How different are the monophthongs of Malay speakers of Malaysian and Singapore English?

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Early works on Singapore and Malaysian English used to consider them as a single homogeneous entity based on their shared history as previous British colonies. However, since 1965, both Malaysia and Singapore have been independent from each other. It is interesting to investigate, some four decades post-independence, how different the English speech patterns of Malaysians and Singaporeans have become taking into account the different language planning policies undertaken by both countries. This paper compares one particular aspect of pronunciation, i.e. the vowel qualities and durations of both varieties. The formants of the vowels of the read speech of five male and five female speakers of Malaysian English (MalE) are compared to an equivalent sample of speakers of Singapore English (SgE) in order to compare the vowel qualities between the two varieties. In particular, we compare the vowel quadrilateral space of MalE in comparison with SgE. Vowel durations are also measured for vowels produced in citation forms only. It is found that SgE speakers did maintain some distinctions between the long/short vowel pairs in terms of duration while the MalE speakers tended to conflate the long/short vowel pairs durationally.

Keywords: Malaysian English, Singapore English, vowel quality, vowel duration

1. Introduction

As both Malaysia and Singapore are former British colonies, early works on English in Malaysia and Singapore used to categorize them as the same variety of English (Tongue 1974, 1979; Platt and Weber 1980). However, it is reasonable to speculate that Malaysian English (MalE) may differ from Singapore English (SgE)
in the present day given the fact that the two nations have had separate political identities as well as different language and educational policies in the past 40 years (Baskaran 2004). In Singapore, for example, in 1987 English became the medium of instruction for the teaching of all subjects at all levels (Lim 2004: 5). This has led linguists to refer to Singaporean children as “English-knowing bilinguals” (Pakir 1992), since the policy has been for Singaporeans to learn the English language as their first language and to offer either Mandarin, Malay or Tamil as their second language in formal education. English is thus the common language that unites Singaporeans and helps to strengthen their national identity (Lim 2004: 4). The “Speak Mandarin” campaign of the early 1980s further elevated the importance of English as it became the language for intra-ethnic communication (Kirkpatrick 2007: 121). In Malaysia, although English had the status as an official language prior to 1967, it has since been accorded the status as the primary second language. Bahasa Malaysia became the official language in West Malaysia in 1967 (Asmah 2000) and is the medium of instruction at all levels of education except for some primary schools where the medium of instruction is either Mandarin or Tamil. The change in the language policy resulted in an apparent drop in the Malaysian students’ English proficiency, prompting the government to take action to improve students’ proficiency levels in the English language.

As a result of the government’s change in policy, since 2003, English has become the medium of instruction for Mathematics and Science in Malaysia. By 2008, Mathematics and Science was to have been taught entirely in English from primary up to tertiary level. However, due to problems with the implementation of this policy, the government still allows students some leeway in the major public examinations, and students are given the freedom to choose to answer the Mathematics and Science papers in English or Malay, Chinese or Tamil, depending on the medium of instruction used in the schools which they attend. On 8 July 2009, the Education Minister announced a reversal of the policy back to teaching Mathematics and Science in Bahasa Malaysia, which will be implemented in 2012 (Chapman 2009).

Schneider (2007: 148, 155) has suggested that Malaysia is in Phase 3 (nativization), while Singapore has moved on to Phase 4 (endonormative stabilization), in the Dynamic Model of Postcolonial Englishes. Schneider’s model, which is much influenced by theories of language contact and the notion of “linguistic ecologies” (Mufwene 2001), theorizes that in the evolution of a variety of language there is a constant process of competition and selection of features available to the speakers from a “feature pool of possible linguistic choices” (Schneider 2007: 21). As speakers select from this pool, they redefine and express their social and linguistic identities, accommodating their speech so that they become more similar to those whom they wish to associate with. In this Dynamic Model, varieties of English
in Phase 3 would tend to show a marked local accent with great variability in terms of the range of the sociolinguistic accent (Schneider 2007: 44) while speakers belonging to varieties of English in Phase 4 would tend to demonstrate more linguistic homogeneity in their language as some stabilization has occurred (Schneider 2007: 51). As such, if speakers from two different countries who come from similar ethnic and cultural backgrounds speak the same languages but differ in their manner of speaking, it is likely that this difference is caused by the different experiences they have gone through that have been brought about by the different language policies adopted by their countries.

The main aim of this paper is to compare acoustically the vowel qualities and durations between SgE and MalE and depending on the findings, to discuss whether MalE and SgE are in different phases of development as proposed by Schneider (2007).

