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Vowel variations among speakers of Malaysian English

Sock Wun Phng
Iowa State University

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Vowel variations among speakers of Malaysian English

by

Sock Wun Phng

A thesis submitted to the graduate faculty
in partial fulfillment of the requirements for the degree of

MASTER OF ARTS

Major: Teaching English as a Second Language/Applied Linguistics

Program of Study Committee:
John M. Levis, Major Professor
Gulbahar H. Beckett
Charles L. Nagle

The student author and the program of study committee are solely responsible for the content of this thesis. The Graduate College will ensure this thesis is globally accessible and will not permit alterations after a degree is conferred.

Iowa State University
Ames, Iowa

2017

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DEDICATION

This thesis, the culmination of two years of blood, sweat, and tears, is dedicated to my family, both the first and the second; 谢谢 and danke.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEDICATION</td>
<td>ii</td>
</tr>
<tr>
<td>ACKNOWLEDGEMENTS</td>
<td>v</td>
</tr>
<tr>
<td>ABSTRACT</td>
<td>vi</td>
</tr>
<tr>
<td>CHAPTER 1 INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>The Current State of Malaysian English</td>
<td>6</td>
</tr>
<tr>
<td>CHAPTER 2 LITERATURE REVIEW</td>
<td>9</td>
</tr>
<tr>
<td>Malaysian English and Singapore English</td>
<td>9</td>
</tr>
<tr>
<td>Existing Research on Malaysian English</td>
<td>13</td>
</tr>
<tr>
<td>CHAPTER 3 METHODOLOGY</td>
<td>20</td>
</tr>
<tr>
<td>The Present Study</td>
<td>20</td>
</tr>
<tr>
<td>Participants</td>
<td>21</td>
</tr>
<tr>
<td>Materials</td>
<td>23</td>
</tr>
<tr>
<td>Equipment</td>
<td>25</td>
</tr>
<tr>
<td>Recording Environment</td>
<td>25</td>
</tr>
<tr>
<td>Procedures</td>
<td>25</td>
</tr>
<tr>
<td>Data Analysis</td>
<td>26</td>
</tr>
<tr>
<td>CHAPTER 4 RESULTS AND DISCUSSION</td>
<td>31</td>
</tr>
<tr>
<td>Within-Group Comparison</td>
<td>31</td>
</tr>
<tr>
<td>Across-Group Comparison</td>
<td>52</td>
</tr>
<tr>
<td>CHAPTER 5 CONCLUSION</td>
<td>78</td>
</tr>
<tr>
<td>Limitations of the Study and Future Research</td>
<td>80</td>
</tr>
<tr>
<td>NOMENCLATURE</td>
<td>82</td>
</tr>
<tr>
<td>REFERENCES</td>
<td>83</td>
</tr>
</tbody>
</table>
APPENDIX A: PARTICIPANT RECRUITMENT FACEBOOK POST .................. 87
APPENDIX B: SCREENING SURVEY................................................................. 88
APPENDIX C: INTERVIEW REFERENCE SHEET ........................................ 89
APPENDIX D: PASSAGE-READING TASK .................................................... 90
APPENDIX E: SENTENCE-READING TASK.................................................. 91
APPENDIX F: EXAMPLE PRAAT SCRIPT....................................................... 92
APPENDIX G: IRB APPROVAL................................................................. 93
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My heart is full of gratitude also to my parents, who, from Day One, have never opposed my interests in pursuing degrees in English and now, in linguistics. Had it not been for their support, I would never have discovered this love and passion that I have for my field. My gratitude extends to my younger sister, whose FaceTime hangouts have accompanied me through many an all-nighter.

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ABSTRACT

The language policies in Malaysia, having been controlled by the ethnic Malays ever since Independence Day in 1957, have hence dictated which language influences each major ethnic group is exposed to. With the official language as well as the language of instruction in public schools being Malay, ethnic Malays who speak it as a first language (L1) are typically monolingual speakers of Malay. The ethnic Chinese and Indians who usually speak Mandarin or Tamil as an L1 respectively are typically bilingual or trilingual. These different language influences might play a role in how speakers of each ethnic group produce Malaysian English (MalE) monophthongs and diphthongs, and this study investigated what those influences might be in the form of vowel variations. This study extracted formant values in the Bark scale from recordings made of the participants reading 12 of Wells’ (1982) lexical sets: FLEECE, KIT, DRESS, TRAP, GOOSE, FOOT, THOUGHT, LOT, STRUT, NURSE, FACE, and GOAT. The formant values were used to plot vowel charts to facilitate comparisons among Malay-, Chinese-, and Indian-influenced MalE.

It was found that Indian-influenced MalE (InMalE) varied the most from Malay-influenced MalE (MaMalE) and Chinese-influenced MalE (ChMalE) in their productions of the monophthongs KIT, DRESS, FOOT, LOT, and NURSE. MaMalE varied in FLEECE, and ChMalE varied in GOOSE, TRAP, THOUGHT, and STRUT exhibited no significant across-group variation. As for diphthongs, MaMalE did not diphthongize FACE. ChMalE’s FACE, on the other hand, moved higher and more backed, and InMalE’s moved higher and more
fronted. For the diphthong GOAT, only InMalE varied their production by realizing GOAT as a monophthong.

These variations in vowel production may involve the role of language policy in Malaysia as well as the power imbalance among ethnic groups. If more Indian Malaysians are now Dominant Users of English, they speak English as an L1 and either Malay or an Indian language as their second language, in contrast to Malay Malaysians’ L1 of Malay and Chinese Malaysians’ L1 of a Chinese language. This difference, in combination with the power imbalance in Malaysia where the Malays hold the strongest political influence, with the Chinese not far behind, and the Indians largely ignored, might explain why InMalE varies the most from MaMalE and ChMalE. It might also explain why MaMalE and ChMalE exhibit fewer variations between each other. The study’s limitations are discussed and suggestions are provided for further research.
The English language has undergone copious changes since it was introduced to Malaysia, then known as Malaya, by the British. The language alighted with them in 1771 when they arrived at Penang and established a trading post (Baker, 2008). Trading posts in Singapore, then a part of Malaya, and Melaka soon followed. The map of Malaya in Figure 1 shows Penang, Singapore, and Melaka and the years in which they fully transitioned from being trading posts to being British settlements.

*Figure 1.* Penang, Singapore, and Melaka on a map of Malaya (Baker, 2008, p. 111)

Throughout the colonial period, English gained traction as the language for administration, commerce, and government, especially as the British slowly overpowered
the Dutch colonists who had already settled in Malaya (Subramaniam, 2007).

