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'Native' and 'non-native' perception of stress in Singapore English

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ABSTRACT: Many scholars have noted how Singapore English (SgE) exhibits different stress placement patterns as compared to British or American English. Much work has also been done to suggest that such deviations of stress placement patterns from the traditional 'native' norms create problems for intelligibility. This study is concerned with the way stress in SgE is perceived by speakers of different Englishes, comparing specifically two groups of participants: the speakers of SgE; and the speakers of British, American and Australian Englishes (the traditional Inner Circle English speakers). The analyses of a perception test indicate that stress is perceived differently between speakers of different Englishes.

INTRODUCTION

This paper is concerned with the way stress in Singapore English (SgE) is perceived by speakers of different Englishes. A comparison is made between two groups of participants: the speakers of SgE; and the speakers of British, American and Australian Englishes. The latter group has been conventionally referred to as the 'native' speakers of English, or whom Kachru (1982, 2005) would refer to as the Inner Circle English speakers. This paper will show, from the analyses of a perception test, that stress is perceived differently between speakers of different varieties of English. Acoustic measurements of the speech stimuli data will explain how the differences in stress perception come about.

It is widely acknowledged that prosody is an important aspect for intelligibility and communication (e.g. Maassen & Povel 1984; Laures & Weismer 1999; Hahn 2004; Field 2005). Morley (1991) also identifies prosody as a guiding principle for pronunciation teaching. A proliferation of work has also taken on from Morley's assertion and have presented similar stance about prosody and its importance in pronunciation instruction (e.g. Brown 1995; Clennell 1996; Celce-Murcia et al. 1996). One prosodic feature that has been said to be particularly relevant to the pedagogical training of English language teachers is *stress*, also known as *accent* (e.g. Bolinger 1958, 1972; Gunter 1974; Beckman 1986), *nucleus* (e.g. Cruttenden 1997; Gussenhoven 1983), *prominence* (e.g. Jones 1956; Roach 2001) and *tonic* (e.g. Crystal 1969; Halliday 1967). Stress is 'a degree of intensity upon some syllable which makes it more prominent or louder than unstressed syllables' (Pike 1947: 250). Kingdon (1958: ix) defines stress as 'the force employed in uttering a syllable', and this force gives the syllable 'a certain degree of prominence'. As Roach (2001: 86) summarises, 'stressed syllables are recognised as stressed because they are more prominent than unstressed syllables'. And stress is acoustically realized in speech by using or combining either one or more of the following parameters: a detectable change in

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pitch, increased vowel duration, and increased intensity (Lieberman 1967; Crystal 1969; Lehiste 1969; Ladd & Cutler 1983; Bolinger 1986; Cruttenden 1997).

The influence of prosody on intelligibility cannot be underestimated. Munro and Derwing (1999) for example, show that prosodic errors appear to affect intelligibility far more than phonetic errors. Field (2005), in his study, manipulated stress and vowel quality of his stimuli, and asked trained listeners to transcribe them. His study shows that when word stress is shifted to an unstressed syllable, without a change in vowel quality, utterances are perceived to be significantly less intelligible as compared to utterances which only had vowel quality manipulated. Such findings are not restricted only to English. O'Brien's (2004) study on German shows that German native speakers focused more on prosody than on individual sounds when rating speech samples as native-like. The impact of stress on intelligibility and communication has also been raised as an issue within the Singapore context, though the extent to which the stress patterns in SgE is a cause of unintelligibility has yet to be ascertained. Scholars (e.g. Tongue 1979; Platt & Weber 1980, Deterding 1994; Deterding & Hvitfeldt 1994; Low & Grabe 1999; Schaetzel & Low 2009; Schaetzel et al. 2010) have noted how SgE exhibits different stress placement patterns as compared to British or American English. By providing information on how SgE stress patterns 'deviate' from the British or American variety, these studies seem to be implicitly suggesting that there are some native norms that need to be followed, to which SgE is not conforming. Schaetzel and Low (2009), in particular, have also put forward the pedagogical methods to deal with stress in SgE, suggesting perhaps that stress placement in Singapore is an issue for intelligibility. It comes as no surprise therefore, that Hansen Communication Lab, a commercial firm running English-language coaching services in Singapore, finds stress in SgE to be a source of concern for communication. It states on their website (Hansen Communication Lab 2010) that:

> in Singapore English, you will often hear the stress on the 2nd syllable so the words sound more like cal-EN-dar or lav-EN-der [. . .] if you aren't aware of this difference, misunderstandings can and will happen.