2. Research on Singapore English and Malaysian English vowels

Previous research on the vowels of SgE has focused on monophthongs (Tay 1982; Brown 1988; Hung 1995; Bao 1998; Suzanna and Brown 2000; Deterding 2003, 2005; Heng and Deterding 2005). Suzanna and Brown’s study showed that while generally Singapore speakers have been able to produce a difference between /e, æ/ in formal contexts, this distinction is largely absent in casual conversations. Deterding (2003) found the vowels /i:, ɪ/, /e, æ/ and /ɔ:, ɒ/ to be partially merged for tokens selected from recorded SgE conversations while the /ʊ, u:/ vowels are further apart than in British English (BrE). Although earlier studies of the pronunciation of MalE are based on impressionistic work, such as those done by Killingley (1965), Zuraidah (2000) and Baskaran (2004, 2005), they nevertheless provide a valuable descriptive framework laying the foundation for subsequent research. Even though research on the pronunciation of MalE based on instrumental methods has started, studies in this area on MalE are still relatively scarce.

As Baskaran (2004) points out, phonological variation depends on variables like ethnicity, education, socio-economic background and the formality of the discourse, but decisions on exactly which level each phonological feature belongs to are difficult. It has been noted that the monophthongs of MalE differ from BrE in terms of long/short vowel neutralization (Baskaran 2004; Zuraidah 2000). The neutralization occurs both in terms of long vowels being shortened in medial position and short vowels being lengthened especially before the sounds /l, n, r, s, ş/. Zuraidah (2000), who studied the pronunciation of Malay undergraduate students from a university in Malaysia, claims that the pairwise length oppositions are virtually conflated into one phoneme.
In terms of vowel quality, Zuraidah (2000) also found that back vowels such as /ɔ:/, /ɒ/ and /ɑ:/ tend to be more close than their BrE counterparts, while Baskaran (2004) proposes that there are some differences in the back vowels in that the THOUGHT and BATH vowels are more raised and centralized compared to BrE.

Rajadurai (2006) found that Malaysians in her study had six instead of the seven short monophthongs that speakers of Received Pronunciation (RP) have. RP here refers to the type of accent traditionally associated with those who were educated in private schools in Britain (Kirkpatrick 2007: 17). The six vowels found in the speakers of her study are a high front vowel /ɪ/, a mid front vowel /ɛ/ that represents both /e/ and /æ/, a low central vowel /ʌ/, a mid central vowel /ə/, a low back vowel /ɒ/ and a high back vowel /ʊ/.

Using Wells’ (1982) standard lexical sets, the following inventory of MalE was provided by Baskaran (2004):

| Table 1. Baskaran’s (2004) vowel inventory of MalE based on Wells’ standard lexical sets |
|------------------------------------------|------------------------------------------|
| KIT i | FLEECE i > i: |
| DRESS æ > e > e | FACE e > e | SQUARE æ > e |
| TRAP æ > e | PALM a > ä | START a > ä |
| LOT ə | THOUGHT ə | NORTH ə |
| STRUT a | GOAT o > o: | FORCE ə |
| FOOT u | GOOSE u > u: | CURE ə |
| BATH a > ä | PRICE a | happy i |
| CLOTH ə | CHOICE ə | letter ə |
| NURSE ø | MOUTH ø | comma ø > ø |
| horSES ø | POOR ø |
What is evident from the overview of previous work on the phonology of MalE is that apart from Tan and Low (fc.) and Wan Aslynn (2005) there is a lack of acoustic evidence validating the impressionistic claims made. Killingley’s (1965) thesis on MalE, which touches on phonological features, was based on auditory perception. Similarly, research done by Platt and Weber (1980), Zuraidah (2000) and Baskaran (2004, 2005) also builds on perceptual studies. The paucity of acoustic research led Baskaran to comment that close phonetic analysis of MalE is much needed (Baskaran 2004). The present study aims to begin redressing this imbalance by attempting an acoustic investigation of the vowel quality and vowel durations of MalE speakers. As there is a large body of research on SgE based on acoustic work (Low 1994, 1998, 2000a, 2000b; Low, Grabe and Nolan 2000; Lim 2000; Moorthy and Deterding 2000; Suzanna and Brown 2000; Lee and Lim 2000; Deterding 2000, 2001, 2003, 2005, 2007; Heng and Deterding 2005; Lim and Low 2005; Ong, Deterding and Low 2005; Levis 2005; Tan 2005), it is interesting to compare the results for MalE speakers against SgE speakers. Thus, SgE is used as a comparative reference point rather than BrE since much work has been done on SgE in addition to the fact that historically these two varieties of English were regarded as a united entity (Tongue 1974, 1979; Platt and Weber 1980). If differences are observed between the realization of the vowels of MalE and SgE, then it implies that divergence has taken place.

The main research questions for the present study are:

1. Is there a difference in the speech patterns between Singaporean and Malaysian speakers of English?
2. What are the acoustic differences in terms of vowel quality and duration?
3. What do the findings of the present study suggest about the phases of development of both varieties of English?