Consequently, career development and social mobility for Malayans hinged on the knowledge of English. As Subramaniam (2007) aptly put it, English became the language of power.

However, in 1957, Malaya gained its independence from the British, Malaysia was born, and the Malay language displaced English as the official language (Phoon & Maclagan, 2009). This change is explained by Omar (as cited in Subramaniam, 2007):

The rise of nationalism which led to the independence of Malaya in 1957 brought with it the importance of Malay as an element of national identity. Malay was the best choice to fulfill this function because of several factors: its indigeneity, its role as a lingua franca, its position as a major language, its possession of high literature, and the fact that it once had been an important language of administration and diplomacy in the Malay archipelago. (pp. 11-12)

Ten years later, Malay was institutionalized and also became the language of instruction in schools (Tan & Low, 2010). The only educational level that was exempted from this policy was the primary level, the equivalent of first to sixth grade, where some schools, dubbed the vernacular schools, used Mandarin or Tamil as the language of instruction. This exemption mainly sprung up because many Chinese and Indian communities in pre-independent Malaya already had their own primary schools. Because these communities were comprised of speakers of different Chinese or Indian languages, Mandarin and Tamil were adopted as the languages of instruction because they are the languages used for interethnic communication in those communities.
The Chinese and Indian communities strongly opposed the British when they tried to abolish these vernacular Mandarin- and Tamil-medium schools because the English-medium schools run by the British promoted Western values and could potentially eliminate the Chinese and Indian cultures from Malaya (Lee, 2015). The mainland Chinese government, along with United Nations officials, was in opposition of this British proposal as well because they viewed the move as an oppression of Chinese culture (Lee, 2015). Thus, the British withdrew the proposal and chose to instead focus on providing English education to the children of the Malay elites, whom they saw as future leaders of the people (Saad as cited in Lee, 2015). Around the time of the second World War, when Malayans prepared to pursue independence, ethnocentrism and patriotism increased, and Malayans, the Malays included, embraced their vernacular Malay, Chinese, and Indian schools, paving the way for the adoption of Malay as the official language of independent Malaysia.

English, meanwhile, lingered in the background, spoken by the elites who learned and used English during its heyday as well as by their descendants. Another group of English learners and users were the students who attend a third type of school: the private school. Private schools differed from the public and vernacular schools in that English is the language of instruction. The syllabi taught and the materials used are exactly the same as those taught and used in the other types of schools, but everything, except Malay, was taught in English. Since private schools and vernacular schools made up a small percentage of Malaysian schools, most students still grew up learning Malay formally, resulting in Malay holding ground as the language for interethnic communication among Malaysians as a whole (Tan & Low, 2010).
During this time, Malay, Mandarin, and Tamil still circulated as mother tongues, but depending on one’s educational background, she could be a monolingual Malay speaker, a bilingual Malay and Mandarin or Tamil speaker, or a trilingual Malay, Mandarin or Tamil, and English speaker. With the first group being the biggest and the third group the smallest, it did not come as a surprise when, in the past few decades, the level of proficiency in English of Malaysians began plummeting (Tan & Low, 2010). This posed an issue because 92 percent of Malaysian employers prioritized English proficiency when making hiring decisions (Yong, Tan, & Yong, 2012).

In light of this issue, in 2003, the Minister for Education took action in the form of updating the language policy (Tan & Low, 2010). Under the new policy, by 2008, all mathematics and science classes were to be taught in English, and the national syllabi and materials for said classes were reprinted in English (Tan & Low, 2010). The ministry focused exclusively on mathematics and science because it believed that this way, not only would it increase the general level of proficiency in English, but it would also make Malaysia more competitive in science, technology, engineering, and mathematics fields on the global stage because English is “tacitly acknowledged as the most effective language today for scientific and technological development” (Nair-Venugopal, 2006, p. 52). However, in 2009, due to problems in its implementation, the policy was reversed, reinstating Malay as the language of instruction for mathematics and science classes, to be in full effect by 2012 (Tan & Low, 2010). Malay thus remained the language learned formally by most Malaysians and, consequently, the language for interethnic communication.
When discussing the ethnic groups in Malaysia, reference is being made to the three main ethnic groups: the indigenous Malays and the immigrant Chinese and Indians (Baskaran, 2008). Because the Malays “inhabited the area when modern written history began and…were influenced culturally by the geography of the area” (Baker, 2008, p. 17), they were and still are referred to as the *bumiputera*, which translates to Princes of the Land. Although the Chinese and Indians were already in Malaya before the arrival of colonists and had intermarried with the Malays, the British, during their colonization of Malaya, brought over more Chinese to work as miners in order to meet the increasing demand worldwide for tin, one of Malaya’s largest exports in British trade deals (Subramaniam, 2007). This resulted in the generalization that the Chinese and Indians were immigrants imported by the colonists, a misconception that prevails to this day.

There are many other immigrant minority ethnic groups like the Thais, Eurasians, and Arabs, but they only make up one percent of the Malaysian population, whilst the Malays, as of 2016, make up 68.6%, the Chinese 23.4%, and the Indians make up 7% of the total population of 31.7 million (Ho, 2016). This disproportionate population distribution weighted in the Malays’ favors, coupled with the *bumiputera* label, resulted in an added advantage that gave the Malays more control and power over the country and its citizens. This racial divide is felt to this day, reinforced by the political system (Baker, 2008), fueling conversations on the country’s language policies.

To better understand the complicated nature of deciding on an official language or, at the very least, a shared language for interethnic communication, it must first be understood that the first languages (L1s) spoken by just the major ethnic groups are multiple. The Malays mostly speak Malay, Kadazan, or Iban; the Chinese mostly speak
Mandarin, Hokkien, or Cantonese; and the Indians mostly speak Tamil, Malayali, or Telugu (Baskaran, 2008). Given that the Malays have the greatest political control, they have the influence to decide on what that shared language should be. As a consequence, Malays, as previously discussed, are mostly monolingual. The Chinese and Indians, on the other hand, even those who attend vernacular schools or private schools, often come in contact with languages other than their first because they need to know at least Malay in order to function in Malaysian society. This potpourri of monolingualism, bilingualism, and trilingualism, brought about by different ethnic and educational backgrounds simmering in a small peninsular country, “inserts a local flavor” (Lee, 2015, p. 1) into the English spoken in Malaysia, spawning a localized variety of the language: Malaysian English.