To hear or listen to stress, however, is not a straightforward affair. The perception of stress is in fact dependent on a set of acoustic properties. We know, from as early as the pioneering works of Fry (1955, 1958, 1965), that the perception of stress in any language denotes a set of complex perceptual physical dimensions, and the listener relies on (1) length, (2) loudness, (3) pitch, and (4) vowel quality, to determine stress. Testing his hypotheses on each parameter in turn in a series of experiments on British English revealed that fundamental frequency ranks as the most dominant perceptual cue in British English, followed by duration, intensity, and finally vowel quality. Various other studies (Bolinger 1958; Morton & Jassem 1965; Westin et al. 1966; Awedyk 1986; Eek 1987; Beckman 1986; Lass 1987) have also shown that different perceptual cues are employed for different languages or varieties of the same language. The study of stress in SgE therefore cannot be conducted by simply adopting or assuming the cues of stress established for another variety of English. Research has shown, for instance, that SgE speakers typically do not make use of vowel reduction to mark unstressed syllables (Deterding 2001, 2007). Speakers of the same language from different ethnic backgrounds have also been found to perceive stress using different acoustic parameters. Tan (2002), for example, shows that a higher pitch acts less as a trigger for stress for ethnically Chinese Singaporeans, the majority group in

Singapore, than for the ethnic Malay and Indian Singaporeans. Tan (2005) also found that researchers of different linguistic backgrounds do make different judgment calls, especially in areas such as prosody. Using four trained phoneticians as informants, two of whom are Singaporean and speak SgE and the other two are British who speak British English, she observed that the two groups of phoneticians had vastly different judgments when it came to identifying stress placement in SgE. This is not far from what Tay (1982) pointed out more than 30 years ago (with no supporting evidence though): British speakers perceive stress differently from SgE speakers.

Is Tay's intuitive statement true? How is stress perceived by speakers of different Englishes? What causes these differences? Can one think about norms in stress perception, and if so, whose norms should be applied? In the next sections, I will outline the methodology of a perception study carried out to investigate the above questions, and present the results of the study.

LISTENING TO STRESS

The perception test consists of 50 polysyllabic English words taken from a corpus of SgE spontaneous speech. The aim of the perception test is to determine if different speakers of English perceive stress on different syllables. An acoustic analysis of the 50 polysyllabic words follows the perception test to ascertain if different acoustic parameters trigger different perceptions in different speakers. This section will describe the data collection process.

Perception test stimuli

The stimuli for the perception test came from the NIE Corpus of Spoken Singapore English (NIECSSE) (Deterding and Low 2001). The NIECSSE corpus provides ideal material for this perception test for three main reasons: (1) this is a corpus of spontaneous SgE speech which, as opposed to read speech or elicited speech samples, brings out more information about actual communicative practices; (2) the recordings were done in quiet environments, and as such, provide good quality speech samples well-suited for phonetic analysis and (3) the corpus has already been tagged, lexically transcribed and filed sentence-by-sentence, which makes for convenient use. The NIECSSE corpus consists of interviews of 46 educated Singaporeans conversing with their professor, David Deterding, a British English speaker. The interviewees were asked to speak on a set topic, for example, a memorable holiday or how they spent their vacation. All the interviewees were reading their degree in English Language Teaching in Singapore. All the interviewees had English as their primary language of communication, either at work or at home. As they were conversing with their English professor, they were all conscious of speaking 'properly', namely, speaking the 'standard' and formal variety of SgE (as opposed to the colloquial variety). In fact, one could perhaps say that the interviewees may have been *too* proper and may have modified their speech in accommodation to their British professor, and thus losing some distinctive Singaporean features in their speech. Nevertheless, the fact that the perception test yielded results attests more strongly to the saliency of the prosodic features in SgE.

The test stimuli, consisting of 50 polysyllabic words, were extracted from the speech produced by 20 different speakers of the corpus. All 20 speakers were female, all ethnically Chinese and spoke at least one other Chinese language. Of the 50 polysyllabic words

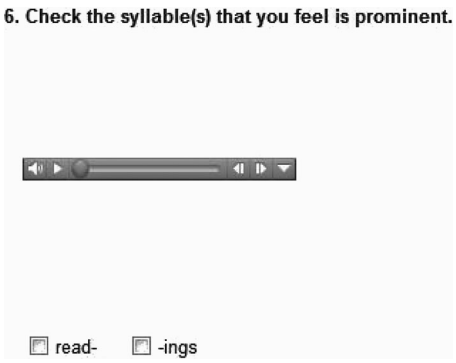


Figure 1. An example from the perception test questionnaire

selected to form the test stimuli for the perception test, 30 of them are bi-syllabic words and 20 of them are words with three or more syllables. Care was taken to make sure that none of these words occurred phrase-finally or sentence-finally, so as to avoid possible final lengthening effects. The perception test was limited to no more than 15 minutes so as to prevent the participants from experiencing experimental fatigue. The 50 polysyllabic words chosen as stimuli were extracted from the original corpus, using Praat (Boersma & Weenink 2014).

