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# THE VOWELS OF THE DIFFERENT ETHNIC GROUPS IN SINGAPORE

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## Introduction

Over the past decade, interest in Singapore English, and also the Englishes of other countries in South-East Asia, has burgeoned. Furthermore, the easy availability of computer software has made it straightforward to record and measure speech, with the result that nowadays description of regional varieties of English is increasingly based on the measurement and analysis of substantial quantities of data. Here, some new measurements of the vowels of Singapore English are presented and then compared with other recently-published results for varieties of English in South-East Asia.

For Singapore English, it has long been observed that there is a tendency for speakers to have no distinction between the long/short pairs of vowels /iː/~/ɪ/, /ɔː/~/ɒ/, /ɑː/~/ʌ/, and /uː/~/ʊ/ as well as the two non-close front vowels /e/~/æ/ (Tongue 1979, 28, Tay 1982, Brown 1988, Bao 1998, Lim 2004, Wee 2004), and measurements (Hung 1995, Deterding 2003) have confirmed most of these observations.

These measurements have mainly focused on the speech of ethnically Chinese Singaporeans, as they constitute the overwhelming majority of the population of Singapore, but this overlooks a significant dimension in the variation found in Singapore English, as 14% of Singaporeans are ethnically Malay and 9% are Indian (Singapore Department of Statistics 2006), so it is important to consider the extent to which the speech of Malays and Indians differs from that of Chinese.

A few previous studies have compared the vowels of the different ethnic groups. Suzanna and Brown (2000) showed that, although all speakers in Singapore tend to merge /e/ and /æ/, this tendency is strongest for Malays and least evident for Indians, which suggests there may be some differences between

the vowels of the different groups. Similarly, Deterding (2000) reported that, although both Chinese and Malay Singaporeans tend to produce /eɪ/ and /əʊ/ without much diphthongal change during the vowel, there is a small difference between the two groups in the pronunciation of /eɪ/. However, Deterding (2005) found that *egg* rhymes with *vague* and not with *peg* for virtually all young Singaporeans regardless of their ethnic background, and this is evidence for the emergence of a unique variety of Singapore English which is shared by all groups and which is becoming increasingly independent of any external model (Schneider 2003).

Despite this apparent emergence of a distinct Singaporean variety of English, Deterding and Poedjosoedarmo (2000) showed that listeners can identify the ethnic background of young educated Singapore speakers with a high degree of accuracy on the basis of just ten seconds of conversational speech, so it is clear that substantial differences remain between the English of the different groups. Lim (2000) suggested that the main difference lies in the intonation, possibly because the final pitch peak occurs later in the utterance for Malays, and Tan (2002) reported that Chinese, Malay and Indian Singaporean listeners react differently to the perception of stress when pitch, amplitude and duration are manipulated, confirming that there are indeed differences in their intonation.

Although it seems that intonational differences are key to the ability of Singaporeans to identify the speech of the three main ethnic groups, it is possible that vowels and consonants also play some part. After briefly considering the identifiability of the ethnic background of speakers of Singapore English, this paper will investigate the monophthong vowels of the three groups in Singapore. It will also compare the results with measurements of the vowels of other speakers of English in the South-East Asian region, to consider the extent to which there are common features of pronunciation across the region, as has been reported by Deterding and Kirkpatrick (2006).

## Subjects

A total of 43 female undergraduate students at the National Institute of Education (NIE) in Singapore were recorded in January and July 2006. The subjects also filled in a brief biodata questionnaire, which in addition to questions about gender, age, and ethnic background, asked them to list the languages they speak, with whom, and the age at which each was learned. Two ethnically-Indian subjects indicated that they speak both Malay and English at home and neither claimed much knowledge of Tamil or any other Indian language, so these two subjects were excluded from the analysis. The existence of these two Indian subjects with a strong Malay background illustrates the diversity of the Indian population in Singapore.

Of the forty-one subjects whose data is analysed, twenty-five are ethnically Chinese, twelve are Malay, and four are Indian. Although this relative shortage of data for the Indian community is unfortunate, it accurately reflects the ethnic make-up of Singapore, where Indians are the smallest of the three main groups.

At the time of the recording, the average age of the subjects was twenty-two years, with the youngest being nineteen and the oldest thirty. All forty-one subjects were studying on the BA program at NIE, where they were training to become teachers. English was the chosen speciality in their studies for all them, and all are highly competent in English. Of the Chinese students, six gave English as their best language, six gave Mandarin Chinese, and thirteen stated an equal ability in the two languages. A few also claimed some ability in other varieties of Chinese, such as Hokkien or Cantonese, but this was never one of their best languages. Of the Malays, one gave English as her best language, two gave Malay and the other nine stated an equal ability in Malay and English. Of the four Indians whose data is analysed, one gave English, two gave equal English and Tamil, and one gave equal English and Punjabi.

## Data

The subjects were recorded reading the following text (the "Wolf" passage):

> There was once a poor shepherd boy who watched his flocks in the fields next to a dark forest near the foot of a mountain. One hot afternoon, he thought up a good plan to get some company for himself and also have a little fun. Raising his fist in the air, he ran down to the village shouting "Wolf, Wolf." As soon as they heard him, the villagers all rushed from their homes, full of concern for his safety, and two of them stayed with him for a while. This gave the boy so much pleasure that a few days later he tried exactly the same trick again, and once more he was successful. However, not long after, a wolf was looking for a change in its usual diet of chicken and duck, so it actually did come out from the forest and began to threaten the sheep. Racing down to the village, the boy of course cried out even louder than before, but as all the villagers were convinced that he was trying to fool them a third time, nobody bothered to come and help him, and so the wolf had a feast.

The use of a slightly longer version of this text is discussed in Deterding (2006), where it is shown that it works well for the measurement of the vowels of English, and in fact it is far more suitable for this purpose than the North Wind and the Sun passage (IPA 1999, 39) that has been used by the International Phonetic Association for nearly one hundred years.

The recordings were made directly onto a computer in the Phonetics Laboratory at NIE, using CSL hardware (Model 4500, Version 2.7.0) from

KAY Elemetrics with a high-quality Shure SM48 dynamic microphone placed a few inches from the mouth of the speakers.

## Identifiability

A short extract of about ten seconds was taken from the data of twelve of the subjects: five Chinese, five Malays and two Indians. (It is unfortunate that the data from only two Indians could be used, as the other two Indians were classmates of the listeners.) The extract was identical in all cases:

> Raising his fist in the air, he ran down to the village shouting "Wolf, Wolf." As soon as they heard him, the villagers all rushed from their homes, full of concern for his safety

The twelve extracts were then played in random order to a group of 20 third-year undergraduates, thirteen Chinese and seven Malays, who were asked to identify the ethnic group of each speaker as Chinese, Malay or Indian. The overall correct identification rate was 85%, which is almost as high as the 90% for conversational speech reported by Deterding and Poedjosoedarmo (2000), even though the latter included no Indian speech. Furthermore, the identification rate found here is much higher than the 59% found for a read passage in Deterding and Poedjosoedarmo (2000), and it is also somewhat higher than the 73% reported for conversational speech by Lim (2000). The individual results are shown in Table 1.