The Current State of Malaysian English

Current descriptions of Malaysian English (MalE) divide the language into three levels: the acrolect, the mesolect, and the basilect. The acrolect, summarized by Preshous (2001) as the “‘high’ social dialect used for official and educational purposes” (p. 47), is usually considered standard MalE because it is the dialect used on radio and television, in much the same way as Received Pronunciation is viewed as standard British English. It is the least marked of the three dialects. The mesolect is the “‘middle’ social dialect used in semi-formal situations” (Preshous, 2001, p. 47) such as among colleagues at work. As for the basilect, the “‘low’ social dialect” (Preshous, 2001, p. 47), it is the most marked of the three dialects, typically used by speakers with lower levels of proficiency in English.

Today, the most common dialect of MalE that is used is the mesolect, dubbed Colloquial Malaysian English (CMalE) or Manglish (Govindan & Pillai, 2017). CMalE is
used in everyday interactions with family and friends. However, it is viewed by some as a non-standard version of English that is causing the decline in overall English proficiency (Preshous, 2001). This mindset is typically held by members of the older generation, those who were English-educated in British-controlled Malaya and who still see the prestige associated with English (Preshous, 2001). This prescriptivist view is fueled by how CMalE is such a mixture of the different L1s that it is sometimes understandable only to Malaysians (Khojastehrad & Sattarova, 2015; Lee, 2015), which is disconcerting for groups that regard CMalE as a step towards the “deterioration of the standard of English” (Wong, Lee, Lee, & Yaacob, 2012, p. 147).

On the other end of the debate, Lee (2015) notes that CMalE is, in actuality, dictated by its grammar. He laid out the conventions followed by speakers of CMalE, examples of which are as follows:

1. Dropping subject pronouns for referential pronouns and dummy pronouns

   E.g., *You* Never do anything right!

2. Replacing the present perfect tense with *verb* + *already*

   E.g., *I shower already.*

3. Omitting articles

   E.g., *Talk like (a) pretentious person.* (p. 15)

He argues that CMalE is not necessarily wrong or improper. On the contrary, it is usually the more proficient speakers who are able to switch between the acrolect and mesolect to fit the speech context (Govindan & Pillai, 2017). Govindan and Pillai (2017) observed that CMalE is used to “mark camaraderie and solidarity and also to construct ethnic, cultural, and social identity” (p. 75). This observation is corroborated by
Gatbonton, Trofimovich, and Magid (2005), who found from two studies that accent plays a role in ethnic group affiliation and that “the more learners sound like the speakers of their target language, the less they are perceived by their peers to be loyal to their home group” (p. 504). Even though their two studies focused on French and Chinese speakers in Canada, a link can be drawn between that situation and the situation in Malaysia. Gatbonton et al. (2005) discussed how this relationship between accent and group affiliation remained stable across different learning contexts, suggesting that this phenomenon is common in multilingual countries like Canada and Malaysia. Regardless of a prescriptivist or descriptivist stance in the debate about CMalE, the situation remains: MalE, like other varieties of English, is constantly changing and adapting to its speakers.
Malaysian English and Singapore English

Malaysia is, by Kachru’s (1985) definition, an Outer Circle country, where English is institutionalized and used in multilingual and multicultural contexts. By this definition, Singapore is also an Outer Circle country. Figure 2 illustrates Kachru’s Three Circles Model of World Engishes. This model describes the status of English in Inner Circle countries like the United States and the United Kingdom, Outer Circle countries like Malaysia and Singapore, and Expanding Circle countries like China and Russia.

![Kachru's Three Circles Model of World Englishes](image)

*Figure 2. Kachru's (1985) Three Circles Model of World Englishes*

However, according to Schneider’s (2007) Dynamic Model of Postcolonial Engishes in Figure 3, MalE is categorized in Phase 3, whereas Singapore English (SgE)
is categorized in Phase 4. Phase 3 is the Nativization phase, in which varieties typically exhibit a marked local accent with variability among different sociolinguistic accents (Schneider, 2007). On the other hand, varieties in Phase 4, the Endonormative Stabilization phase, typically display more linguistic homogeneity (Schneider, 2007). The Dynamic Model of Postcolonial Englishes thus suggests that the pronunciation of MalE varies among speakers from different sociolinguistic backgrounds, ethnicity included, but that speakers of SgE have, more or less, the same pronunciation regardless of sociolinguistic background.

Figure 3. Schneider’s (2007) Dynamic Model of Postcolonial Englishes

The Dynamic Model of Postcolonial Englishes touches on an important distinction between MalE and SgE. It proffers the explanation that speakers from different countries, despite sharing similar ethnic and cultural backgrounds, would still differ in speech because they have had different experiences, likely connected to different language policies.
When Malaysia gained its independence from Britain in 1957, the newly formed government began the process of reclaiming the country’s identity, starting with the establishment of Malay as the official language (Subramaniam, 2007). A decade later, Malay successfully became the learned L1, and English took a backseat, having been relegated to a second language (Subramaniam, 2007). It was around this time in 1965 when Singapore was, in Baker’s (2008) words, “expelled” (p. 347) from Malaysia due to its diverging political beliefs. Singapore, then a Chinese-dominated state, did not agree with having one ethnic group monopolizing the government, so Malaysia retaliated by removing Singapore’s statehood. Singaporeans, scrambling to “fight for survival in a hostile world…had to undertake a fundamental reevaluation of who they were, where they were going, and what they were going to do to survive” (Baker, 2008, p. 347). They adopted a new national identity, and they decided that the English language was going to be a part of that identity.

Singapore adopted English as the language of instruction in schools in 1987 at all levels and for all subjects, with Malay, Mandarin, and Tamil being offered as a second language (Tan & Low, 2010). Since English is learned as an L1 for Singaporeans, it is the language used for interethnic communication, uniting Singaporeans and strengthening national identity (Tan & Low, 2010). Because the Malays, Chinese, and Indians in Singapore speak their different ethnic languages as well, Singaporeans are mostly bilingual at least.

Undeniably, even though MalE and SgE originated from the same roots, more than five decades’ worth of differing political identities and language and educational policies have created distinguishable differences between the two varieties, especially in
vowel production. The first difference is that SgE tends to reduce vowels more often and more consistently than MalE (Tan & Low, 2014). Tan and Low (2014), in their study on the rhythmic patterning of MalE and SgE, found that in both read speech and natural speech, SgE speakers demonstrated a more stress-timed rhythm, with a significant difference between the full-vowel sentence sets and reduced-vowel sentence sets that were used. MalE, on the other hand, exhibited a more syllable-timed rhythm, with no significant difference between the full-vowel and reduced-vowel sentence sets.