Perception test questionnaire

The perception test questionnaire was in two parts. The first part required participants to answer basic biographical information such as gender, age and ethnic group. In addition to that and of particular importance to this study, participants were asked to provide information about their (1) country of residence; (2) nationality; (3) the languages they spoke. This is so that the data collected could be collated and analysed according to speakers of different locales and linguistic backgrounds.

The second part of the questionnaire is the perception test. Each test word was accompanied by its corresponding sound file. For each polysyllabic word, participants were asked to listen to the sound file and then indicate the syllable they thought was stressed. They were asked to indicate, in a check-box, which syllable(s) they felt sounded 'prominent'. The word 'prominent' was used, as opposed to 'stressed' in the study as *prominence* is a less loaded term that may be easier understood by non-linguists, since the participants were intended to be laymen with little or no linguistics knowledge. Participants had the option to indicate more than one prominent syllable in each word. Each test word was provided orthographically, and each word was broken up into syllables in each instance. Figure 1 below shows an example from the perception test questionnaire. The questionnaire with the accompanying sound files was uploaded on an online survey website (SurveyGizmo.com).

Perception test participants

A web link to the questionnaire was sent out to participants via colleagues, students and friends. While the target was to get SgE speakers as well as speakers of American, British

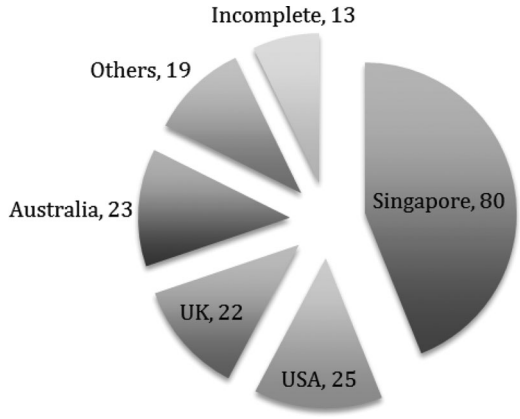


Figure 2. Nationalities and number of participants.

and Australian English, speakers of other varieties of English were not excluded from participating in the survey. The web link was made available for a month before the survey was closed. During the period of one month, a total of 182 participants responded to the questionnaire. As the author's network was based primarily in the university setting, the respondents were mostly family, friends and students of colleagues from the following universities: the National University of Singapore and Nanyang Technological University in Singapore; Manchester University and Cambridge University in the UK; Australian National University and La Trobe University in Australia; and Oklahoma University and Cornell University in the US. The author acknowledges at this point that dialectal variation, especially in the UK, US and Australia, could not be controlled due to the nature of this method of data collection. Figure 2 shows the breakdown of the nationalities of the participants.

Of the 182 participants, 13 responses had to be disregarded as information on the participants' nationality or linguistic backgrounds was missing, making it impossible to group them for analysis. Nineteen responses grouped under 'Others' consisted of responses from nationalities from Japan, China, Hong Kong, Taiwan, Indonesia, Vietnam, Portugal and Malaysia; and individually, their numbers were too small to contribute meaningfully to the analysis. As such, a total of 32 responses were disregarded for the analysis. Responses from the 80 Singapore English speakers, 25 American English speakers, 22 British English speakers and 23 Australian English speakers were taken for analysis. The British, American and Australian responses were grouped together as they belong to the Inner Circle English (Kachru 1982, 2005) speakers. For ease of analysis and reference, this group of participants will be referred to from now on as N-SG (non-Singaporean). The analysis will then concentrate on comparing the 80 Singapore English speakers' (referred to as SG henceforth) responses to the 70 N-SG responses to stress.