Table 1 Correct identification rate (%) of 12 subjects by 20 Singaporean listeners

| | | ***Identified as*** | | |
|---|---|---|---|---|
| | | Chinese | Malay | Indian |
| ***Speakers*** | Chinese | 94 | 4 | 2 |
| | Malay | 9 | 86 | 5 |
| | Indian | 5 | 37.5 | 57.5 |

From Table 1, it can be seen that the Chinese speakers were identified most accurately, with 94% correct identification. The Malays were also on the whole identified correctly, though the 86% figure falls below that for the Chinese. In contrast, the Indians were identified least accurately, with only 57.5% correct answers. This is the same pattern reported both by Deterding and Poedjosoedarmo (2000) and by Lim (2000), and indeed it reflects the comments of the participants that they could easily identify the Chinese and Malay speakers but had much more difficulty with the Indians. However, a word of

caution is appropriate here with regard to the Indians: one of the two Indian speakers (the one whose best language is English) was correctly identified by all 20 listeners while the other was only identified correctly by 3 of the 20 listeners (most of the others guessing her to be Malay, even though in her biodata she indicated equal use of Tamil and English). So it seems that there may be a prototypical kind of speech for Indian Singaporeans even if only some of them actually exhibit it.

Although one should be careful about drawing conclusions from results for just one or two speakers, the pattern suggested here confirms that of previous studies, that Singaporeans find it most difficult to identify the ethnic background of Indians. It seems that the Indian community in Singapore is indeed the most diverse, with some people originating from south India and speaking a Dravidian language such as Tamil or Malayalam, others coming from north India and speaking an Indo-European language such as Punjabi or Hindi, and still others using Malay at home.

It might be tempting to conclude from Table 1 that the higher identification rate for the Chinese speakers arises because the majority of the listeners were Chinese. However, if we consider the results for the two groups of listeners separately, we find that the higher identification rate for the Chinese speakers is not in fact related to the ethnic background of the listeners. The results for the thirteen Chinese listeners are shown in Table 2, and those for the seven Malays are shown in Table 3.

Table 2 Identification rate (%) for the Chinese listeners

| | | ***Identified as*** | | |
|---|---|---|---|---|
| | | Chinese | Malay | Indian |
| ***Speakers*** | Chinese | 91 | 6 | 3 |
| | Malay | 9 | 83 | 8 |
| | Indian | 4 | 38 | 58 |

Table 3 Identification rate (%) for the Malay listeners

| | | ***Identified as*** | | |
|---|---|---|---|---|
| | | Chinese | Malay | Indian |
| ***Speakers*** | Chinese | 100 | 0 | 0 |
| | Malay | 9 | 91 | 0 |
| | Indian | 7 | 36 | 57 |

From Tables 2 and 3 we can see that the Malay listeners identified all the Chinese speakers correctly, and in fact they outperformed the Chinese listeners in this respect. Moreover, for both sets of listeners, the same pattern is found:

the Chinese are the most easily identifiable, followed closely by the Malays, while the Indians are the most difficult to identify.

In the early 1980s, Platt and Weber (1980, 46) and Platt et al. (1984, 6) both reported that it was not possible for the ethnic background of younger speakers of English in Singapore to be identified. Then, for data recorded in the mid-1990s, with read speech Deterding and Poedjosoedarmo (2000) found an identification rate of 59%, and with conversational data Lim (2000) reported 80% for Chinese and 75% for Malays. Now, with data recorded in 2006, we find yet higher identification rates (apart from the Indians), and this suggests that there has been a greater separation of the English spoken by the ethnic groups in Singapore in recent years. One possibility is that, as English is becoming used more and more widely in Singapore, not just in schools but as a home language as well, greater ethnic diversification is developing. Schneider (2003) proposes five major stages in the emergence and establishment of new Englishes, and the final stage is labelled "differentiation" as new subvarieties develop to reflect group identities. It seems that Singapore English may be approaching this fifth stage.

Overall, we can conclude that there are indeed distinct patterns of speech for the different communities in Singapore which listeners can easily use to identify the ethnic background of speakers with a high level of accuracy. We will now investigate whether these differences show up in the pronunciation of monophthong vowels.

## Measurement of Vowels

For the data of each speaker, at least three tokens were measured for each of the eleven monophthong vowels of RP British English. Although the adoption of British English as the starting point provides us a convenient foundation for the description of vowels, it is a contentious issue. Mohanan (1992) makes a strong case for the description of the phonology of each variety of a language in its own terms and without reference to other varieties, and with regard to grammar, Alsagoff and Ho (1998) show that, if we always compare Singapore English with British English, we miss important features such as distinct meanings for *already*. And indeed, the assumption that British pronunciation of words provides a basis for the description of Singapore English is problematic. The selection of words for the description of each vowel will be discussed in some detail below, particularly with reference to /e/, /æ/ and /ɔː/.

All the tokens were selected to avoid preceding /w/, /r/, and /j/ and following /ŋ/ and /l/, as all these consonants have a substantial influence on the quality of the vowel (Deterding 1997). However, the Wolf passage is explicitly designed to provide plenty of suitable vowels which can be measured in a range of

phonological environments that avoid these preceding and following consonants. Indeed, a slightly longer version of the passage has been shown to work well for the acoustic description of the vowels of RP British English (Deterding 2006), providing a close match to measurements from unscripted connected speech broadcast by the BBC (Deterding 1997). Table 4 shows the vowels selected for measurement, grouped according to the pronunciation expected in RP British English. For polysyllabic words, the syllable containing the vowel that was measured is underlined.

Table 4 Words selected for measurement

| *Vowel* | *Words* |
|---|---|
| /iː/ | sheep, **ev**en, feast |
| /ɪ/ | fist, this, **chic**ken, did, con**vinc**ed |
| /e/ | **shep**herd, next, get, **plea**sure, suc**ces**sful |
| /æ/ | plan, ex**act**ly, **act**ually, be**gan** |
| /ʌ/ | up, **com**pany, fun, much, duck, come |
| /ɑː/ | dark, **af**ternoon, **af**ter |
| /ɒ/ | flocks, hot, not, **both**ered |
| /ɔː/ | thought, more, course, be**fore** |
| /ʊ/ | foot, good, **look**ing |
| /uː/ | after**noon**, soon, two |
| /ɜː/ | heard, con**cern**, third |

For each token of each vowel, the first and second formants were measured by means of LPC formant tracks overlaid on computer-based spectrograms derived using Praat software Version 4.3.12 (Boersma and Weenink 2005). There were few difficulties in obtaining these values, though in six cases (two each of the Chinese, Malay and Indian data) there was no vowel that could be measured in the first syllable of *chicken* as it was absorbed by the preceding /ʧ/, so measurements for these tokens were omitted. This kind of absorption of vowels is common in connected speech, though it is rather more usual in unstressed syllables, especially those with a schwa (Shockey 2003, 22). In a few cases, a word was misread: one Chinese speaker read *they* instead of *this*, one Malay had *near* instead of *next*, one Chinese omitted the word *up* and one Indian read *up* as *about*. In addition, one Indian speaker pronounced *concern* with the stress on the first syllable with the result that the second syllable had a syllabic nasal. All these tokens were also omitted from the data. Measurement of

the first two formants was possible for nearly all the other tokens, though the second formant could not be measured for one token of *more* by a Chinese speaker, and heavy aspiration of the initial /k/ prevented measurement of the formants in two Chinese tokens of *company* and one token of *come*, so all these tokens were also excluded. The averages for the Chinese, Malay and Indian subjects were then calculated.