Second, SgE distinguishes between long-short vowel pairs but MalE does not (Tan & Low, 2010). This difference causes MalE to have a more limited number of vowel categories, when compared to SgE. Tan and Low (2010) found that SgE speakers consistently distinguished between the vowel pairs /ɪ-ɨ/ (as in BIT-BEAT), /ʌ-ɑ/ (as in CUT-AFTERNOON), /ɔ-ɔ/ (as in CUT-CAUGHT), and /ʊ-u/ (as in FOOT-SOON) in terms of vowel duration. In MalE, the /ɔ-ɔ/ pair is never differentiated, showing that there is conflation of /ɔ-ɔ/ in MalE and that speakers possess only one vowel to represent both sounds. This pair also proved difficult for MalE speakers to differentiate in terms of vowel quality, further explaining why MalE sounds more syllable-timed than SgE does. The conflation of long-short vowel pairs in MalE, coupled with its lack of vowel reduction, gives MalE a more staccato rhythm than SgE.

Despite these differences, many researchers have considered MalE and SgE as interchangeable varieties (Brown, 1988a; Brown, 1988b; Platt & Weber, 1980; Platt, Weber, & Ho, 1983; Tongue, 1979), most likely due to Malaysia and Singapore’s overlapping histories.
Existing Research on Malaysian English

Researchers have now begun to contrast MalE and SgE in a crop of new articles published in the last ten years. However, they seem to shy away from MalE phonology and instead address other linguistic features such as syntax (Govindan & Pillai, 2017; Khojasteh & Kafipour, 2012; Ting, Mahadhir, & Chang, 2010) and lexis (Ang, Rahim, Tan, & Salehuddin, 2011; Tan, 2009a; Tan, 2009b). Nonetheless, there has been some work done on MalE phonology with research on intelligibility (Rajadurai, 2006) and the teaching and learning of pronunciation (Jayapalan & Pillai, 2011; Pillai, 2008; Pillai & Jayapalan, 2010). In terms of recent studies on the sounds of MalE, these are mainly sociolinguistic studies concerned with attitudes and perceptions toward MalE (Bolton, 2008; Lee, 2015; Wong et al., 2012).

When researchers move away from impressionistic work and into instrumental analyses of MalE phonology, they still do not cover descriptions of MalE sounds; rather, there is a strong focus on vowel contrasts and the role played by speakers’ L1s in distinguishing between vowel pairs. Ahmad (2005) advocates that such studies are important because understanding how Malaysian learners’ L1s affect their productions of traditional vowel contrasts can aid in the understanding of how best to teach English pronunciation in Malaysia. Pillai, Don, Knowles, and Tang (2010) beg to differ, however, by stating:

We have to treat with some caution claims concerning the extent to which the L1 of Malaysian speakers influences their English pronunciation, since we are dealing with a heterogeneous group with a wide range of L1s and ethnic, geographical, educational, and socio-economic backgrounds. Valid
generalizations about vowels produced by Malaysians cannot be made using only Malay as a reference point, particularly when referring to Malaysian English in general. (p. 161)

Phoon, Abdullah, and Maclagan (2013) likewise agree that “MalE is not a uniform variety of English” and that “one cannot therefore assume that all Malaysians sound alike when they speak English” (p. 24).

In line with Pillai et al. (2010) and Phoon et al. (2013), Phoon and Maclagan (2009) and Pillai (2014) agree that ethnicity affects a speaker’s pronunciation of MalE, which echoes Schneider’s (2007) classification of MalE being a Phase 3 variety with significant variability among sociolinguistic accents.

In spite of that, studies that include Chinese- and Indian-influenced MalE are few and far between. Phoon and Maclagan (2009) found that although the number of MalE consonants, 24, does not differ from other English varieties, they do differ in terms of how they are realized. Figure 4 summarizes the findings for Chinese-influenced MalE (ChMalE).

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<thead>
<tr>
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**Figure 4.** Consonant phoneme inventory of ChMalE (Phoon & Maclagan, 2009, p. 26)

For ChMalE consonants, Phoon and Maclagan (2009) found these features:

1. Glottalization of final stops
   
   E.g., BED [beʔ], BOOK [boʔ], DOG [dəʔ]
2. Devoicing of intervocalic and final voiced consonants
   E.g., WEB [wɛp], EYES [aɪs], BRIDGE [brɪdʒ]

3. Reduction of final consonant clusters
   E.g., ELEPHANT [ælɪfənt], PRESENT [prɛzənt], LIFT [lɪft]

4. Flapping of intervocalic /t/
   E.g., BUTTERFLY [bʌtəflai], CATERPILLAR [kætəpɪlə], COMPUTER [kəmpjʊtə]

5. Substitution of labiodental fricative /v/ for bilabial glide /w/
   E.g., VASE [wɑs], VEST [wɛst], OVEN [əʊvən]

6. Avoidance of dental fricatives
   E.g., BROTHER [brʌðə], TEETH [tɪf], NOTHING [nətɪŋ]

7. Omission of dark /l/
   E.g., BALL [bɔl], MILK [mɪlk], HOSPITAL [hɔspɪtə]

8. Rhoticity
   E.g., FOUR [fɔːr], MOTORCYCLE [mɔtərskɪlo], BIRD [bɜrd]

9. Affrication of TR, DR, and STR
   E.g., TREE [τriː], DRUM [dɹʌm], STRAWBERRY [straʊbɛri]

10. Omission of morphological markers in final clusters
    E.g., JUMPED [dʒʌmp], KICKED [kɪk], LAUGHED [lɑf] (pp. 26-33)

    In terms of vowels, Pillai (2014) conducted an instrumental analysis of MalE monophthongs and diphthongs with 11 participants of Chinese and Indian ethnicities by using the University of Malaya’s Corpus of Spoken Malaysian English. Figure 5 shows the monophthongs plotted on a formant chart. F2 on the x-axis stands for the second
formant, the value of which shows how fronted or backed a vowel is produced in the mouth. F1 on the y-axis stands for the first formant, the value of which shows how high or low a vowel is produced in the mouth. A formant chart thus provides a visualization of the realizations of vowels in the mouth, allowing for easier comparisons.