3. Methodology

3.1 Subjects

The subjects recorded for the read text of this study were ten ethnically Malay Malaysian and ten Malay Singaporean speakers of English. Malay speakers were chosen as Malays form 55% of the population in Malaysia (Baskaran 2004). Another reason why ethnically Malay subjects were chosen is because there is less variation in terms of substratum influences which can colour their speech as compared to the Chinese and Indian speakers, who would have more varied dialects or languages as the language spoken in their homes. As the subjects spoke similar
languages and had similar backgrounds, it may be surmised that variation or differences in their pronunciation could be due to the influence of the language and educational policies of their respective countries. Although there are a number of Malay dialects in Malaysia, there are two varieties which are accepted as norms for good usage (Asmah 1977: 2). In the first variety, which is spoken in the central and southern regions of Peninsula Malaysia, the orthographical “a” as well as the orthographical “r”, both in word-final positions, are realized differently. In theses two varieties, the orthographical “a” in word-final position is realized as a schwa /ə/, and “r” in word-final position is realized as silence. In the second variety, which is spoken in the northern states of Peninsula Malaysia as well as in East Malaysia, the orthographic “a” and the “r” in word-final positions are realized as the low central vowel [a] and the alveolar trill [r], respectively (Asmah 1977: 2). For this reason, care was taken to ensure that the MalE speakers selected were all from the central region of Peninsula Malaysia. There were equal numbers of male and female speakers. All of the subjects were undergraduate students in their respective countries, had been educated entirely in the normal school system and had never resided out of their respective countries for more than four months at a stretch. The speakers selected all come from urban areas. The biodata of every speaker was collected. Their ages ranged from 19 to 22 for the Malaysians, with an average age of 21.1, and from 22 to 38 for the Singaporeans, with an average age of 26. All the speakers were bilingual in English and Malay. The subjects selected also did not have American influenced English, as it has been found that in American English, vowels become r-coloured (or rhoticised) whenever they are followed by “r” in the spelling (Ladefoged 2001: 36), and it also lacks the /ɒ/ vowel (Ladefoged 2001: 44). One Singaporean speaker could speak another language (French) while three Malaysians spoke one other language (Mandarin, Japanese and Arabic respectively).

For the measurement of vowel durations of vowels produced in citation forms, an additional four subjects for MalE and SgE were selected, making it a total of 14 subjects measured for each variety of English. The additional speakers’ recordings of citation forms were included in the corpus so that more tokens of the same vowel could be measured in order to get a more representative sample. These additional subjects all had backgrounds similar to the subjects chosen earlier. All of them spoke only English and Malay. The average age of the 14 MalE speakers was 20.4 while the average age of the 14 SgE speakers was 25.9.

3.2 Recording conditions

In conducting acoustic analysis of speech, it is important to have clearly recorded speech samples for accurate measurements. Ensuring that there are a sufficient number of tokens for each category analyzed is also necessary. There is therefore
a need to use read texts and specially prepared sentences to enable comparison cross-varietally (MalE and SgE) as well as to ensure that there is variation in the phonetic contexts surrounding the vowels under investigation. Although the “North Wind and the Sun” passage (hereafter NWS) is the standard text used by the International Phonetic Association (1999: 39), the issues raised by Deterding (2006) regarding its suitability for phonetic research warrants our attention. One of the issues raised is that there are words which learners of English find difficult, like *cloak* and *obliged*, since these are not common in modern English, in addition to the archaic word order in *the more closely did the traveler fold his cloak around him* and the long sentences. Other problems that have been highlighted by Deterding (2006) are the absence of certain sounds like /ʒ/, medial and initial /z/, initial /θ/, word-final consonant clusters ending in /s/ or /z/, word-final /l/ and the diphthongs /ɔɪ/ and /eə/ as well as triphthongs like /aɪə/ and /auə/. There is also just one instance of the dark /l/ (in *fold*). Deterding proposed an alternative passage, *The Boy who Cried Wolf* (hereafter the “Wolf” passage), which can be found in the appendix.

Deterding (2006) demonstrated that the “Wolf” passage works well for the description as well as the measurement of vowels and consonants in English. As such, the Wolf passage was selected as the text for the recordings to measure vowels in MalE. A minimum of three tokens of each monophthong from every speaker were selected for analysis.

Subjects were also asked to read citation forms with the vowels in carrier sentences like “Please say *beat* again”. The carrier sentences remained fixed while the embedded token (*beat*, *bit*, *bet*, *bat*, *cut*, *cart*, *cot*, *caught*, *could*, *cooed*, *bird*) changed. This is because citation forms are a more formal style of reading, and as the data is similar in terms of speaking rate, stress and phonological environment, this enables the measurement of the duration of the long and short vowel pairs.