The average formant values can be plotted on a graph of the first formant ($F_1$) against the second formant ($F_2$), where the first formant provides an indication of the open-close quality of the vowels and the second formant reflects their front-back quality (Haywood 2000, 147; Ladefoged 2001, 176). For the purposes of plotting the formants, the values are converted from Hertz to the auditory Bark scale using the formula suggested by Zwicker and Terhardt (1980). The average values for the Chinese speakers are shown in Figure 1, those for the Malays are in Figure 2 and for the Indians in Figure 3.

Figure 1 Plot of the first two formants for the vowels of 25 Chinese Singaporeans

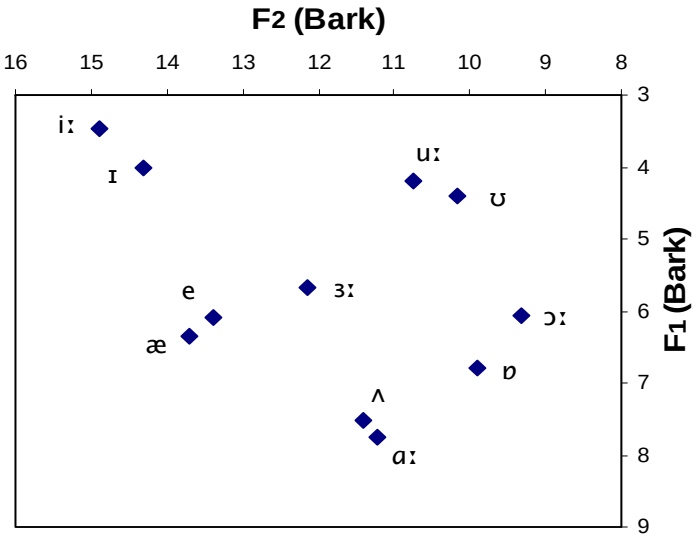


Figure 2 Plot of the first two formants for the vowels of 12 Malay Singaporeans

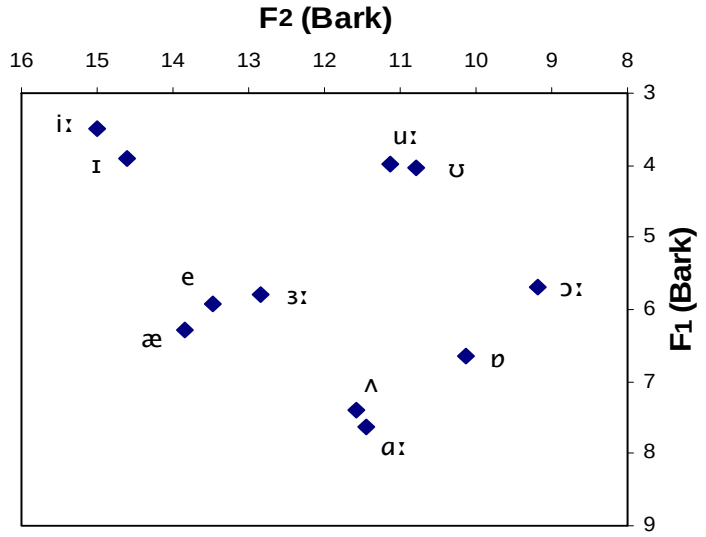
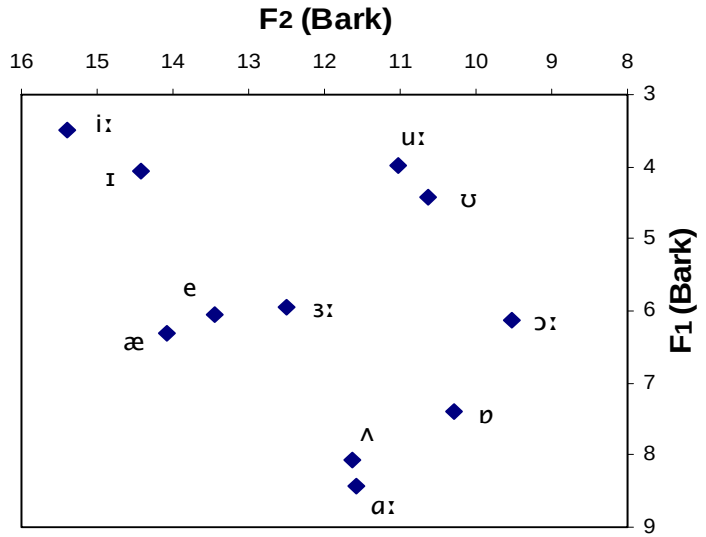



Figure 3 Plot of the first two formants for the vowels of 4 Indian Singaporeans



Comparison of these figures suggests there is almost no difference between the vowels of the three main ethnic communities in Singapore, and by and large they confirm the overall patterns reported for Singapore English in earlier research: /e/ and /æ/ are close together, though we will discuss these two vowels a little more below; similarly /iː/ and /ɪ/ are close together, especially for Chinese and Malays, though it is possible that the four Indian subjects maintain a greater distinction between these two vowels; /uː/ and /ʊ/ are also close together for all three communities and especially for the Malays; and there is also little distinction between /ɑː/ and /ʌ/, though we need to be careful about concluding too much from this as these two vowels are distinguished mostly by means of length rather than vowel quality in RP British English (Deterding 1997). The only surprising result is that a distinction seems to be maintained between /ɔː/ and /ɒ/, in contrast to all previous observations that these two vowels tend to be merged in Singapore English. We will discuss this issue further below.

The biggest difference between the three speech communities is that /ɜː/ is more fronted for the Malays. We will address this issue first before considering the status of /e/ and /æ/, /ɔː/ and /ɒ/ and finally /uː/ and /ʊ/.

**/ɜː/**

One possibility to explain the less fronted /ɜː/ for the Chinese and Indian subjects is rhoticity, as the three words measured for /ɜː/ all include a potential postvocalic /r/: *heard, concern* and *third.* Although most Singapore English is non-rhotic, following the pronunciation of most varieties of British English where /r/ occurs only before a vowel, an increasing number of young Singaporeans do have a rhotic accent, perhaps as a result of the pervasive influence of American movies and music. Indeed, Poedjosoedarmo (2000) reported that, for a group of educated young Singaporean subjects reading a passage, 24% of the Chinese used a postvocalic /r/ at least once while only 12% of Malays did, so it seems that this tendency is stronger among the Chinese than the Malays. And indeed, of our forty-one subjects, six Chinese, one Malay and two Indians (one a speaker of Tamil and the other a speaker of Punjabi) exhibited some rhoticity.

The main acoustic effect of postvocalic /r/ is to lower the third formant (Haywood 2000, 203; Ladefoged 2001, 213), but it also tends to affect the other formants to a certain extent, especially the second formant. However, if we exclude all the tokens of /ɜː/ from the subjects who exhibited rhoticity, this in

fact has almost no effect on the results, so it is not clear why the Malays have a more fronted /ɜː/.

An issue arises in connection with rhoticity: if the subjects are using a truly American accent, the choice of words for analysis is flawed, as *after* and *afternoon* should be included under /æ/ rather than /ɑː/, and all the examples for /ɒ/ should be included under /ɑː/ as American English generally does not have the /ɒ/ vowel (Wells 1982, 473). However, even for those Singaporeans whose pronunciation is partially rhotic it is rare to adopt a completely consistent American accent, and in fact none of the subjects studied here had /æ/ in *after* or /ɑː/ in *hot* and *not*.