This particular chart illustrates that:
1. /i-/i/, /e-æ/ (as in BEAT), and /ʌ-ɑ/ are produced close together, suggesting conflation;
2. /ɒ-ɔ/ and /ʊ-u/ are produced far apart; and
3. /ɒ/ is produced more fronted and closer to /ʌ-ɑ/. (p. 67)

![Formant Chart]

**Figure 5.** Monophthong vowels of MalE (Pillai et al., 2010, p. 165)

In Chinese- and Indian-influenced MalE, as Pillai (2014) found, /ɒ-ɔ/ are produced far apart, whereas with Malay-influenced MalE (MaMalE), there is close overlap in these vowels (Tan & Low, 2010).
As for MalE diphthongs, Figure 6 presents their average rate of change (ROC) values, as found by Pillai (2014). ROC values describe the movements of diphthongs from the first half of the vowel to the second half. When the ROC is a negative value, it shows a rising trajectory from a lower vowel to a higher one, and when the ROC value is small, it shows small movement. Therefore, with the values from Figure 6, it can be deduced that the word BIDE moves slightly from the lower vowel /a/ to the higher vowel /ɪ/.

<table>
<thead>
<tr>
<th>Word</th>
<th>Diphthong</th>
<th>Average ROC (Hz/second)</th>
<th>Word</th>
<th>Diphthong</th>
<th>Average ROC (Hz/second)</th>
</tr>
</thead>
<tbody>
<tr>
<td>bayed</td>
<td>ei</td>
<td>-198</td>
<td>bout</td>
<td>ao</td>
<td>-301</td>
</tr>
<tr>
<td>bide</td>
<td>ai</td>
<td>-1601</td>
<td>beard</td>
<td>əʊ</td>
<td>928</td>
</tr>
<tr>
<td>Boyd</td>
<td>ɔɪ</td>
<td>-462</td>
<td>poor</td>
<td>ɔʊ</td>
<td>647</td>
</tr>
<tr>
<td>bode</td>
<td>əʊ</td>
<td>-248</td>
<td>bear</td>
<td>əʊ</td>
<td></td>
</tr>
</tbody>
</table>

**Figure 6.** Average rate of change (ROC) values for MalE diphthongs (Pillai, 2014, p. 75)

The MalE vowel inventory is similar to that of British English, with 13 monophthongs and seven diphthongs (Phoon & Maclagan, 2009). MalE’s realization of those vowels, though, differ from British English, as shown in Figure 7. For ChMalE vowels, Phoon and Maclagan (2009) found the following features:

1. **Simplification of diphthongs**

   E.g., HAIR [hɛ], ALLIGATOR [ælɪɡətə], PILLOW [pɪlo]

2. **Distinction of vowel length**

   a. /i/ tends to be realized as a short, tense vowel with quality of /ɨ/
   
   b. Words with /u/ in closed syllables realized with short, tense /ʊ/
   
   c. Words with /ɜ/ (as in HEARD) may be produced as short, tense /ʌ/
d. Long, tense vowel /ɔ/ and short, lax vowel /ʌ/ not clearly distinct

e. Distinction between long, tense vowel /a/ and short, lax vowel /ʌ/ mostly preserved

3. Realization of full vowels in unstressed syllables

E.g., OCTOPUS [ɒktəpʊs], AMBULANCE [æmbjuləns], POTATO [pəˈteɪto] (pp. 34-37)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>FLEECE</td>
<td>i</td>
<td>i or ɪ</td>
<td>NURSE</td>
<td>ɜ</td>
<td>ɜ or ə</td>
</tr>
<tr>
<td>KIT</td>
<td>ɪ</td>
<td>ɪ</td>
<td>STRUT</td>
<td>ʌ</td>
<td>ʌ or a</td>
</tr>
<tr>
<td>DRESS</td>
<td>ɛ</td>
<td>ɛ or ɛ</td>
<td>PRICE</td>
<td>ʌɪ</td>
<td>ʌɪ</td>
</tr>
<tr>
<td>TRAP</td>
<td>æ</td>
<td>æ</td>
<td>MOUTH</td>
<td>əʊ</td>
<td>əʊ</td>
</tr>
<tr>
<td>GOOSE</td>
<td>u</td>
<td>u or ʊ</td>
<td>CHOICE</td>
<td>ɔɪ</td>
<td>ɔɪ</td>
</tr>
<tr>
<td>FOOT</td>
<td>ʊ</td>
<td>ʊ or u</td>
<td>FACE</td>
<td>ɛɪ</td>
<td>ɛɪ or e</td>
</tr>
<tr>
<td>THOUGHT</td>
<td>ɔ</td>
<td>ɔ or ɔ</td>
<td>GOAT</td>
<td>əʊ</td>
<td>əʊ or ʊ</td>
</tr>
<tr>
<td>LOT</td>
<td>ɒ</td>
<td>ɒ or ɔ</td>
<td>NEAR</td>
<td>ɛ</td>
<td>ɛ</td>
</tr>
<tr>
<td>START</td>
<td>ɑ</td>
<td>ɑ or ʌ</td>
<td>SQUARE</td>
<td>ɛʊ</td>
<td>ɛʊ or ɛ</td>
</tr>
<tr>
<td>COMMA</td>
<td>ə</td>
<td>ɛ or ʌ</td>
<td>CURE</td>
<td>ʊʊ</td>
<td>Not tested</td>
</tr>
</tbody>
</table>

Figure 7. Vowel inventory of MalE (Phoon & Maclagan, 2009, p. 34)

While Pillai (2014) and Phoon and Maclagan (2009) covered ChMalE and Indian-influenced MalE (InMalE) phonology comprehensively, more work still needs to be done with comparisons of the three major accents: MaMalE, ChMalE, and InMalE.

Phoon et al. (2013) conducted a study that included participants from Malay, Chinese, and Indian backgrounds, but it focused on MalE consonants. Phoon et al. (2013) found that there are features in the realizations of MalE consonants that are distinctly Malaysian, but there are also features that distinguish among the three accents. For example, MaMalE, ChMalE, and InMalE all reduce final stop clusters such as the -NT in PRESENT, producing it as /pæzənt/. However, only MaMalE and occasionally InMalE trill
R, as in /ræbɪt/ for RABBIT; only ChMalE rhotacizes final -R, as in /bʊɡæt/ for BURGER; and only InMalE substitutes /v/ for /w/ as in /vɒtʃ/ for WATCH.

Often, when variation occurs in the pronunciation of Outer or Expanding Circle Englishes, it is chalked up to the speakers’ different L1s, but in as complex a sociolinguistic landscape as Malaysia, Phoon et al. (2013) speculate that “Malay may act as a filter in the language transfer process and may influence [ChMalE and InMalE] as well as [MaMalE]” (p. 20). What this shows is that there is value in studying MalE as a standalone variety. More specifically, comparing the vowel inventories of MaMalE, ChMalE, and InMalE allows for investigation into whether L1 transfer is in play or whether Malay stands in the middle of that transfer process.