PERCEPTUAL DIFFERENCES

The analysis is in two parts. In the first part, I present the results of the perception test. The N-SG speakers' responses to stress in Singapore English are compared to the native SG speakers' responses. The second part concentrates on the

acoustic analysis of the test stimuli to determine if different acoustic parameters trigger different perception in these speakers. The responses to each of the 50 test words in the perception test stimuli were collated across each group of participants. The syllable each participant marked as prominent was recorded as one token. The major difference between these two groups of speakers occurs in the identification of the prominent syllable(s) within polysyllabic words. While there are some words where everyone hears stress on the same syllables, there is a large number of polysyllabic words where the N-SG participants and SG participants perceive stress differently. Three broad patterns emerged from this analysis, which I will group as Type 1, Type 2 and Type 3 words respectively:

1. Type 1 words: For 33 of the 50 test words, SG participants perceive stress on the final syllable, while the N-SG participants perceive it on a non-final syllable;
2. Type 2 words: For 10 of the 50 test words, both the SG participants and N-SG participants perceive stress on the same syllable, regardless of the position of the syllable; and
3. Type 3 words: For seven of the 50 test words, the N-SG participants perceive stress on a non-final syllable, while the SG participants perceive stress on the final as well as non-final syllables.

All 50 test words will also be subdivided into different groups. The grouping is done using standard English stress rules[1]a basis of classification. The details are as follows.

Type 1 words

Table 1 shows the list of Type 1 words, further subdivided into Groups 1A, 1B and 1C. In Type 1 words, a clear pattern of stress perception emerges. A clear majority of SG respondents perceives stress on the final syllable, neatly contrasting with a large majority of N-SG participants who perceive stress on the non-final syllable. Figure 3 shows more detail of the different responses of the two groups of respondents for Type 1 words in its different sub-groupings.

As can be seen in Figure 3, there is clearly a tendency for SG participants to perceive stress in word-final syllables, both for bi-syllabic and tri-syllabic words. The N-SG participants on the other hand, perceive stress on the non-final syllable, and they tend to be where the standard word stress should be. For Group 1A words, all the bi-syllabic words have the standard word stress on the non-final syllable, and 78.5% of the N-SG participants indicated perceived stress on this syllable. For words in Group 1B, the standard word stress is on the first syllable, and 74.4% of the N-SG participants indicate perceived stress in this syllable. Similarly, in Group 1C, we see 77.3% of the N-SG participants perceiving stress on the second syllable, which is the syllable that receives standard word stress. This is in stark contrast to the SG participants who consistently perceive word-final stress in Type 1 words. A chi-square test was performed to examine the relation between the participants' and their perception of stress in the different syllables, and the difference in perception was found to be significant at $p < 0.01$, χ^2 $(2, N = 5350) = 977.05$.

Type 2 words

So far, from the results shown by Type 1 words, there are two main observations one can make: (1) SG participants perceive word-final stress and (2) N-SG participants perceive stress according standard English stress rules. One can be tempted, at this point, to draw

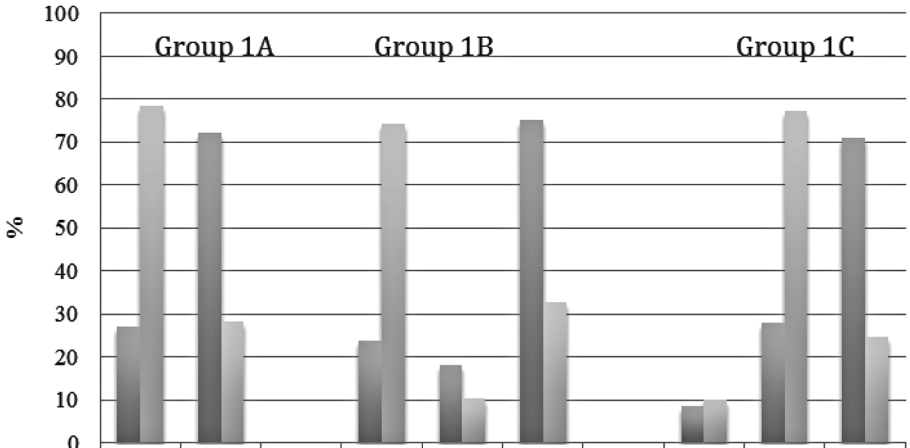
Table 1. Type 1 words

Group 1A (bi-syllabic words with standard stress placement on the word-initial syllable)	Group 1B (tri-syllabic words with standard stress placement on the word-initial syllable)	Group 1C (tri-syllabic words with standard stress placement on the penultimate syllable)
busy	recently	excited
readings	practicum	relaxing
statues	ministries	vacation
money	amoury	experience
always	furnitures [sic]	assistant
people	industry	chinchilla
islands	holidays	
travel	renovate	
movies	babysit	
posted		
classmates		
calling		
longer		
country		
naughty		
sister		
nephews		
various		