## /e/

Although the lack of distinction between /e/ and /æ/ in general confirms the reports of previous research, we need to be very careful about the words that are used for analysis. Deterding (2005) has shown that, for nearly all Singaporeans, *egg* and *bed* have a close vowel, rhyming with *vague* and *made* respectively rather than with *peg* and *fed*, and if words such as these are included in the data for /e/, this distorts the results. Indeed, closer examination of the individual words measured for /e/ reveals exactly this problem.

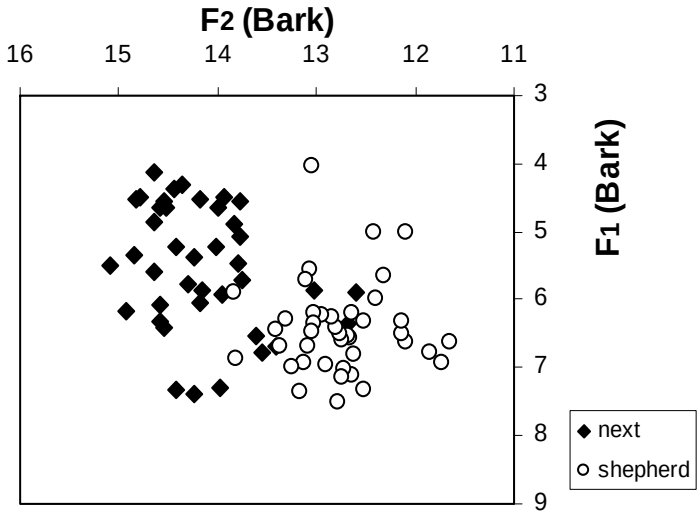
Figure 4 shows a scatter plot for the vowels of *next* and the first syllable of *shepherd* for all forty-one subjects, and it is quite obvious that *next* has a more front and slightly more close vowel than *shepherd* for nearly all the subjects. In fact, only six subjects (two Chinese and four Malays) have a vowel in *next* that clearly belongs with *shepherd*, though three other tokens (one from each of the three groups) are fronted but not close.

To investigate the quality of the vowel in *next* further, two Chinese subjects were asked to read the sentence:

I will send you the text next September.

On listening to these recordings, it was immediately clear that the vowel in *text* is quite different from that in *next*. In fact, *next* probably has the same vowel as *makes* or *takes*, while *text* has the same vowel as *send* and the second syllable of *September*, and this confirms that, just as with *egg* and *bed*, the vowel in *next* does not belong with the other tokens of /e/ for the overwhelming majority of Singaporeans.

Figure 4 Scatter plot for *next* and *shepherd*

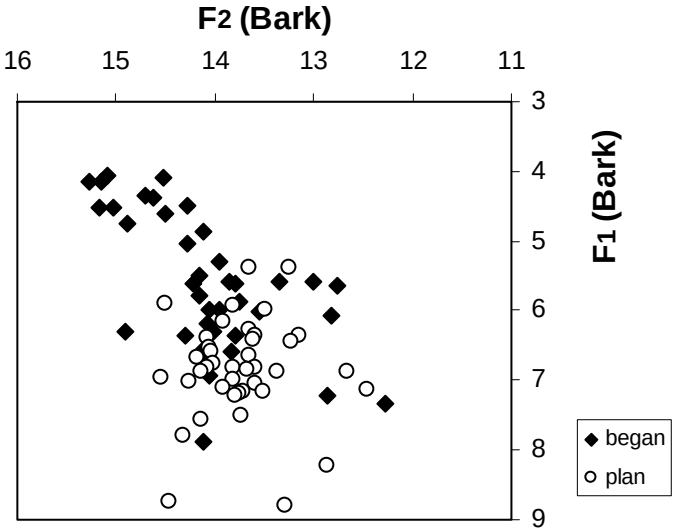



Further examination of the values indicates that some (though not all) speakers have a close vowel in *get* as well, though the vowel in *shepherd*, *pleasure* and *successful* is nearly always relatively back and open. Therefore, for plotting the quality of /e/ we should exclude *next* and *get* and just use *shepherd, pleasure* and *successful*. It is unfortunate that all values for /e/ now occur in polysyllabic words, but that is better than including vowels that clearly do not belong.

**/æ/**

We also need to be careful about the words that are selected for /æ/. Figure 5 shows the scatter plot for the vowels in *plan* and *began* for all the speakers, and it can be seen that, for some of the speakers, *began* has a substantially more close vowel than *plan*. Of the thirteen subjects with this relatively close vowel in *began*, eight are Chinese, three are Malay and two are Indian.

Figure 5 Scatter plot of *began* and *plan*




Two students were asked to read the following sentence, and it was confirmed that, for some speakers in Singapore, *began* rhymes with *regain* and does not have the same vowel as *plan* (as it would in most varieties of English).

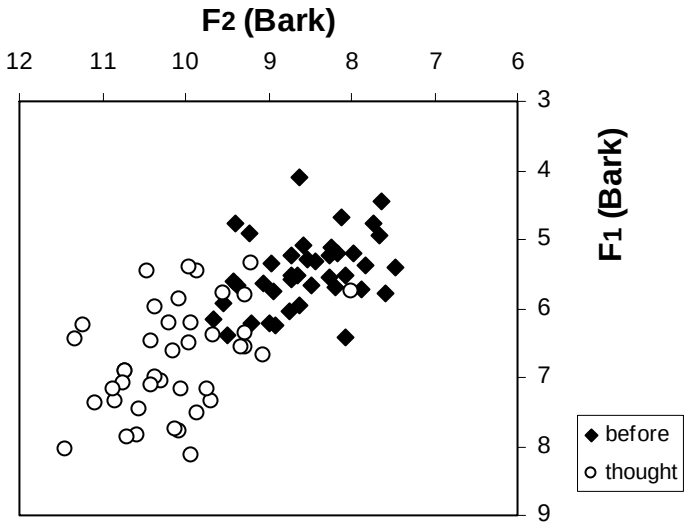
He began to regain his sanity.

Although the majority of subjects do not have this close vowel in *began*, a significant minority do, and given that for them it is clearly not the same vowel as that in *plan*, we should exclude it from the average values calculated for /æ/.

### /ɔː/ and /ɒ/

We also need to consider the words that are investigated for /ɔː/. Figure 6 shows a scatter plot of the vowels in *before* and *thought* for all forty-one speakers, and we can note that *before* is more back and more close than *thought*, and only one token of *thought* (from a Malay speaker) has this close back quality. In fact, the same pattern occurs with *more* and *course*, as *more* tends to have the same vowel as *before* while *course* is similar to *thought.* It seems, therefore, that the vowel tends to be more close and more back when there is no following consonant.

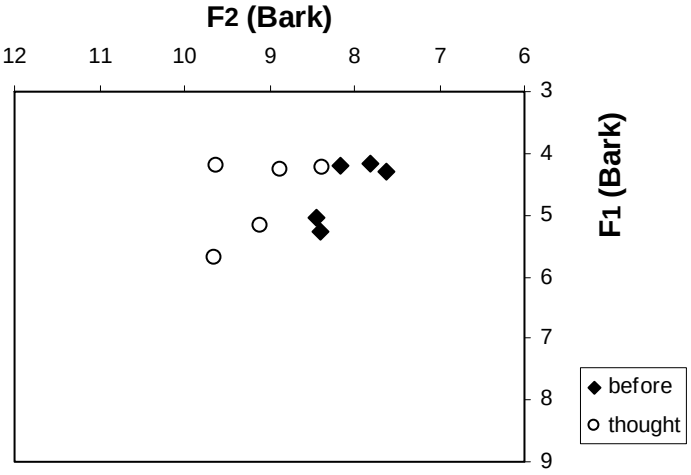
Figure 6 Scatter plot of *before* and *thought*




However, before concluding that there is a different vowel in *before* than *thought*, we need to consider whether this is a natural process that affects speakers of English in general. Figure 7 shows a similar scatter plot for *before* and *thought* for five female RP British English speakers, and we can see that, while the vowel in *before* is certainly more back than that in *thought*, it is not more close. So it seems that what is distinctive about Singapore pronunciation is that the open/close quality of /ɔː/ depends on whether there is a following consonant or not.