If there exist differences among these three accents, it can be speculated that L1 transfer is the cause of the differences. If there does not exist differences, that might then mean that Malay is affecting the MalE phonology of speakers who do not speak Malay as an L1. That could, in turn, reflect the effects of the language policy in Malaysia.
CHAPTER 3. METHODOLOGY

The Present Study

It is worthwhile to examine the possible relationship between the language policy in Malaysia and the phonology of its variety of English as produced by its three largest ethnic groups, all of which boast different linguistic repertoires, depending on their educational and ethnic backgrounds. Hypothetically, if the language policy influences how speakers of different L1s produce MalE monophthongs and diphthongs, there should be little across-group variation. If this is the case, reforming the language policy could be a step towards increasing the country’s overall English proficiency, if that remains an issue for policymakers. On the other hand, if it is L1 transfer that influences speakers’ productions of MalE monophthongs and diphthongs, policy reformation might not be an effective measure.

In order to inspect this relationship, descriptions are needed of MaMalE, ChMalE, and InMalE vowels. These descriptions would shed light on whether there are within-group and across-group variations in vowel productions that would allow for the comparison of these three accents of MalE. Prompted by such a possibility, this study investigated the vowel quality of monophthongs and diphthongs among MaMalE, ChMalE, and InMalE. The study was guided by two research questions:

1. What differences exist in the production of monophthongs among Malay-, Chinese-, and Indian-influenced Malaysian English?

2. What differences exist in the production of diphthongs among Malay-, Chinese-, and Indian-influenced Malaysian English?
Participants

Participants were recruited from the Malaysian student association at a large American Midwestern university. An advertisement (Appendix A) was posted to the association’s Facebook page. Joining this Facebook page is optional. In a welcome email that Malaysian students receive prior to their arrival on campus, the link to join the Facebook page is included for those interested. Because of that, the advertisement might not have reached every Malaysian student on campus. An additional caveat is that the Malay, Chinese, and Indian Malaysians who are interested might not speak Malay, Mandarin, or Tamil at home. They might speak one of the other languages, and that narrowed the potential participant pool.

Seven students responded to the advertisement over the course of a month. Four reached out via private messages on Facebook Messenger, while the other three sent emails. From these seven correspondences, only one stopped responding to emails. From the remaining six responders, one referred a friend to the study, and that friend referred another friend. Both referrals agreed to participate in the study, bringing the total participants up to eight. The ninth and final participant was a friend brought along by another one of the responders, and she was likewise interested in participating.

Table 1 summarizes the demographic information for the nine participants, collected through a screening survey at the end of the informed consent form (Appendix B). To ensure anonymity, participants were assigned into groups based on their first language: MAL for the Malay speakers, MAN for the Mandarin speakers, and TAM for the Tamil speakers. Their orders within their groups were than randomized to come up with their code numbers.
Table 1.

Participants' demographic information

<table>
<thead>
<tr>
<th>Group</th>
<th>Participant code</th>
<th>First language</th>
<th>Age</th>
<th>Gender</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAL</td>
<td>MAL1</td>
<td>Malay</td>
<td>24</td>
<td>Female</td>
</tr>
<tr>
<td></td>
<td>MAL2</td>
<td>Malay</td>
<td>23</td>
<td>Male</td>
</tr>
<tr>
<td></td>
<td>MAL3</td>
<td>Malay</td>
<td>33</td>
<td>Female</td>
</tr>
<tr>
<td>MAN</td>
<td>MAN1</td>
<td>Mandarin</td>
<td>21</td>
<td>Male</td>
</tr>
<tr>
<td></td>
<td>MAN2</td>
<td>Mandarin</td>
<td>19</td>
<td>Female</td>
</tr>
<tr>
<td></td>
<td>MAN3</td>
<td>Mandarin</td>
<td>19</td>
<td>Male</td>
</tr>
<tr>
<td>TAM</td>
<td>TAM1</td>
<td>English</td>
<td>22</td>
<td>Male</td>
</tr>
<tr>
<td></td>
<td>TAM2</td>
<td>English</td>
<td>21</td>
<td>Male</td>
</tr>
<tr>
<td></td>
<td>TAM3</td>
<td>English</td>
<td>22</td>
<td>Male</td>
</tr>
</tbody>
</table>

The average age of participants in the MAL, MAN, and TAM groups is 27, 20, and 22 respectively. Because of the limited responses to the advertisement, participant demographics could not be controlled, resulting in differing ages and an unbalanced mix of female and male participants. This was a concern because factors such as age and sex can affect pronunciation (Wells, 1982). In MalE specifically, Tan and Low (2010) found differences between female and male speakers. For example, female speakers tended to overlap the /ɛ-æ/ and /ʌ-ɑ/ vowel pairs whereas male speakers did not.

Another detail to note is that the participants in the TAM group were actually L1 speakers of English, described by Govindan and Pillai (2017) as Dominant Users of English. These Dominant Users of English generally come from multilingual backgrounds, as is true for most Malaysians, but primarily speak English with family and friends. They are still considered as having a Tamil background because, as explained by the participants themselves, they still speak Tamil with their grandparents and extended family members and grew up with Tamil influence. Joseph (2007) also found that Indian Malaysians in such environments tend to acquire the phonological inventory of their mothers, even if they do not necessarily have Tamil as an L1 or speak Tamil regularly.
With shifting educational and socio-economic backgrounds, Indian Malaysians are increasingly identifying as Dominant Users of English (Govindan & Pillai, 2017).

Materials

There were four sets of materials used in this study: the informed consent document, an interview reference sheet (Appendix C), the “Boy who Cried Wolf” passage (Appendix D), and a PowerPoint presentation with 12 of Wells’ (1982) lexical sets (Appendix E).

The “Boy who Cried Wolf” passage was chosen over the standard “North Wind and the Sun” passage because of a few problems highlighted by Deterding (2006). First, there are words in the “North Wind and the Sun” passage like CLOAK and OBLIGED that are not as common in contemporary English, which might affect how participants pronounce them and cause inconsistencies in the data. Second, some of the word orders, e.g. the more closely did the traveler fold his cloak around him, are archaic and might make participants’ readings of the passage more disjointed and less fluent. Third, the “North Wind and the Sun” passage uses comparably longer sentences than the “Boy who Cried Wolf” passage does, and longer sentences are more difficult to read aloud.

