.