In making a good acoustic recording, there is a need to minimize background noise (Ladefoged 2003: 21). As such, the recordings were done in quiet rooms with good acoustic support like carpeted flooring and cushioned walls where possible. Recordings were done directly onto a computer with a microphone placed close to the speakers. A sampling rate of 22 000 Hz was used to ensure good quality recording (Ladefoged 2003: 26).

3.3 Data analysis

The data was analyzed using version 4.4.22 of Praat (Boersma and Weenink 2006). Instances of the vowels were identified and analysis was done by estimating formants (F1 and F2) using Linear Predictive Coding (LPC) analysis overlaid on digital spectrograms. Measurements were also done manually to counter-check for
errors such as identifying a high fundamental frequency for a formant (Lieberman and Blumstein 1988: 87; Ladefoged 2003: 108).

Vowels have traditionally been associated with a well defined acoustic pattern as well as a steady rate of articulatory configuration, often characterised by their first two formants (Hayward 2000: 147). Plots of the frequencies of these two formants have a high correlation with the traditional vowel quadrilateral. The first formant (F1) is inversely proportionate to vowel height (Ladefoged 2001: 176) and the second formant (F2) shows backness and rounding (Hayward 2000: 150). Thus, deriving plots of the frequencies of F1 and F2 provides an objective way to produce a diagrammatic representation of speakers’ vowel quality. In order to derive the speakers’ vowel quadrilaterals, the average values of F1 and F2 of the vowels of each of the speakers are calculated and then the overall averages are calculated separately for the male as well as female speakers. The vowels are charted after the dimensions have been scaled through the auditory Bark scale which is widely used by phoneticians (Hayward 2000: 142). The Bark scale is a nonlinear transformation of frequency that corresponds to the analysis that is done by the ear (Kent and Read 1992: 228). The purpose of using it is to transform measurements of the vowel formants into a perceptual space enabling a visual representation of how the sounds are perceived (Hayward 2000: 140, 141). Thus, the distance between the formant values on the plot will be similar to how the distances between vowel qualities are perceived auditorily. The formula used for conversion to the Bark scale is similar to the one used by Deterding (2003), which was suggested by Zwicker and Terhardt (1980), where F is the frequency in Hertz and Z is the frequency in Bark:

\[ Z = 13 \arctan(0.00076F) + 3.5 \arctan\left(\frac{F}{7500}\right)^2. \]

Following Deterding (2003), the vowel quality is represented in the formant plot using a direct plotting of F2 against F1.

From the measurements taken, the vowel plot of the vowels produced by the subjects were plotted for both MalE and SgE for the “Wolf” passage, and the distance of the individual vowels from the centroid was compared cross-varietally. The centroid referred to here is the centre point of the chart that represents the speakers’ vowel space.

This study measured the vowel durations for vowels produced in citation forms and the vowel qualities for the vowels found in the read text, the “Wolf” passage. It has been noted that vowels such as /i:/ and /ɪ/ in BrE differ in both vowel length and vowel quality (Deterding 2003), but obtaining durational measures of vowel length in longer read texts is challenging. This is because although the duration of a vowel can be measured quite easily from a spectrogram, it is difficult to interpret the absolute value from the data, as many factors such as the speaking rate, the
degree of stress and the phonetic environment surrounding the vowels influence its length (Ladefoged 2003: 102).

3.4 Measurements and problems

The vowel is defined as beginning where the amplitude of the signal begins to change and where a richer formant structure is discernable from the waveform. In most cases, the segmentation of the waveform corresponds to a fairly clear formant structure for the relevant vowel in the spectrogram. Figure 1 shows a spectrogram of the /i:/ vowel in the word beat.

In cases of ambiguity, the three principles as expounded by Low (1998:36) were strictly followed, namely, searching for a change in the formant structures, listening to the tokens and being consistent in adhering to the same principles of measurement each time. The words chosen for the analysis are shown in Table 2.

The words chosen for the measurement of the monophthong vowels in the “Wolf” passage followed the selection made by Deterding (2006) with the exception of next. It has been found that in SgE, there are two realizations of the /e/ vowel where one is close, such as the vowel found in the realization of egg, bed and dead, while the other is more open, like the one found in beg, peg and fed (Deterding 2005). Due to the uncertain nature of /e/ in SgE, a visual check of the F1 and F2 values of the /e/ vowel was done. It was found that /e/ in the next token

![Figure 1. Spectrogram and reading of /i:/ vowel in the word beat](image-url)
for five of the SgE speakers in this study was different from the other /e/ vowels measured. As such, it was decided to exclude the measurements for next in the analysis. Where possible, the vowel monophthongs measured did not follow the approximants /j, w, r/ nor precede the velar nasal /ŋ/ and the dark /l/ to minimize the possibility that the quality of the vowels will be influenced by the phonetic environment of the neighbouring consonants. Generally, no function words were selected for measuring, as they are likely to be reduced in connected speech, with the exception of did, this and up. However, in the case of did and this, the words in the “Wolf” passage were used for emphasis so the likelihood of them being reduced is minimized.