A PowerPoint presentation was utilized to elicit 12 of Wells’ (1982) lexical sets in the carrier sentence Now I say WORD. It was set up to show the phrase Now I say followed immediately by the target word. After each sentence, participants were prompted to click the mouse to move on to the next sentence. An example slide is shown in Figure 8.
These 12 lexical sets, referred to henceforth as vowels, are representative of sets of words with similar vowels. For example, the lexical set FLEECE is representative of words containing the /i/ vowel such as BEAD or HEED. These 12 lexical sets were specifically chosen because eight of them (FLEECE, KIT, DRESS, TRAP, GOOSE, FOOT, THOUGHT, and LOT) contain vowel pairs that MalE has been previously thought to conflate (Ahmad, 2005; Phoon & Maclagan, 2009; Tan & Low, 2010). One of them (STRUT) has been shown to be realized as /strʌt/ and /stræt/ interchangeably in MalE (Phoon & Maclagan, 2009). One of them (NURSE) contains an r-colored vowel that MalE realizes as /nɜːs/ or /nəs/ (Phoon & Maclagan, 2009). The final two (FACE and GOAT) were the only diphthongs investigated because they are the only diphthongs that show variation in MalE, as was established in Figure 7. The other diphthong, SQUARE, has a final r-sound that might affect the vowel production, as Phoon and Maclagan (2009) found. The order
in which these words were presented to participants was jumbled so that the progression was not made obvious to them.

Equipment

The audio files were recorded on a Zoom H2 audio recorder as three separate files corresponding to the three tasks for each participant. The .wav files were then transferred to a Mac desktop computer and labelled (Participant Code) P(1/2/3). The second task for the third participant in the Tamil-speaker group, for example, would thus be TAM3 P2. Another Mac desktop was used for the PowerPoint slides for Task 3. This computer was situated in the recording room.

Recording Environment

All recordings were made in a dedicated media lab, a small, enclosed room with limited background noise. For the informed consent procedure and the first and second tasks, the participant was seated at a table placed in the center of the room. For the third task, the participant was seated behind the Mac desktop. The audio recorder was always placed on the flat surface in front of them, about nine inches from the mouth. Only one participant was interviewed in the room at any given time.

Procedures

When the participants arrived, they were seated at the table for the informed consent procedure. After asking any questions, the participants signed the consent form and completed the screening survey. Once it was confirmed that they were 18 years or older and spoke Malay, Mandarin, or Tamil as a first language, the first task, the interview, was started. For the second task, participants were handed a sheet with the “Boy who Cried Wolf” passage, accompanied with instructions. They were given some
time to silently read through the passage to familiarize themselves with the story. The audio recorder was started whenever they were ready to begin reading aloud. Participants were then ushered to the desktop for the third task. They were given some time to read the instructions, and questions were answered. When they were ready to begin, the audio recorder was started. Participants had control of the mouse and could click to move on to the next page whenever they were ready. After each data collection session, the audio files were transferred onto a separate, private desktop computer and labelled accordingly.

Data Analysis

All of the data analyses were conducted on Praat Version 6.0.28 (Boersma & Weenink, 2017). The analyses began with the audio from Task 3 because the citation forms allowed for clearer realizations of the target words and consequently allowed for more accurate formant extraction. Audio files from Tasks 1 and 2 were back-up files to be consulted if there happened to be inconsistencies in the Task 3 data resulting from unconventional pronunciations of the lexical sets or from noise.

To extract formants, each Task 3 audio file was opened in Praat. Each target word was identified and selected. This process was streamlined by turning on formants, which show up as red dotted lines in Figure 9.

There are five formants shown in the figure, but for the purposes of this study, only the first and second formants were used. The first and second formants are the first and second red dotted lines, counted from the bottom. If these two formants were parallel to each other throughout the length of the vowel as in Figure 10, the vowel was considered a monophthong. If the two formants were not parallel to each other
throughout the length of the vowel and instead diverged in their paths, the vowel was considered a diphthong, as in Figure 11.

**Figure 9.** Praat interface for TAM1’s LOT

**Figure 10.** Example of a monopthong
Figure 11. Example of a diphthong

Formant extraction for monophthongs involved clicking on the midpoint of the vowel and pulling up the formant listing. Figure 12 shows a screenshot of the process, with the values for the first and second formants highlighted on the formant listing.

Figure 12. Formant extraction for monophthongs
For diphthongs, in order to capture the glide or the movement that the vowel makes from one part of the mouth to another, formants were recorded for the 25-percent mark and the 75-percent mark of the entire vowel. As Figures 13 and 14 show, it was akin to breaking the diphthong into two monophthongs and measuring their midpoints.

The formants extracted from Praat were provided in Hertz, but for this study, they were converted into the Bark scale using the following formula that was proposed by Zwicker and Terhardt (1980). Z in the formula is the frequency in Bark, and F is the original frequency in Hertz:

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

Bark is preferred to Hertz because it accounts for individual differences among speakers such as the shape or the size of their mouths by transforming the frequencies into a perceptual scale (Tan & Low, 2010).

With this formant frequency information, each of the participants’ vowel charts were plotted onto a formant chart. F1 on the y-axis represents vowel height or how high or low in the mouth the vowel was produced. F2 on the x-axis represents vowel frontness or how front or back in the mouth the vowel was produced. Charts were also plotted for each lexical set, with all participants’ productions included. The formant values of all three participants were then averaged for each group to be used to plot a comprehensive vowel chart for comparison across groups. These charts were plotted using Praat scripts, an example of which can be found in Appendix F.
Figure 13. Formant extraction for diphthongs at 25-percent mark

Figure 14. Formant extraction for diphthongs at 75-percent mark
CHAPTER 4. RESULTS AND DISCUSSION

Within-Group Comparison

Malay-influenced Malaysian English

Table 2 shows the formant values in Bark of the 12 analyzed vowels for the MAL group. Diphthongs are marked by two assigned values. For example, the F1$_1$/F1$_2$ of GOOSE for MAL1 is 3.95/4.59, and the F2$_1$/F2$_2$ is 10.06/10.33. Based on these formant values, it can be observed that MAL1 diphthongized vowels more frequently than did MAL2 and MAL3, both of whom produced all 12 vowels as monophthongs, save for FACE.

Table 2.