Note: At this point, I would like to make a note about the word *various* in the test stimuli. *Various*, in most standard varieties of English, is a tri-syllabic word /vɛə-rɪ-əs/, though Wells (2008: 870) shows it with a linking symbol between the second and third syllable, indicating that these two syllables can be 'compressed into a single syllable' (173). This suggests that the word can in fact be considered as bi-syllabic. In SgE, in fact, it is produced as a bi-syllabic word [ve-rəs]. The decision made is to classify it as a bi-syllabic word. The author is indebted to the reviewer for highlighting this point, and suggesting the reference.

the conclusion that SG stress perception is word-final, whereas N-SG stress perception is not, and this can be applied across the board. Unfortunately, the pattern is not quite as neat as that, as we shall see in Type 2 words, and later in Type 3 words.

Table 2 shows the list of Type 2 words, which I will again subdivide into Group 2A and Group 2B. Coincidentally, there are no tri-syllabic words on this list. This is by no means any suggestion that stress perception has a correlation to the number of syllables, as there is not enough data in this data set to substantiate that claim. In Type 2 words, it can be observed that a large majority of both SG and N-SG respondents alike perceive stress on the same syllable – for words in Group 2A on the final syllable; and for words in Group 2B, on the non-final syllable. Figure 4 shows, in more detail, the different responses of the two groups of respondents for Type 2 words in its different sub-groupings. For Group 2A words, all the bi-syllabic words have standard word stress on the final syllable, and 82.6% of the N-SG participants indicated that they perceived stress on this syllable. This is in line with what is observed in Type 1 words, since the N-SG participants perceive stress according to standard word stress rules. Similarly, based on the findings from Type 1 words, it is not surprising that 85.5% of the SG participants perceive final stress in Group 2A words, given that they seem to have a tendency to do so.



	Group 1A			Group 1B				Group 1C		
	Syll 1	Syll 2		Syll 1	Syll 2	Syll 3		Syll 1	Syll 2	Syll 3
SG	27.1	72.2		23.8	18.2	75.2		8.7	28.1	71.1
N-SG	78.5	28.4		74.4	10.3	32.8		10.2	77.3	24.6

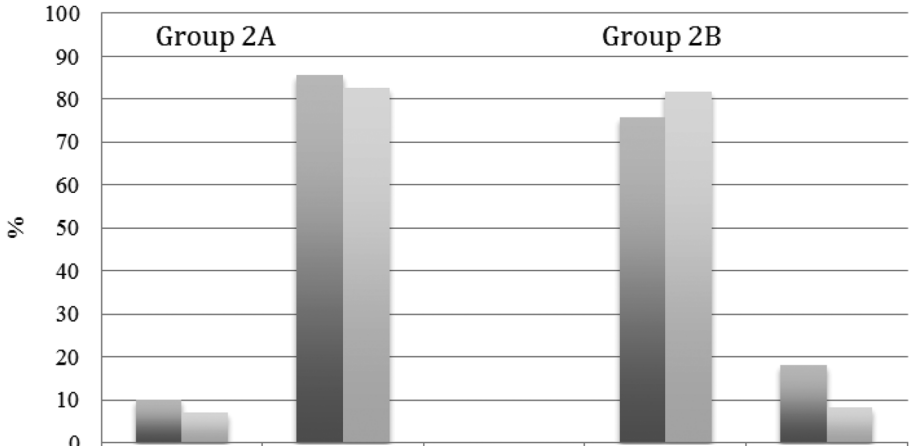
Figure 3. Responses to the perception of stressed syllables in Type 1 words.
Note: The percentages do not add up to 100% because respondents have the option to indicate more than one prominent syllable. In some cases, the percentages add up to less than 100% because some respondents did not make a choice

Table 2. Type 2 words

Group 2A (bi-syllabic words with standard stress placement on final syllable)	Group 2B (bi-syllabic words with standard stress placement on initial syllable)
exams	Pastor
revenge	tired
career	children
degree	trekking
massage	period

Note: Once again, similar to the word *various* in the earlier section, and also in note to Table 1. *Period*, like *various*, in most standard varieties of English, is a tri-syllabic word /piə-rɪ-əd/, but in SgE, it is produced as a bi-syllabic word [pi-rəd]. See also Wells (2008) in note to Table 1. A decision was made to classify it as a bi-syllabic word.