4. Results

4.1 Vowel durations

The overall results for the durational measures for citation forms are listed in Table 3. Both MalE and SgE speakers maintained the difference in the vowel durations for citation forms, as the long vowels were all longer than the short vowels. Paired t-tests done confirmed that there was a significant difference between all the long and short vowel pairs in SgE and most of the vowel pairs in MalE. Generally, the realization of the front and central vowels tend to be longer in MalE compared to SgE while the back vowels in SgE tend to be longer than the MalE back vowels with the exception of /ə/.
Table 3 also shows the results of the paired t-tests that were done to ascertain if there were differences in the duration of the long/short vowel pairs for the two varieties of English. As can be seen from the results, the SgE speakers differentiated between the long and short vowels durationally for all vowel pairs as shown by the results of the t-test. As for the MalE speakers, all the vowel pairs were differentiated in length except for /ɒ, ɔ:/ . As pointed out by Hung (1992: 33), citation forms in carrier sentences like “Please say beat again” are very formal, scripted sentences, making it highly likely that the speakers were aware of what was being investigated and so were consciously monitoring their pronunciation. The fact that there was no differentiation in the vowel length between /ɒ, ɔ:/ by MalE speakers suggests that there may be some conflation of vowels in MalE.

4.1 Vowel quality

Table 4 lists the average F1 and F2 formant frequencies for MalE and SgE monophthongs for the “Wolf” passage, and the plots of the average formants for the male MalE and SgE speakers are shown in Figures 2 and 3, while the average formants for the female MalE and SgE speakers are shown in Figures 4 and 5.

Examination of Figure 2 suggests that the vowel quadrilateral of the male MalE speakers appears to be more compact than that of the male SgE speakers in Figure 3. In order to check if this is so, the method adopted by Deterding (1997) was used where the centroid is taken to be the average of the F1 and F2 values of all the vowels excluding the central vowel /ɜ:/ . The distance of each vowel from the centroid was obtained using the Euclidean distance in order to ascertain the average distance of all the vowels from the centroid and thus show how peripheral or central the vowels are in the speakers’ vowel quadrilateral. The average distance of the vowels from the centroid for the male MalE speakers is 1.770 and for the
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Table 4. Average formant frequencies for MalE and SgE monophthongs (“Wolf” passage)

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<th>Male</th>
<th>Female</th>
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<td>F1 (Hz)</td>
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<td>i:</td>
<td>320</td>
<td>2257</td>
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<tr>
<td>r</td>
<td>359</td>
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<td>e</td>
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<td>1755</td>
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<td>æ</td>
<td>590</td>
<td>1867</td>
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<tr>
<td>æ</td>
<td>666</td>
<td>1436</td>
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<td>a:</td>
<td>757</td>
<td>1410</td>
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<td>692</td>
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<td>ɔ:</td>
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<th>Male</th>
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<td>F1 (Hz)</td>
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<td>i:</td>
<td>309</td>
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<td>r</td>
<td>324</td>
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<td>e</td>
<td>487</td>
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<td>æ</td>
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<td>638</td>
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<td>654</td>
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<td>u</td>
<td>637</td>
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<td>ɔ:</td>
<td>560</td>
<td>987</td>
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<td>o</td>
<td>374</td>
<td>1250</td>
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<tr>
<td>u:</td>
<td>389</td>
<td>1226</td>
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<tr>
<td>ɔ:</td>
<td>473</td>
<td>1747</td>
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The result of the t-test that was performed shows that the difference is marginally significant ($t = 2.33$, df = 9, $p < 0.05$, paired sample, two-tailed).

Figures 4 and 5 show the vowel space of the female MalE and SgE speakers. Results of the calculation of the distance of the vowels from the centroid show that...
Figure 2. Formant plot for average Malaysian male vowels (“Wolf” passage)

Figure 3. Formant plot for average Singapore male vowels (“Wolf” passage)
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Figure 4. Formant plot for average Malaysian female vowels (“Wolf” passage)

Figure 5. Formant plot for average Singapore female vowels (“Wolf” passage)
the average for the female MalE speakers is 2.396 and for the female SgE speakers it is 2.223. These numbers suggest that the vowel space of the female MalE speakers is more peripheral than that of the female SgE speakers. However, the paired t-test done to compare the difference between distance of the vowels and the centroid of the female MalE and SgE speakers does not show a significant difference (t = 1.22, df = 9, ns, paired sample, two-tailed).