This pattern is distinct from that for *next*. Above we noted that *next* has a close vowel while *text* has a more open vowel, and this suggests that it is not possible to predict which vowel will occur on the basis of the syllable shape. In contrast, we can predict the occurrence of the close or open variant of /ɔː/, as there is a close vowel if there is no following consonant. In other words, the close vowel is an allophone of /ɔː/ and not a separate vowel. However, for the purposes of plotting vowel quality, we need to be aware of these two allophones.

Figure 7 Scatter plot of *before* and *thought* for five RP British English females




We might briefly consider influences on Singapore English that might have resulted in the close vowel in *before* and *more* and the more open vowel in *course* and *thought*. One potential source of influence might be from Chinese languages. Mandarin Chinese is unlikely in this respect as the only possible syllable-final consonants in Mandarin are /n/ and /ŋ/ (Duanmu 2003). However, some other Chinese languages such as Hokkien and Cantonese do have final plosives, and even though in Singapore today these languages are not widely spoken by young people, historically they have had a strong influence on Singapore English.

For Cantonese, Zee (1999) notes that /ɔ/ tends to be lowered in syllables that end with a plosive, so it is indeed possible that this is an influence on Singapore English.

For Hokkien, the picture is less clear. For the Taiwanese variety of Hokkien, Chung (1996, 2) lists six non-nasalized monophthongs, including the relatively close /o/ and the more open /ɔ/, but of these, only /o/ can occur with a following consonant, including /k/ (1996, 75), so we can consider whether the quality of /o/ in Taiwanese Hokkien is influenced by a following consonant.

Taking words from Taiwan Language Committee (2005), we have *gok* (國 "country") with a final /k/ and *gho* (五 "five") and *ko* (塊, "[measure word for] dollars") with no following consonant, and we can compare the quality of the vowel in these three words. A 50-year old female subject who grew up in south-east Taiwan was recorded reading the following sentence three times:

在外國五塊
di ghua-gok gho ko
("In foreign country, five dollars.")

The quality of the vowel in *gok*, *gho* and *ko* was measured, and it was found that there is little difference between them, a conclusion that is confirmed by careful listening. So it seems that Hokkien is not an influence on Singapore English with regard to the quality of the vowel being affected by the existence of a following consonant, unless the version of Hokkien spoken in Singapore is different in this respect from Taiwanese Hokkien.

We should also consider the possible influence of Malay. In Standard Malay there are five vowels, including the mid back vowel /o/, but this vowel cannot occur in word-final position except as a result of deletion of final /r/ (Teoh 1994, 17). As the Malay spoken in Singapore is generally non-rhotic and so final /r/ is indeed omitted, it is not clear whether there is a contrast in the quality of final and non-final /o/ in the Malay spoken in Singapore. In addition, Maris (1980, 5) states that [ɔ] exists in Malay as a variant of /o/, but it is not stated whether this variation is determined by syllable shape or not.

In conclusion, the most likely influence on the pronunciation of /ɔː/ in Singapore English is Cantonese, but more research is needed to investigate this issue further.

## /uː/ and /ʊ/

We have seen that the quality of /ɔː/ depends on whether there is a following consonant in the syllable. We should now consider the quality of /uː/ to find out if there are different allophones of this vowel as well, depending on the syllable shape. Figure 8 shows the scatter plot for *soon* and *two* for all forty-one subjects, and indeed we find a similar pattern for *two*, in which there is no final consonant, with the vowel tending to be further back.

Figure 8 Scatter plot of *soon* and *two*

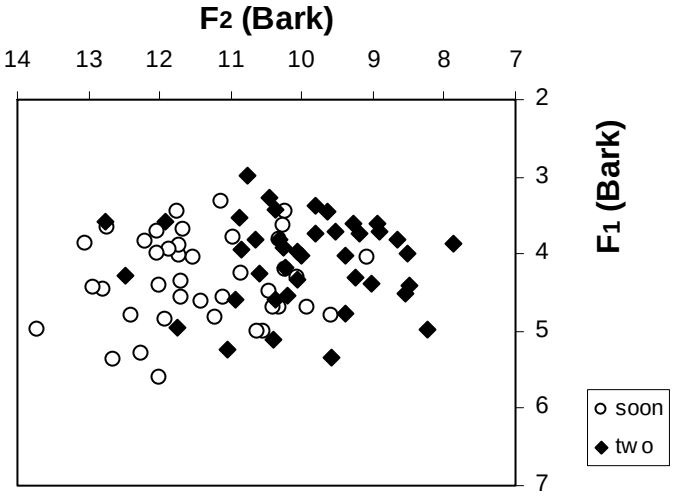



Figure 8 shows that just four tokens of *two* have a relatively front quality, three of which are from Malay speakers and one from an Indian. In addition, the two tokens of *soon* with the most back quality are from a Malay and an Indian, so it seems that the tendency for a less back vowel in *soon* compared with a fully back vowel in *two* is strongest among the Chinese speakers.

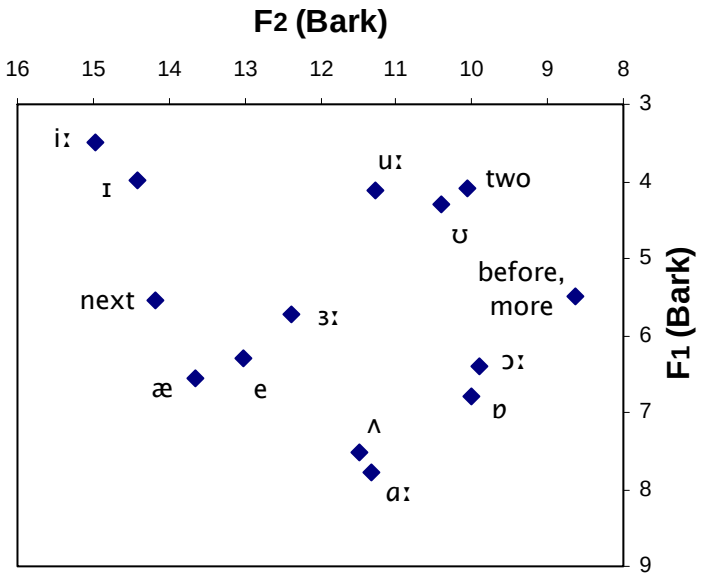
## Summary for Singapore English

We can now summarize the findings for Singapore English. There seems to be little difference in the quality of the monophthongs for the three main ethnic groups, except perhaps that Malays have a more fronted /ɜː/, so the undoubted differences in their speech patterns must lie either in the pronunciation of their consonants or, more probably, in their intonation.