For Group 2B words, the standard word stress is on the first syllable, and again, it is not surprising to have 81.7% of the N-SG participants indicating perceived stress in this syllable. Interestingly, as one would expect the SG participants to continue with the trend of perceiving stress in word-final syllables, 75.8% of SgE participants in fact perceive stress in the first syllable, with only 18.2% of the participants perceiving word-final stress. This is certainly different from what one would expect, given the results in Type 1 words. However, this is not aberrant, as the acoustic analysis in the second part of this section will provide an explanation for this.



	Syll 1	Syll 2		Syll 1	Syll 2
SG	10.2	85.5		75.8	18.2
N-SG	7.1	82.6		81.7	8.3

Figure 4. Responses to the perception of stressed syllables in Type 2 words

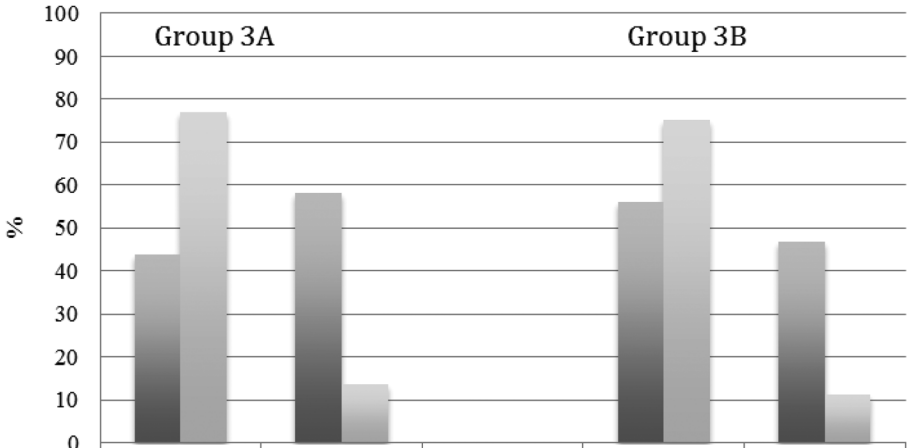
Table 3. Type 3 words

Group 3A (polysyllabic words with standard stress placement on the first syllable)	Group 3B (polysyllabic words with standard stress placement on penultimate syllable)
shifted	assignments
bargain	department
previously	refreshing
	polytechnic

Type 3 words

Table 3 shows the list of Type 3 words, which I will again subdivide into Group 3A and Group 3B. In this set of words, the results are mixed, and this is particularly so for the SG participants. The N-SG participants consistently, for more than 75% of the time, perceive stress on a non-final syllable, while the SG respondents perceive stress on the final as well as non-final syllables, with no clear preference for one syllable or another. Figure 5 shows the distribution in more detail. A chi-square test was performed to examine the relation between the participants' and their perception of stress in the different syllables, and the difference in perception was found to be significant at $p < 0.01$, $\chi^2\,(2, N = 965) = 156.79$.

For words in Group 3A, the comparison is between the first syllable and the final syllable. For words in Group 3B, the comparison is between the penultimate syllable and the final syllable. For Group 3A words, all the polysyllabic words have the standard word stress on the first syllable, and 77.1% of the N-SG participants indicated that they perceived stress on this syllable. Again, this is in line with what has been observed earlier, since the N-SG participants perceive prominence according to standard word stress placement. A similar observation can be seen in Group 3B words where the standard word stress is on the penultimate syllable, and again, we see 75.1% of the N-SG participants indicating



	First syll	Final syll		Penult. Syll	Final syll
SG	43.7	58.2		56.2	46.8
N-SG	77.1	13.5		75.1	11.2

Figure 5. Responses to the perception of stressed syllables in Type 3 words

perceived stress on this syllable. The situation however, is not as consistent for the SG participants. There is no clear indication of which syllable(s) are perceived to be stressed, with responses ranging from 43–58% across both subgroups of words in Type 3. As to why Type 3 words show such a split in terms of perceptual judgment for the SG respondents, the acoustic analysis below will provide an explanation.

To summarise what has been observed so far in the perception test, it can be said that for most, if not all of the 50 test words in the perception test stimuli, it appears that the N-SG respondents hear stress in words with the stress patterns as expected in their variety of English. In contrast, SG participants tend to hear final stress in most words, even when this breaks the rules of the standard English stress rules. The apparent 'anomalies' we find in the SG participants' judgments in Type 2 and Type 3 words need to be further explained, which will be done so in the following part.