The results of the t-tests confirm that the vowel space of the male SgE speakers is more peripheral than that of the male MalE speakers. Although the vowel space of the female SgE speakers is more compact than the female MalE speakers, the t-test results show that it cannot be claimed that the vowel spaces of the female speakers are different.

To have a better view of the quality of the vowel pairs, the vowel pairs will be examined more carefully with reference to the vowel quadrilaterals in Figures 2–4. Figures 4 and 5 show that the /i:/ and /ɪ/ vowels appear to be quite close for the MalE and SgE female speakers while Figures 2 and 3 show that /i:/ and /ɪ/ are closer for the male SgE speakers compared to the MalE speakers. The /e/ and /æ/ vowels are very close to each other in Figures 4 and 5 with the /æ/ vowel slightly lower and fronted compared to /e/ for the female speakers of MalE and SgE. The male MalE speakers’ /e/ and /æ/ also demonstrate a similar trend. Although the /æ/ vowel is more fronted than /e/ for the SgE male speakers, both these vowels were realized at similar heights.

The vowel quadrilateral of the male MalE speakers in Figure 2 shows that there is some degree of differentiation in the vowel height of /ʌ/ and /ɑ:/ whereas this pair of vowels appear to be very close for the SgE male speakers. In Figure 5 the /ʌ/ and /ɑ:/ vowels appear to be slightly differentiated for the female SgE speakers and Figure 4 shows that they are very similar for the female MalE speakers.

Figures 2–5 show that /ʊ/ and /ɔ:/ are not as clearly differentiated in MalE as in SgE. The /ʊ/ vowel is more fronted than /ɔ:/ for the MalE male speakers, as can be seen from Figure 2, but the SgE male speakers’ vowel quadrilateral appears to show that /ʊ/ is higher than /ɔ:/ in Figure 3. The /ʊ:/ vowel also appears not to be as back as the /ɔ:/ vowel in Deterding’s study (2003). Figures 4 and 5 also show apparent fronting of /ʊ:/ in the vowel quadrilateral of female MalE and SgE speakers.

While the vowel quadrilateral provides an overall picture of the quality of the vowels, there is a need to consider the vowel plots of the vowel pairs in order to investigate the realization of the vowel quality of all the tokens of the vowel pairs. The vowel plots of the male speakers will be focused on and vowel plots of the female speakers will be referred to only when they exhibit a trend that is different from the male speakers.

Vowel plots of the /i:/ and /ɪ/ vowels were examined to have a closer look at this pair of vowels. The vowel plots for the /i:/ and /ɪ/ vowels of males are shown in
Figures 6 and 7. The /i:/ and /ɪ/ vowels for the MalE and SgE male speakers appear to be very conflated as there is much overlap in the vowels. Vowel plots of the /i:/ and /ɪ/ vowels for the female MalE and SgE speakers show a similar trend. Thus /i:/ and /ɪ/ seem to be conflated into one vowel for the speakers in this study. This is similar to Deterding's finding on /i:/ and /ɪ/ for SgE speakers (Deterding 2003) and claims on /i:/ and /ɪ/ in MalE (Zuraidah 2000; Baskaran 2004; Rajandurai 2006).
Figure 8 shows that there is greater variation of the /e/ and /æ/ vowels in terms of height in MalE, compared to SgE as seen in Figure 9. Nevertheless there is much overlap in the realization of these two vowels and this confirms that this pair of vowels is partially merged for MalE and SgE.

Figure 10 shows that although slightly more than half the number of /ʌ/ tokens are higher than /æ:/ for the male MalE speakers, there is still some degree of
overlap. The vowel plot of the male SgE speakers in Figure 11 shows that there is no separation between these two vowels in terms of vowel quality. Vowel plots of the female speakers in Figures 12 and 13 similarly show hardly any separation between these two vowels.

To ascertain if there are categorical separations between the vowels /ɒ/ and /ɔ:/, the vowel plots of this pair of vowels is considered. The vowel plots for /ɒ/ and
/ɔ:/ of the male MalE speakers in Figure 14 show considerable overlap. The realization of the SgE speakers’ /u/ and /ɔ:/ vowels, as can be inferred from Figure 15, show that although there is some overlap because of individual speaker variation, generally there is some separation between this vowel pair in that /u/ tends to be more fronted and lower than /ɔ:/.

In comparison, Deterding (2003) found in his

![Figure 12. Vowel plot for female MalE /ʌ/ and /ɑ:/ vowels](image)

![Figure 13. Vowel plot for female SgE /ʌ/ and /ɑ:/ vowels](image)
data that there was considerable overlap in SgE but almost complete separation of the /ɒ/ and /ɔ:/ vowel pair in his British data.