However, overall there are clear idiosyncratic patterns that extend throughout Singapore English: *next* tends to have a close front vowel compared to *shepherd*, *pleasure* and *successful*; *more* and *before* also have a close back vowel compared to *thought* and *course*; and *two* has a more back vowel than *soon* and *afternoon*. In plotting the quality of these vowels, it is important that *next*, *more*/*before* and *two* are shown separately from /e/, /ɔː/ and /uː/ respectively. Similarly, for some speakers, *began* and *get* both have a relatively close front vowel, so inclusion of these two words in the averages for /æ/ and /e/

respectively distorts the results. Taking these matters into consideration, we get the pattern of vowels shown in Figure 9. The positions for the eleven monophthong vowels that are shown by means of the vowel symbols now only include tokens with a following consonant, and in addition *began* and *get* are excluded. The biggest difference from the earlier plots are that /ɔː/ and /ɒ/ are close together, and both /e/ and /æ/ are a little more open. The values for the fourteen vowels plotted in Figure 9 are listed in the Appendix.

Figure 9 Combined plot of the vowels of Singapore English




The vowel qualities shown in Figure 9 will now be compared with measurements for Malaysia, Brunei and Hong Kong.

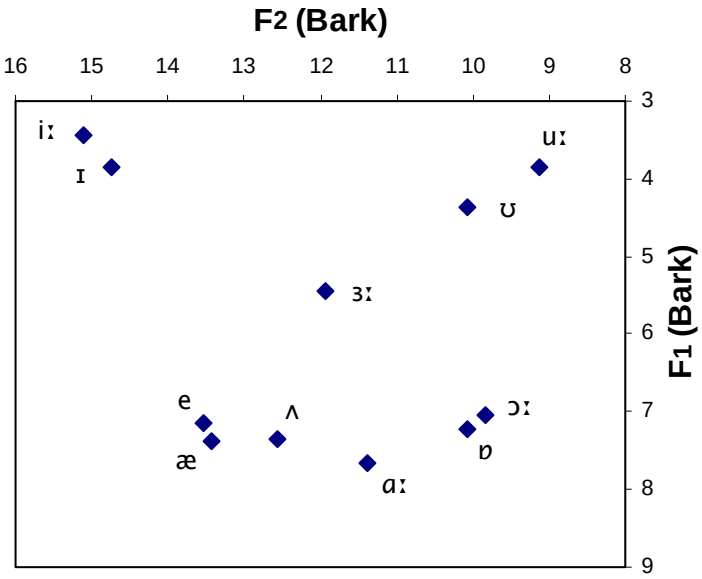
## Malaysian English

Baskaran (2004) reports that in Malaysian English the long vowels tend to become shortened, though at the same time the short vowels are sometimes lengthened, especially before final /n, l, r, s, ʃ/. Furthermore, both TRAP and DRESS may be pronounced with /ɛ/. Zuraidah (1998) reports the same

characteristics of Malaysian English, so it seems that that this variety is similar to Singapore English with respect to the pronunciation of monophthongs.

Tan and Low (2006, forthcoming) measured the vowels of three ethnically Malay female speakers of Malaysian English reading the words *beat*, *bit*, *bet*, *bat*, *cut*, *cart*, *cot*, *caught*, *could*, *cooed*, *bird* in a carrier phrase, and their results are shown in Figure 10.

Figure 10 Plot of the first two formants for the vowels of three Malaysians (from Tan and Low forthcoming)




Although the pattern of the vowels is quite similar to that of Singapore English, we can note that /e/, /æ/, /ɒ/ and /ɔː/ are all more open, /ʌ/ is more front and more distant from /ɑː/, and /uː/ is more back.

The difference for /e/, /æ/, /ɒ/ and /ɔː/ probably arises because these vowels were measured from monosyllabic citation words for the Malaysian data, whereas the Singapore data includes polysyllabic words in a more natural read passage, and it is hardly surprising if more peripheral vowels occur in citation data. (Though this does not explain why /ʌ/ and /ɑː/ are fully open in the Singapore data.)

The different quality of /uː/ may arise because, although *cooed* has a final consonant, the word consists of two morphemes, *coo+ed*, and it may be that the pronunciation of the vowel is treated as if there were no following consonant. Indeed, McMahon (2000, 192) reports that in Scottish English the length of a vowel before a final /d/ depends on whether the /d/ is a separate morpheme or not, and one wonders whether the same might not apply to Malaysian English. This issue will be discussed further below in connection with the data from Hong Kong.

The relative distance between /ʌ/ and /aː/ in Malaysian English remains unexplained, and this is the most significant difference between the two sets of data. However, as we will see below, this distinction between /ʌ/ and /aː/ also seems to occur in other varieties of English in South-East Asia.

## Brunei English

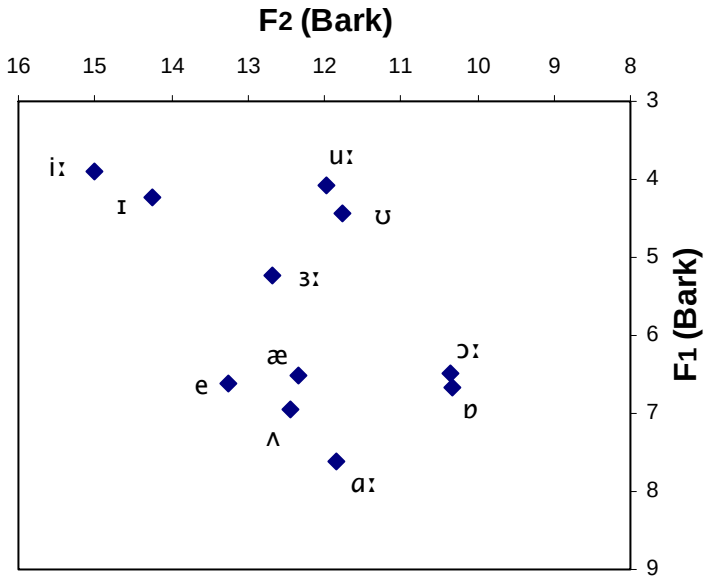
For Brunei English, Mossop (1996) similarly reports a shortening of the long vowels, a lack of difference between the long and short vowels, and /æ/ being pronounced like /e/.

Salbrina (2005, 2006) measured the vowels of ten female undergraduates from Brunei reading the North Wind and the Sun passage, and their average formant values are shown in Figure 11.

The main differences between the Brunei and Singapore data are that /æ/ appears to be more central for Brunei, /ʌ/ is more close and further from /aː/, and both /uː/ and /ʊ/ are more front.

The problem with /æ/ is that all stressed instances of this vowel in the North Wind and the Sun passage (*traveller*, *wrapped*) occur after /r/, and this has the affect of lowering the second formant. In fact, Salbrina (2006) investigated this issue further with her Brunei speakers, using supplementary recordings to compare instances of /æ/ with a preceding /r/ against those with no /r/, and she found that the effect of /r/ was to lower both the first and the second formants, $F_1$ by about 100 Hz and $F_2$ by about 200 Hz. Without these effects, it is possible that the relationship between /e/ and /æ/ in Brunei English is similar to that in Singapore English.

Figure 11 Plot of the first two formants for the vowels of 10 Brunei speakers (from Salbrina 2006)




The distance of /ɑː/ from /ʌ/ is similar to that of the Malaysian data in Figure 10 above. About half of all young undergraduates in Brunei nowadays have a rhotic English accent (Salbrina pc), and the inclusion of *dark* might explain why $F_2$ is at a lower frequency. However, it does not explain why the $F_1$ of /ɑː/ is at a higher frequency than that of /ʌ/.