ACOUSTIC ANALYSIS

In this section, acoustic measurements on the 50 test words will provide an explanation for how different acoustic parameters can trigger the differences in perception in these three types of words for the SG participants. Using Praat, fundamental frequency (F_0), amplitude and duration were measured for two syllables of each polysyllabic word. As mentioned earlier, the acoustic properties for stress are fundamental frequency, amplitude, duration, and vowel quality. Vowel quality however, will not be part of the investigation here as research has shown that SgE speakers typically do not make use of vowel reduction to mark unstressed syllables (Deterding 2001, 2007). The measurements of the mean of amplitude, maximum pitch within the syllable, and syllable length were taken. The different syllables and their respective measurements for fundamental frequency, amplitude and duration were then compared using a two-tailed t-test to determine if their differences are statistically significant.

Table 4. Average F_0, amplitude and duration for Type 1 words

	F_0 (Hz)	Amplitude (dB)	Duration (sec)
Syllables marked as stressed by N-SG respondents (i.e., non-final syllables)	194.80	59.04	0.180
Syllables marked as stressed by SG respondents (i.e. final syllables)	195.96	69.51	0.280
Difference	–1.16	–10.47	–0.100

Table 5. Average F_0, amplitude and duration for Type 2 words

	F_0 (Hz)	Amplitude (dB)	Duration (sec)
Syllables marked as unstressed by both sets of speakers	181.55	60.17	0.230
Syllables marked as stressed by both sets of speakers	215.23	59.79	0.337
Difference	–33.68	0.38	–0.107

For Type 1 words, the syllable that is perceived as stressed by the SG respondents is compared with the syllable that is perceived to be stressed by the N-SG participants. In other words, the following comparisons are made:

- For Group 1A, which consists of bi-syllabic words with standard stress placement on the penultimate syllable, the first syllable is compared to the second syllable.
- For words in Group 1B, which consists of tri-syllabic words with standard stress placement on the antepenultimate syllable, the first syllable is compared to the final syllable.
- For Group 1C words which are tri-syllabic words with standard stress placement on the penultimate syllable, the penultimate syllable is compared to the final syllable.

Table 4 shows the average measurements for the different syllables in Type 1 words. The differences in F_0 ($t = 0.20$, paired-sample, two-tailed, $df = 32$, $p = 0.84$) and amplitude ($t = 0.95$, paired-sample, two-tailed, $df = 32$, p = 0.35) are found not to be significant. The difference in duration however is found to be statistically significant ($t = 5.73$, paired-sample, two-tailed, $df = 32$, $p < 0.001$). This suggests that longer syllables trigger the perception of stress for SG respondents, and not so for the N-SG respondents. For Type 2 words (in which everyone hears stress on the same syllable), the first syllable is compared with the final one. Table 5 shows the average measurements for the different syllables in Type 2 words.

Interestingly, like Type 1 words, the differences in F_0 (t = 1.57, paired-sample, two-tailed, $df = 9$, $p = 0.15$) and amplitude ($t = 0.51$, paired-sample, two-tailed, $df = 9$, $p = 0.62$) are found not to be statistically significant. The difference in duration however is also found to be statistically significant ($t = 2.46$, paired-sample, two-tailed, $df = 9$, $p < 0.05$). What this means then is that duration once again is shown to be a trigger for stress for the SG respondents. In other words, it is not so much the placement of the syllable (final or non-final) but syllable length that leads the SG participants to perceive stress.

As mentioned earlier, Type 3 words are the ones that SG respondents seem to have trouble perceiving stress, and judgments are split on the non-final as well as the final

Table 6. Average F_0, amplitude and duration for Type 3 words

	F_0 (Hz)	Amplitude (dB)	Duration (sec)
Non-final syllables	205.39	59.89	0.209
Final syllables	185.69	58.93	0.235
Difference	19.70	0.96	–0.026

syllable, whereas the N-SG respondents perceive stress only on the non-final syllable. For Type 3 words, the following comparisons are made:

- For Group 3A, which consists of polysyllabic words with standard stress placement on the first syllable, the first syllable is compared to the final syllable.
- For words in Group 3B, which consists of polysyllabic words with standard stress placement on the penultimate syllable, the penultimate syllable is compared to the final syllable.

Table 6 shows the average measurements for the different syllables in the Type 3 words. In these Group 3 words, the differences of all three acoustic parameters – F_0 ($t = 0.94$, paired-sample, two-tailed, $df = 6$, p = 0.38); amplitude ($t = 0.89$, paired-sample, two-tailed, $df = 6$, $p = 0.41$) and duration ($t = 0.98$, paired-sample, two-tailed, $df = 6$, p = 0.36) – are found not to be statistically significant. What this means then is that there is no clear trigger for stress for the SG respondents, which explains why there is no consistent pattern to their perception of stress in this group of words.