It was earlier mentioned that the /u:/ monophthong appears to be fronted in the vowel quadrilaterals of female MalE and SgE speakers in Figures 4 and 5. However, examination of the vowel plots of the female speakers show that they are very similar to vowel plots of the male speakers in Figures 16 and 17 in that there was a great deal of overlap in the realization of these two vowels.

Figure 14. Vowel plot for male MalE /ɒ/ and /ɔ:/ vowels

Figure 15. Vowel plot for male SgE /ɒ/ and /ɔ:/ vowels
Table 5 summarizes the similarities and differences in terms of duration and vowel quality found in the vowels of MalE and SgE in this study.

Standard deviation measures were done for all the F1 and F2 frequencies of all the vowels from the "Wolf" text that were measured in this study to determine the range of inter-speaker variability within each variety of English for the realization of the monophthongs. Table 6 lists all the values obtained.

![Figure 16. Vowel plot for male MalE /ʊ/ and /u:/ vowels](image1)

![Figure 17. Vowel plot for male SgE /ʊ/ and /u:/ vowels](image2)
A close examination of the standard deviation values in Table 6 shows that out of a total of 22 categories, MalE speakers showed more variability than the SgE speakers for 11 categories of monophthongs in terms of F1 realizations and 15 categories of monophthongs in terms of F2 realizations. Paired t-tests were done to ascertain if there was a significant difference in the level of variability in F1 and F2. The results show no significant difference between the standard deviation values of all the F1 realizations of MalE and SgE monophthongs ($t = 0.77$, $df = 21$, ns., two-tailed, paired) while the paired t-test results of the SD of all the F2 realizations was closer to the critical t-value of 2.08 for a significant difference ($t = 1.78$, $df = 21$, ns., two-tailed, paired). As F1 frequency corresponds closely with the vowel height of articulations and F2 frequencies with backness and lip rounding (Hayward 2000: 150), it cannot be claimed that the inter-speaker variation in the realization of the MalE monophthongs is different from the inter-speaker variation of the SgE monophthongs in terms of vowel height nor backness and lip rounding.

<table>
<thead>
<tr>
<th>Vowel pairs</th>
<th>MalE</th>
<th>SgE</th>
</tr>
</thead>
<tbody>
<tr>
<td>/i, i/</td>
<td>males: conflated females: conflated difference in vowel length</td>
<td>males: conflated females: conflated difference in vowel length</td>
</tr>
<tr>
<td>/e, æ/</td>
<td>males: some overlap, /æ/ appears slightly more fronted and lower than /e/ females: overlap</td>
<td>males: some overlap, both vowels at about same height, /æ/ slightly more fronted than /e/ females: overlap</td>
</tr>
<tr>
<td>/ʌ, a:/</td>
<td>males: some overlap, /ʌ/ generally higher females: overlap difference in vowel length</td>
<td>males: conflation females: overlap difference in vowel length</td>
</tr>
<tr>
<td>/u, ɔ:/</td>
<td>males: vowel quality not differentiated females: vowel quality not differentiated no difference in vowel length</td>
<td>males: /ɔ:/ more back, generally a little higher females: some differentiation, /ɔ:/ more back, generally a little higher difference in vowel length</td>
</tr>
<tr>
<td>/ʊ, u:/</td>
<td>males: vowel pair not differentiated females: not differentiated difference in vowel length</td>
<td>males: vowel pair not differentiated females: not differentiated difference in vowel length</td>
</tr>
</tbody>
</table>
5. Conclusion

The average Euclidean differences from the central point suggest that the vowel space of MalE is significantly more compact than the vowel space of SgE for the male speakers. For the female speakers, the investigations done so far do not show that the MalE female speakers had a more peripheral vowel space than the SgE female speakers.

The SgE speakers differentiated the lengths of the long and short vowels in each vowel pair for citation forms. The MalE speakers, on the other hand, did not appear to differentiate in their vowel length for the /ɒ, ɔ:/ pair. This implies that

