THE RHYTHM OF SINGAPORE ENGLISH

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ABSTRACT - Singapore English is relevant for the study of rhythm, because it is often claimed to have syllable-timed rhythm. Speakers of Singapore English Pronunciation (SEP) and Standard Southern British (SSB) were recorded, and the duration of each syllable compared with that of the following syllable for 30 utterances from each variety. It was found that there is greater variability in this measure of syllable-to-syllable duration in SSB, which confirms that SEP might indeed be regarded as more syllable-timed than SSB.

INTRODUCTION

For many years, it has been claimed that there are fundamental differences in the rhythmic structure of different languages, so that some languages can be described as stress-timed, with a tendency for syllables to occur at regular intervals, while others are classified as syllable-timed, with the duration between stressed syllables tending towards regularity. For example, Abercrombie (1967:97) claims that English, Russian and Arabic are stress-timed, while French, Telegu, and Yoruba are syllable-timed.

However, in recent years many researchers have questioned this dichotomy between stress-timing and syllable-timing. For example, Roach (1982) measured variations in the duration of syllables in recordings of English and Russian and compared it with similar measurements for French and Yoruba, and he fails to find any consistent overall distinction in the timing of the first group of supposedly stress-timed languages against the second group of syllable-timed languages; Dauer (1983) fails to find any difference between Spanish, which has been classified as syllable-timed, and English, and suggests that the undoubted difference in the perceived rhythm of these (and other) languages may lie more in the syllabic structure of the languages than in their timing, as Spanish, for example, has far more CV syllables (consisting of a single consonant followed by a single vowel) than English; and Wenk and Wioland (1982) find no tendency for syllable timing in French, which they prefer to characterize as *trailer-timed*, in contrast with English, which they term *leader-timed*.

In searching for evidence for or against stress-/syllable-timing, it would be naive to expect anything approximating perfect isochrony: anybody who produced speech with any unit of speech repeated with complete regularity would sound like a robot. Miller (1984) suggests that languages are better described along a continuum, being more-or-less stress- or syllable-timed, rather than falling absolutely into one category or the other. So if our measurements can show that there is a greater tendency for equal duration either of syllables or between stressed syllables in one variety of speech when compared to another, this would provide evidence for this kind of scale of stress-/syllable-timing.

RHYTHM IN SINGAPORE ENGLISH

Singapore English Pronunciation (SEP) is relevant in this debate over rhythm, because it is often claimed to have syllable-timing (Tongue, 1979:38; Platt and Weber, 1980: 57; Tay, 1982). Moreover, if we compare SEP with a standard variety of English, such as Southern Standard British (SSB), we can factor out the influence of the structure of different languages, because both sets of data will be from the same language.

Of course, it is not entirely true that we can factor out the effects of the different languages. Some of the more salient features of SEP are final consonant cluster simplification, the relative absence of vowel reduction in unstressed syllables, and the lack of smooth liaison between words (Deterding, 1994). Brown

(1988) suggests that these features may combine with syllable-timed rhythm to contribute to what some have termed a *staccato effect*.

One approach would be to say that, if a difference is found in the timing of SEP when compared with SSB, then the factors outlined above, *viz.* simplified consonant clusters, less vowel reduction, and lack of liaison, might be regarded as the features that contribute to the different rhythm, or even the means by which syllable-timing is achieved.

MEASUREMENTS OF RHYTHM IN SINGAPORE ENGLISH

Yeow (1987) looks for instrumental evidence for a difference in the rhythm between British English and SEP, and he fails to find any. However, his findings are based on measurements of the duration between stressed syllables, and he admits that it is extremely difficult to determine which syllables are stressed and which are not, especially in SEP.

In contrast, Low (1994) does find a significant difference in the rhythm of SEP and British English. She recorded some Singaporean speakers and some British speakers reading the same carefully-selected sentences, and she compares the duration of the vowel of one syllable with that of the following syllable; and she finds that there is a greater variability for the British speakers. If the Singaporean speakers were using a more even duration for successive syllables, this indicates that their rhythm may be characterized as more syllable-timed.

The present study investigates whether the findings of Low (1994) are confirmed when natural, conversational speech is used. Furthermore, the whole syllable will be measured, not just the vowel, partly because with conversational speech, often there simply is no vowel to be measured, for example when there is a syllabic /n/ or /l/ or when a function word such as 'to' is spoken fast.

DATA

Three female Singaporean speakers were recorded, first describing a picture and then discussing their educational experiences with the author of this paper (an SSB speaker). Then three female SSB speakers were recorded, performing exactly the same tasks in the same setting. In many cases, as all the speakers were discussing the same topics, they used the same kinds of words; so we have the ability to compare very similar samples of speech.