To conclude then, from what we can see in these 50 test words in the perception test stimuli, it is consistent that N-SG respondents perceive stress according to the rules of Standard English stress placement, regardless of the acoustic properties of the syllables. On the other hand, SG respondents perceive stress in syllables that are longer, which means that duration acts as a trigger for stress for SG participants. In cases where there are no clear durational differences in syllables (as in Type 3 words), this is where SG respondents are unclear as to where stress is located, resulting in the split results.

NATIVE OR NON-NATIVE?

In the title of this paper, the words *native* and *non-native* are in quotation marks, and this is done so precisely because of what this study reveals. The traditionally 'native' speakers of English – Kachru's Inner Circle English speakers – carry with them set ideas of how English works, including where stress should be. While they probably have no intention of being prescriptivists, and I am not saying that they are, their perceptions are undoubtedly coloured by what they are used to and what they have held on to as 'rules' in their own varieties of English. This explains why the Inner Circle English speakers in this study – the British, American and Australian English respondents – consistently pick out stressed syllables based on standard word stress placement rules, regardless of what the acoustic properties of the syllables may be.

Singapore English respondents, on the other hand, show a much more varied account in terms of where they deem the stressed syllables are. While seemingly unsystematic, the acoustic analysis reveals that the syllables marked as stressed are the ones that are in fact longer syllabically. In other words, duration is the trigger for stress for this group

of speakers. Being traditionally labelled as 'non-native' speakers belonging to the Outer Circle, SgE respondents show a sensitivity to their own variety of English that no other speakers have. In this case, 'nativeness' is no longer the right of Inner Circle English speakers. While they are native speakers of their own varieties of English, in the same vein, Singaporeans are native speakers of SgE. It bears evidence to Kachru's Circle Model that 'native' perceptions are not based on the dominant Inner Circle, but that speakers of each variety of English should be regarded as native speakers of their respective varieties. One can predict, in fact, in future research, that should SgE speakers be asked to perceive stress in another variety of English, they are likely to use their native SgE norms in the perception of stress, no matter how inappropriate or unsuitable that may be.

The results therefore suggest that speakers of different linguistic backgrounds carry with them their native perceptions. These different linguistic backgrounds could lead speakers to have vastly different perceptions based on an identical data set. This is especially crucial for researchers working on world Englishes. Non-native SgE speakers who might invariably use their own 'non-native' perceptions on stress or prosody are coloured by their own perceived judgements, which are unlikely to be in line with what the language can really reveal. Past research on stress in SgE has been making use of well-documented research findings on British or American English and applying them to the prosodic analyses of SgE; one can see from this study how that may lead to erroneous conclusions. What this study has done is to show how a systematic unveiling of the language's prosodic nature can yield results, and one need not rely on other more established varieties of English as a point of comparison, for this comparison could well lead one to erroneous conclusions or prescriptivist judgments. This study also lends weight to Tan's (2005) work, providing more evidence to show how researchers of different backgrounds may in fact have different judgments, especially in areas such as prosody.

What then is the role of stress perception in intelligibility? Stress perception does seem to be a source of unintelligibility given the large volume of research showing how 'unintelligible' some 'non-native' Englishes are. The crux of this problem, as these numerous past works have exhibited, is that questions of intelligibility have too often been taken from the point of view of the so-called 'native' speakers (e.g. Bailey 1984; Munro & Derwing 1995; Derwing et al. 2002; Bresnahan et al. 2002; Hahn 2004; Derwing and Munro 2005; Field 2005; Lindemann 2005; Riney et al. 2005; Setter 2005; Watanabe 2008). As soon as one turns to recent studies originating from researchers working on Asian Englishes without the age-old preconception of who and what constitutes 'native' English speakers (see Deterding 2005; Deterding and Kirkpatrick 2006; Kirkpatrick et al. 2008; Tan and Castelli 2013), intelligibility no longer becomes a pressing issue. Intelligibility depends fundamentally on being sensitive to the different norms that different varieties of English employ. Hearing stress differently then should be taken simply as a difference, and all speakers of English share the responsibility of mutually understanding and embracing such differences.

NOTE

1. The term 'standard English stress rules' refers to the traditional stress placement rules found in most Inner Circle varieties of English.

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