For /uː/ and /ʊ/, Salbrina (2006) suggests that the Brunei speakers may be more influenced by the current fronted quality of these vowels in British English than speakers in Singapore (Deterding 1997; Hawkins and Midgley 2005).

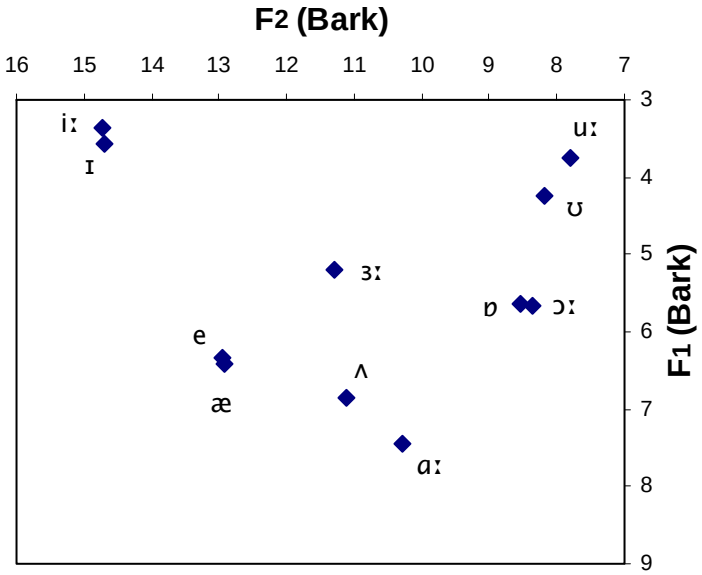
## Hong Kong English

Bolton (2003) notes the absence in a distinction between /iː/~/ɪ/, /ɔː/~/ɒ/, /uː/~/ʊ/ and /e/~/æ/ in Hong Kong English, but no mention is made of any merger between /ɑː/~/ʌ/. The only discussion of either of these latter two vowels concerns the observation that some mid- and upper-range speakers, including

television and radio newsreaders, use /æ/ rather than /aː/ in words such as *dance* and *banana*.

Hung (2002) measured the vowels of fifteen educated young Hong Kong speakers (eight female, seven male) reading two lists of words, one with final a final voiced plosive (*heed, hid, head, had, hud, hard, herd, hawed, hod, whod, hood*) and the other with a final voiceless plosive (*heat, hit, bet, bat, hut, heart, hurt, caught, cot, hoot, hook*). The average vowels for these two sets of words are shown in Figure 12. (The $F_2$ axis is slightly expanded from earlier plots because these data include male speakers. Inevitably, the formants for male speakers tend to have a lower value, but this is not significant, as it just reflects the fact that males have a longer vocal tract.)

Figure 12 Plot of the first two formants for the vowels 15 Hong Kong speakers (from Hung 2002)




When Figure 12 is compared with the data for Singapore, we see that, just as with the data for Malaysia, /uː/ is a fully back vowel. However, as before, we should note that one of the two words used for /uː/ was *whod*, in which the first morpheme can be considered as consisting of /uː/ with no following consonant. In fact, this token has a substantially lower second formant than *hoot*, the other

word used for /uː/. Indeed, the $F_2$ of *hoot* is in fact higher than that of *hook*, so for these two words *hoot* is more front, reflecting the Singapore pattern of /uː/ and /ʊ/ with a following consonant. This seems to confirm that caution should be exercised in using bimorphemic words such as *whod* when measuring the quality of /uː/.

One other feature of Figure 12 is that /ɑː/ is quite distinct from /ʌ/, matching the pattern for Malaysia and Brunei but not for Singapore. It seems that, on the basis of these measurements, only Singapore has these two vowels merged.

## Discussion

It has been shown that the monophthongs of Singapore English show little difference between the three main ethnic groups, suggesting that a distinct variety of English is emerging there. However, it has also been shown that the speech for the different groups in Singapore is quite distinctive, probably mostly in terms of intonation, and the distinctions seem to be increasing with time. In fact, Schneider (2003) has argued that some degree of diversity is one of the key features of the final stage of maturity in the emergence of New Englishes, and on this basis Singapore English indeed seems to be becoming a fully mature variety.

It also seems true that many of the features of the pronunciation of vowels found in Singapore are shared by the Englishes of Malaysia, Brunei and Hong Kong, particularly the merging of the long-short vowel pairs and the lack of a distinction between /e/~/æ/, so it seems that a regional English Lingua Franca is indeed emerging in the region, as described by Deterding and Kirkpatrick (2006). However, it is not clear if the merger of /ɑː/~/ʌ/ that occurs in Singapore is also found in other varieties of English found in South-East Asia.

Further research is needed to determine if some of the idiosyncratic patterns that have been reported for Singapore English are found elsewhere in the region, including the relatively close front vowel in *egg*, *bed* and *next*, and also the relatively close vowel in back vowels with no following consonant in words such as *more* and *before*.

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## Works Cited


Alsagoff, Lubna and Ho Chi Lick. 1998. The grammar of Singapore English. In *English in New Cultural Contexts: Reflections from Singapore*, edited by Foley et al., 127-151. Singapore: Oxford University Press.

Bao, Zhiming 1998. The sounds of Singapore English. In *English in New Cultural Contexts: Reflections from Singapore*, edited by Foley et al., 152-174. Singapore: Oxford University Press.

Baskaran, Loga. 2004. Malaysian English: phonology. In *A Handbook of Varieties of English. Volume 1: Phonology*, edited by Edgar W. Scheider, Kate Burridge, Bernd Kortmann, Rajend Mesthrie and Clive Upton, 1034-1046. Berlin: Mouton de Gruyter.

Boersma, Paul and David Weenink. 2005. Praat: doing phonetics by computer. http://www.fon.hum.uva.nl/praat/ (accessed May 11, 2005).

Bolton, Kingsley. 2003. *Chinese Englishes: A Sociolinguistic History*. Cambridge: Cambridge University Press.

Brown, Adam. 1988. Vowel differences between Received Pronunciation and the English of Malaysia and Singapore: which ones really matter? In *New Englishes: The Case of Singapore*, edited by Joseph Foley, 129-147. Singapore: Singapore University Press.

Chung, Raung-fu. 1996. *Segmental Phonology of Southern Min in Taiwan.* Taipei: Crane Publishing.

Deterding, David. 1997. The formants of monophthong vowels in Standard Southern British English pronunciation. *Journal of the International Phonetic Association* 27: 47-55.

—. 2000. The measurement of the /eɪ/ and /əʊ/ vowels of young English speakers in Singapore. In *The English Language in Singapore: Research on Pronunciation*, edited by Adam Brown, David Deterding and Low Ee Ling, 93-99. Singapore: Singapore Association for Applied Linguistics.

—. 2003. An instrumental study of the monophthong vowels of Singapore English. *English World-Wide* 24: 1-16.

—. 2005. Emergent patterns in the vowels of Singapore English. *English World-Wide* 26: 179-197.

—. 2006. The North Wind versus a Wolf: short texts for the description and measurement of English pronunciation. *Journal of the International Phonetic Association* 36 (2): 87-196.

Deterding, David, and Andy Kirkpatrick. 2006. Emerging South-East Asian Englishes and intelligibility. *World Englishes* 25 (3): 391-409.