The three SEP speakers all had a dialect of Chinese as their first language. However, they all use English regularly and easily in their work as university office staff. They all have 'O' levels, but no 'A' levels. They might be regarded as *mesolectal* speakers of English. Two of the SSB speakers were university lecturers, and the third a school teacher. The difference in the educational levels attained by the two groups of speakers undoubtedly contributed to the differences in their speech. However, we are trying to determine whether it is possible to describe one set of data as more or less syllable-timed than another set of data, so it does not matter that the speakers are not exactly matched.

The speech of these six speakers was analysed on a PC using spectrograms output by the KAY CSL analysis software. One problem was found to lie with the large number of pauses that occurred (as expected) with all speakers, as these would obviously interfere seriously with the measurements of rhythm; and so it was decided to concentrate on continuous stretches of speech, which exhibited at least six syllables with no pause.

Ten utterances (or partial utterances) were selected from each speaker, five from the description of the picture, and five from the discussion of educational experiences; and the duration of the syllables was measured. The final syllable of each utterance was ignored, because there is often syllable-final lengthening

in both varieties of English, and also because it is frequently very difficult to identify the end of a word in final position.

MEASUREMENT OF SYLLABLES

There is a problem of how to measure syllables: the easiest method might be to look for the onset of the vowel, as this is usually (though not always) fairly well defined spectrographically. However, quite apart from the problem already mentioned that some syllables simply do not have a vowel, one must consider for a moment the nature of stressed syllables. Usually, we assume that the perception of stress is determined by factors such as loudness, duration, pitch prominence or movement, and vowel quality (Roach, 1991:86); but it is certainly also true that stressed syllables tend to be articulated much more carefully than unstressed ones, and this affects the consonants just as much as the vowels (Brown, 1990:46). Consequently, the pronunciation of the consonants at the beginning and end of a syllable are likely to play an important part in determining whether it is perceived as stressed or not. For example, in one utterance from my data, a speaker produced the word 'particular' with heavy stress on the second syllable, with the result that the /t/ was heavily aspirated. If this second syllable were measured starting from the onset of the vowel, the aspiration would be included in the first syllable, and this might suggest that this word had a longer first syllable than second syllable, which is not accurate. Therefore, syllables were measured including the initial consonant.

It must be admitted that in some cases the measurements are somewhat arbitrary. Careful repeated listening was used to help determine the boundary between syllables; but there remain some instances, particularly when one word ends with a plosive and the next word also begins with a plosive, where one must just select a midpoint.

SYLLABIFICATION

A further problem lies in identifying syllabic boundaries within polysyllabic words. There is no agreement on this issue amongst linguists. For example, many, such as Fudge (1984), would syllabify 'liking' as /laɪ-kɪŋ/; but others, such as Wells (1990), prefer to follow morphological boundaries, so that 'liking' would be /laɪk-ɪŋ/. The differences extend to words with a single morpheme, so that Fudge would syllabify 'happy' as /hæ-pɪ/, as a single intervocalic consonant is usually taken as the onset of the following vowel, whereas Wells prefers /hæp-ɪ/, on the grounds that the consonant belongs with the stressed syllable.

If the system suggested by Fudge were followed, word boundaries could not necessarily be treated as syllable boundaries, as 'at all' would usually be /ə-tɔːl/ (1984:20). But, given the lack of liaison in SEP, assigning a word-final consonant to be the onset of the following syllable in this way for the most part could only apply for SSB, so we could potentially have different syllabification for the same sequence of words in SEP and SSB. In fact, we would have to consider each syllable boundary separately, as there may be instances where SSB speakers do not have liaison and some where SEP do. This would introduce a huge element of subjectivity, which should obviously be avoided. In this investigation, therefore, the syllabification of Wells was preferred, partly because it provides an external, objective reference point. All polysyllabic words were therefore checked in Wells (1990), and the syllable boundaries suggested therein used, even when these seemed counterintuitive (such as /sʌndr-ɪ/ for 'sundry').

As many might find this method of syllabification problematical, an alternative was also done: all word boundaries were treated as syllable boundaries, but boundaries within words were determined according to the principles of Fudge, with a single intervocalic consonant being assigned to the following syllable, and double consonants being divided between the syllables. For consistency, this principle was followed even when the result violates the phonotactic constraints of English, such as with syllable-initial /ŋ/ in 'Singapore' /sɪ-ŋə-pɔː/.