<table>
<thead>
<tr>
<th></th>
<th>MalE</th>
<th>SgE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>F1 standard deviation</strong></td>
<td>F2 standard deviation</td>
<td><strong>F1 standard deviation</strong></td>
</tr>
<tr>
<td>male /i:/</td>
<td>35.67</td>
<td>147.48</td>
</tr>
<tr>
<td>male /ɪ/</td>
<td>57.45</td>
<td>133.68</td>
</tr>
<tr>
<td>male /e/</td>
<td>73.62</td>
<td>136.01</td>
</tr>
<tr>
<td>male /æ/</td>
<td>83.81</td>
<td>130.68</td>
</tr>
<tr>
<td>male /ʌ/</td>
<td>67.80</td>
<td>165.44</td>
</tr>
<tr>
<td>male /ɑ:/</td>
<td>76.59</td>
<td>193.92</td>
</tr>
<tr>
<td>male /ʊ/</td>
<td>113.07</td>
<td>301.08</td>
</tr>
<tr>
<td>male /ɔ/</td>
<td>103.06</td>
<td>390.96</td>
</tr>
<tr>
<td>male /ɒ/</td>
<td>113.07</td>
<td>301.08</td>
</tr>
<tr>
<td>female /i:/</td>
<td>54.08</td>
<td>137.72</td>
</tr>
<tr>
<td>female /ɪ/</td>
<td>64.97</td>
<td>217.47</td>
</tr>
<tr>
<td>female /e/</td>
<td>65.14</td>
<td>187.70</td>
</tr>
<tr>
<td>female /æ/</td>
<td>87.21</td>
<td>204.50</td>
</tr>
<tr>
<td>female /ʌ/</td>
<td>104.31</td>
<td>191.08</td>
</tr>
<tr>
<td>female /ɑ:/</td>
<td>90.91</td>
<td>186.13</td>
</tr>
<tr>
<td>female /ʊ/</td>
<td>124.79</td>
<td>232.87</td>
</tr>
<tr>
<td>female /ɔ/</td>
<td>139.68</td>
<td>378.23</td>
</tr>
<tr>
<td>female /ʊ/</td>
<td>60.82</td>
<td>217.54</td>
</tr>
<tr>
<td>female /u:/</td>
<td>139.68</td>
<td>378.23</td>
</tr>
</tbody>
</table>
perhaps there was more variation among the MalE speakers’ realization of vowel lengths compared to the SgE speakers. The results, however, should be interpreted with some caution as the measurements were done only for citation forms.

The results of measurements on the vowel quality in this study show that generally the long and short vowels are conflated in MalE and SgE although the degree of conflation varies for the different vowel pairs. The MalE and SgE speakers in this study conflated /i:, ɪ/ and /u:, u:/185. The higher F1 and F2 values of the /ɔ:/ vowel in MalE as compared to SgE suggests that in MalE the /ɔ:/ vowel is less back and more open. The /u:, ɔ:/ vowel pair is also more clearly differentiated in SgE compared to MalE. As there was generally a lot of overlap seen in the vowel plots of the different vowels, it would be useful in future research to first ascertain that all the vowels do belong in the category specified. For instance, it should be checked that all the speakers have the first syllable of company as /ʌ/ and not /ɒ/ (where the pronunciation follows the spelling of the word) and the second syllable of began has the /æ/ vowel and not /e/.

As this study focuses only on the monophthongs of read speech of a small sample of ethnically Malay MalE and SgE speakers, the following conclusions are tentative. The overall picture of the MalE and SgE monophthongs that emerges from this study when the duration and vowel quality are taken into consideration is that some differences can be seen between MalE and SgE. The vowel spaces of the male speakers of both varieties of English are different. There is also the possibility that there may be some difference in the vowel durations as well in the realization of the /u:, ɔ:/ vowels. These subtle differences indicate that perhaps in the developmental phases of both varieties of English, a movement towards divergence has started; however, the standard deviation test confirmed that this movement has not progressed sufficiently for these two varieties of English to be categorized as being in two different phases of development in terms of pronunciation.

Schneider suggests that MalE is in Phase 3 of the Dynamic Model of Postcolonial Englishes where there are more “phonological innovations” (Schneider 2007: 56) while SgE is in Phase 4 where there is greater homogeneity. While this study has shown that there are some differences, namely those concerning the vowel space of the male speakers and the durations of the monophthongs, indicating that some differences can be seen between both varieties of English, these changes are still not yet compelling enough to show clearly that MalE is indeed in Phase 3 and SgE in Phase 4 of the Dynamic Model of Postcolonial Englishes. Perhaps what has been seen in the investigation so far the beginning of a change that is part of the developmental cycle where both varieties of English are diverging. In the light of the Malaysian government’s recent decision to revert to teaching Mathematics and Science in Bahasa Malaysia, possibly more divergence will occur with time. As this study investigated only duration and vowel quality of
monophthongs, further research on other aspects of pronunciation in both varieties needs to be carried out in order to shed further light on the developmental phases of both varieties.

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Appendix

The Boy who Cried Wolf

There was once a poor shepherd boy who used to watch 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 his cousins even stayed with him for a short 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 that had just escaped from the zoo was looking for a change from its usual diet of chicken and duck. So, overcoming its fear of being shot, 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. Unfortunately, as all the villagers were convinced that he was trying to fool them a third time, they told him, "Go away and don't bother us again". And so the wolf had a feast.

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