Deterding, David, and Gloria Poedjosoedarmo. 2000. To what extent can the ethnic group of young Singaporeans be identified from their speech? In *The English Language in Singapore: Research on Pronunciation*, edited by

Adam Brown, David Deterding and Low Ee Ling, 1-9. Singapore: Singapore Association for Applied Linguistics.
Duanmu, San. 2003. *The Phonology of Standard Chinese*. Oxford: Oxford University Press.
Hawkins, Sarah, and Jonathan Midgley. 2005. Formant frequencies of RP monophthongs in four age groups of speakers. *Journal of the International Phonetic Association* 35: 183-200.
Haywood, Katrina. 2000. *Experimental Phonetics*. Harlow: Longman.
Hung, Tony. 1995. Some aspects of the segmental phonology of Singapore English. In *The English Language in Singapore: Implications for Teaching*, edited by Teng Su Ching and Ho Mian Lian, 29-41. Singapore: Singapore Association for Applied Linguistics.
—. 2002. Towards a phonology of Hong Kong English. In *Hong Kong English: Autonomy and Creativity*, edited by Kingsley Bolton, 119-140. Hong Kong: Hong Kong University Press.
IPA, ed. 1999. *Handbook of the International Phonetic Association*. Cambridge: Cambridge University Press.
Ladefoged, Peter. 2001. *A Course in Phonetics*, 4th ed. Fort Worth: Harcourt.
Lim, Lisa. 2000. Ethnic groups differences aligned? Intonation patterns of Chinese, Indian and Malay Singaporean English. In *The English Language in Singapore: Research on Pronunciation*, edited by Adam Brown, David Deterding and Low Ee Ling, 10-21. Singapore: Singapore Association for Applied Linguistics.
Lim, Lisa. 2004. Sounding Singaporean. In *Singapore English: A Grammatical Description*, edited by Lisa Lim, 19-56. Amsterdam: John Benjamins.
Maris, Mohammed Yunus. 1980. *The Malay Sound System*. Kuala Lumpur: Penerbit Fajar Bakti Sdn. Bhd.
McMahon, April. 2000. *Lexical Phonology and the History of English*. Cambridge: Cambridge University Press.
Mohanan, K. P. 1992. Describing the phonology of non-native varieties of a language. *World Englishes* 11: 111-128.
Mossop, Jonathan. 1996. Some phonological features of Brunei English. In *Language Use and Language Change in Brunei Darussalam*, edited by Peter W. Martins, Conrad Ożóg, and Gloria Poedjosoedarmo, 189-208. Athens, Ohio: Ohio University Center for International Studies.
Platt, John, and Heidi Weber. 1980. *English in Singapore and Malaysia*. Kuala Lumpur: Oxford University Press.
Platt, John, Heidi Weber, and Ho Mian Lian. 1984. *The New Englishes*. London: Routledge and Kegan Paul.
Poedjosoedarmo, Gloria. 2000. A description of the English pronunciation of young educated Singaporeans: a study in multidimensional variation. In *The*

*English Language in Singapore: Research on Pronunciation*, edited by Adam Brown, David Deterding and Low Ee Ling, 65-75. Singapore: Singapore Association for Applied Linguistics.

Salbrina, Sharbawi. 2005. An acoustic investigation of the vowels of Brunei English. Paper presented at the 10th ESEA Conference, Universiti Brunei Darussalam, December 2005.

—. 2006. The vowels of Brunei English: an acoustic investigation. *English World-Wide* 27: 247-264.

Schneider, Edgar W. 2003. The dynamics of New Englishes: from identity construction to dialect birth. *Language* 79: 233-281.

Shockey, Linda. 2003. *Sound Patterns of Spoken English*. Malden, MA: Blackwell.

Singapore Department of Statistics. 2006. Singapore residents by age group, ethnic group and sex. http://www.singstat.gov.sg/keystats/mqstats/mds/mds22.pdf (accessed December 3, 2006).

Suzanna, Bte Hashim and Adam Brown. 2000. The [ɐ] and [æ] vowels in Singapore English. In *The English Language in Singapore: Research on Pronunciation*, edited by Adam Brown, David Deterding and Low Ee Ling, 84-92. Singapore: Singapore Association for Applied Linguistics.

Taiwan Language Committee. 2005. *Elementary Taiwanese for Foreigners*. Taipei: Kaito Publishing Company.

Tan, S. K. Rachel and Low Ee Ling. 2006. Convergence or divergence: the case of Singapore English and Malaysian English. Paper presented at 11th ESEA Conference, Curtin University of Technology, 12-14 December 2006.

Tan, S. K. Rachel and Low Ee Ling. forthcoming. Phonology and phonetics of Malaysian English: an overview and current research. In *Malaysian English: Language and Literature*, edited by Kingsley Bolton and Azirah Hashim. Hong Kong: Hong Kong University Press.

Tan, Ying Ying. 2002. Acoustic and perceptual properties in stress in the ethnic subvarieties of Singapore English. Unpublished PhD thesis, National University of Singapore.

Tay, W. J. Mary. 1982. The phonology of educated Singapore English. *English World-Wide* 3: 135-145.

Teoh Boon Seong. 1994. *The Sound System of Malay Revisited*. Kuala Lumpur: Ministry of Education.

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

Wee, Lionel. 2004. Singapore English: phonology. In *A Handbook of Varieties of English. Volume 1: Phonology*, edited by Edgar W. Schneider, Kate Burridge, Bernd Kortmann, Rajend Mesthrie, and Clive Upton, 1017-1033. Berlin: Mouton de Gruyter.

Wells, J. C. 1982. *Accents of English*. Cambridge: Cambridge University Press.
Zee, Eric. 1999. Chinese (Hong Kong Cantonese). In *Handbook of the International Phonetic Association*, edited by IPA, 58-60. Cambridge: Cambridge University Press.
Zuraidah, Mohd Dom. 1997. Malay + English → A Malay variety of English vowels and accent. In *English is an Asian Language: The Malaysian Context*, edited by Halimah Mohd Said and Ng Keat Siew, 35-45. Kuala Lumpur: Macquarie Library and Persatuan Bahasa Moden Malaysia.
Zwicker, E. and E. Terhardt. 1980. Analytical expression for critical-band rate and critical bandwidth as a function of frequency. *Journal of the Acoustical Society of America* 68 (5): 1523-1525.

# Appendix

Table 5 Average formant values for Singapore English

| *vowel* | *words* | $F_1$ *(Hz)* | $F_2$ *(Hz)* |
|---|---|---|---|
| /iː/ | sheep, **ev**en, feast | 360 | 2701 |
| /ɪ/ | fist, this, **chic**ken, did, con**vinc**ed | 415 | 2461 |
| /e/ | **shep**herd, **plea**sure, suc**ces**sful | 690 | 1977 |
| | next | 596 | 2374 |
| /æ/ | plan, ex**ac**tly, **ac**tually, be**gan** | 721 | 2180 |
| /ʌ/ | up, **com**pany, fun, much, duck, come | 854 | 1563 |
| /ɑː/ | dark, **af**ternoon, **af**ter | 889 | 1526 |
| /ɒ/ | flocks, hot, not, **both**ered | 754 | 1256 |
| /ɔː/ | thought, course | 702 | 1237 |
| | more, be**fore** | 590 | 1020 |
| /ʊ/ | foot, good, **look**ing | 451 | 1330 |
| /uː/ | after**noon**, soon | 431 | 1514 |
| | two | 427 | 1268 |
| /ɜː/ | heard, con**cern**, third | 618 | 1793 |

Note: Apart from *before*, *more* and *two*, all the vowels measured include a following consonant