FINDINGS

The duration of each syllable was divided by the average syllable duration of the utterance, to neutralize the effects of speaking rate. The normalized duration of each syllable was then subtracted from that of the following syllable, as a measure of the syllable variability within an utterance. The average of this comparison was then taken as the *variability index* of the utterance, and is given by the following formula, where the normalized duration of each syllable is *d*, and the number of syllables in the utterance is *n*:

$$(\sum_{k=1}^{n-1} |d_{k+1} - d_k|) / (n-1)$$

This measure of variability is similar to the one used in Low (1994). If there is a difference in the rhythm, one would expect stress timed rhythm to exhibit a greater syllable-to-syllable variation, and so the variability index would be greater.

SEP speakers		SSB speakers	
speaker A	0.859	speaker D	0.561
	0.536		0.411
	0.372		0.636
	0.590		0.595
	0.479		0.945
	0.955		0.834
	0.436		0.553
	0.386		0.724
	0.610		0.915
	0.737		0.786
speaker B	0.796	speaker E	0.345
	0.412		0.582
	0.523		1.074
	0.636		0.874
	0.421		0.389
	0.447		0.503
	0.383		0.382
	0.578		0.514
	0.591		0.585
	0.406		0.627
speaker C	0.756	speaker F	0.600
	0.587		0.756
	0.457		0.928
	0.522		0.888
	0.404		0.722
	0.500		0.603
	0.296		0.614
	0.505		0.698
	0.793		0.766
	0.535		0.726
average	0.550	average	0.671
sd	0.160	sd	0.183

Table 1. Variability index with syllabification according to Wells (1990)

Table 1 shows the complete set of variability indices for all the sixty utterances, with syllabification according to Wells (1990). There is a significant difference in the variability of the SEP speech (on the left) from that of the SSB speech ($t = 2.73$, $df = 58$, $p < 0.01$).

The summary for intra-word syllabification according to the guidelines of Fudge is shown in Table 2, and again there is a significant difference in the variability between the two varieties ($t = 3.58$, $df = 58$, $p < 0.01$).

	SEP	SSB
average	0.442	0.567
sd	0.130	0.141

Table 2. Summary of variability indices with intra-word syllabification according to Fudge (1984).

These findings indicate that there are differences in the rhythm of SEP and SSB, and these differences can be measured in the variations in syllable duration. This concurs with the findings of Low (1994).

CONCLUSIONS

A significant difference in the syllable-to-syllable variations in duration has been shown between SEP speech and SSB speech. This confirms the findings of Low (1994), and suggests that there is some validity in regarding the rhythm of the two varieties of speech as differing along a stress-/syllable-timed scale.

One might observe that, although significant, the differences are small. Certainly, there is no suggestion that SEP speech has absolutely isochronous syllable production. But it may be that the differences are sufficient to result in a considerable perceptual impression of varying underlying rhythm.

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REFERENCES

Abercrombie, D. (1967) *Elements of General Phonetics,* (Edinburgh University Press: Edinburgh).

Brown, A. (1988) "The staccato effect in the pronunciation of English in Malaysia and Singapore", in Foley, J. (ed.). *New Englishes - The Case of Singapore*, pp.115-128 (Singapore University Press: Singapore).

Brown, G. (1990) *Listening to Spoken English*, second edition, (Longman: London).

Dauer, R. M. (1983) "Stress timing and syllable-timing reanalyzed", Journal of Phonetics, 11, 51-62.

Deterding, D. (1994) "The characteristics of Singapore English Pronunciation", Review of Educational Research and Advances for Classroom Teachers, 1994, 1.

Fudge, E. (1984) *English Word Stress,* (George Allen & Unwin: London).

Low, E. L. (1994) *Intonation Patterns in Singapore English.* M.Phil. Dissertation, Department of Linguistics, Cambridge University .

Miller, M. (1984) "On the perception of rhythm", Journal of Phonetics, 12, 75-83.

Platt, J. & Weber, H. (1980) *English in Singapore and Malaysia*, (Oxford University Press: Oxford).

Roach, P. (1982) "On the distinction between 'stress-timed' and 'syllable-timed' languages", in D. Crystal (ed.) *Linguistic Controversies*, pp.73-79 (Edward Arnold: London).

Roach, P. (1991) *English Phonetics and Phonology*, second edition, (Cambridge University Press: Cambridge).

Tay, M. W. J. (1982) "The phonology of Educated Singapore English", English World-Wide, 3 (2) 135-145.

Tongue, R. K. (1979) *The English of Singapore and Malaysia*, second edition, (Eastern Universities Press: Singapore).

Wells, J. C. (1990) *Longman's Pronouncing Dictionary*, (Longman: London).

Wenk, J. W. and Wioland, F. (1982) "Is French really syllable-timed?", Journal of Phonetics, 10, 193-216.

Yeow, K. L. (1987) *Stress, Rhythm and Intonation in Educated Singaporean English*. M.A. Dissertation, National University of Singapore.