<table>
<thead>
<tr>
<th>Vowels</th>
<th>MAL1</th>
<th>MAL2</th>
<th>MAL3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F1</td>
<td>F2</td>
<td>F1</td>
</tr>
<tr>
<td>FLEECE</td>
<td>3.89</td>
<td>15.66</td>
<td>3.30</td>
</tr>
<tr>
<td>KIT</td>
<td>4.44</td>
<td>15.56</td>
<td>3.58</td>
</tr>
<tr>
<td>DRESS</td>
<td>7.47</td>
<td>13.53</td>
<td>5.44</td>
</tr>
<tr>
<td>TRAP</td>
<td>8.10</td>
<td>13.38</td>
<td>6.13</td>
</tr>
<tr>
<td>GOOSE</td>
<td>3.95/4.59</td>
<td>10.06/10.33</td>
<td>3.75</td>
</tr>
<tr>
<td>FOOT</td>
<td>4.56</td>
<td>9.91</td>
<td>4.15</td>
</tr>
<tr>
<td>LOT</td>
<td>8.02</td>
<td>10.51</td>
<td>5.94</td>
</tr>
<tr>
<td>STRUT</td>
<td>7.84</td>
<td>11.18</td>
<td>6.53</td>
</tr>
<tr>
<td>NURSE</td>
<td>6.66/5.60</td>
<td>12.20/11.31</td>
<td>4.85</td>
</tr>
<tr>
<td>FACE</td>
<td>4.71/4.04</td>
<td>15.01/15.31</td>
<td>4.34/4.15</td>
</tr>
<tr>
<td>GOAT</td>
<td>4.77/4.44</td>
<td>8.74/8.33</td>
<td>4.49</td>
</tr>
</tbody>
</table>

Figure 15 shows the vowel chart for MAL1. It can be observed that this participant distinguished all 12 vowels and produced them as distinct from one another. The only two vowels that exhibit some conflation are FOOT and the second half of the diphthongized GOOSE. GOOSE moved lower in the mouth, toward the FOOT vowel. Besides GOOSE, the other three diphthongs for MAL1 are NURSE, FACE, and GOAT. NURSE was still
produced as a mid central vowel, but it moved higher and more backed. \textit{FACE} and \textit{GOAT} also moved higher, with \textit{FACE} being fronted and \textit{GOAT} being backed.

\textit{Figure 15.} Vowel chart for MAL1

Apart from these observations, Figure 15 also shows that MAL1’s vowel chart contains six discrete sections:

1. High front vowels (\textit{FLEECE}, \textit{FACE}, and \textit{KIT})
2. High back vowels (\textit{GOOSE}, \textit{FOOT}, and \textit{GOAT})
3. Mid central vowel (NURSE)
4. Low front vowels (DRESS and TRAP)
5. Low central vowels (STRUT and LOT)
6. Low back vowel (THOUGHT)

Figure 16 shows the vowel chart for MAL2. This participant distinguished among all 12 vowels, and they all appear to be produced as monophthongs. The only diphthong for MAL2 was FACE. It did not change much in terms of F1, but it moved toward the front.

MAL2’s vowel chart can more or less be sectioned into five areas:
1. High front vowels (FLEECE, KIT, and FACE)
2. High back vowels (GOOSE, FOOT, and GOAT)
3. Mid front vowel (NURSE)
4. Low front vowels (DRESS and TRAP)
5. Low back vowels (LOT, THOUGHT, and STRUT)

MAL2, based on his vowel space, does not appear to have any central vowels.

Figure 17 shows the vowel chart for MAL3. There appears to be a number of conflated vowels. GOAT and GOOSE and THOUGHT and LOT were produced very closely to each other, suggesting that MAL3 realizes GOAT and GOOSE as the same vowel and THOUGHT and LOT as the same vowel. That means that MAL3 only distinguished among ten of the vowels. In terms of diphthongization, her only diphthong is FACE. It did not change much in F2, but it moved lower in the mouth, past KIT. MAL3’s vowel chart can be divided into five sections:
1. High front vowels (FLEECE, FACE, and KIT)
2. High back vowels (FOOT and GOAT/GOOSE)
3. Mid central vowels (NURSE and STRUT)
4. Low front vowels (DRESS and TRAP)
5. Low back vowel (THOUGHT/LOT)

Figure 16. Vowel chart for MAL2
In Figure 18, all three of the MAL participants’ vowel charts were combined into one formant chart. MAL1’s chart was colored in maroon, MAL2’s chart was colored in green, and MAL3’s chart was colored in blue. MAL1 and MAL3 appear to have a rather similar vowel space in that the difference in F1 and F2 values among their vowel sections is large, which suggests that MAL1 and MAL3 have larger vowel spaces. In contrast, MAL2’s vowel space is smaller; the difference in his F1 and F2 values is smaller. Since MAL2 was the only male speaker in the group, this difference could be attributable to a gender difference.

It is also worth noting that despite the differences in vowel space size, the high back vowels for all three participants still seem to have very similar F1 and F2 values. The second half of MAL1’s GOAT diphthong and MAL2’s GOAT monophthong were produced very closely to each other in terms of formant values. The same can be said of MAL2’s GOOSE and MAL3’s GOAT/GOOSE. Besides the high back vowels, the high front vowels were also produced very similarly between MAL1 and MAL3. Both of these similarities suggest that the L1, Malay, could have an influence on the high vowels of MaMalE.

These findings partially echo what Pillai et al. (2010) found, which was that MaMalE exhibits the least contrast between the /i-ɪ/ vowel pair, as shown in Figure 19. This pair corresponds to the FLEECE and KIT vowels in Figure 18. Another similarity between these and Pillai et al.’s (2010) findings is that the vowels are produced at approximately the same location in the mouth, with there being six vowel sections, the same amount that MAL1 possesses.
Figure 17. Vowel chart for MAL3
Figure 18. Combined vowel chart for MAL participants
Chinese-influenced Malaysian English

For the MAN group, many of the 12 vowels were diphthongized, at least for MAN1 and MAN2. MAN1 and MAN2 produced five diphthongs, but MAN3 produced only two. All three of them were consistent with the diphthongization of FACE and GOAT. Table 3 shows the formant values in Bark of the 12 vowels for the MAN participants.

Although Figure 20 shows some overlap in MAN1’s production of the 12 vowels, it can be argued that the gliding from diphthongization created more vowel categories for MAN1. For example, GOAT and GOOSE appear at first glance to be conflated, but MAN1’s diphthongization of them moved them away from each other. GOAT moved slightly higher and more backed. GOOSE moved higher also but more fronted. The same can be said of DRESS, which began as almost overlapping TRAP, but the diphthongization moved it higher and more fronted and away from TRAP. The other two
diphthongs are FACE and THOUGHT. While FACE moved higher and slightly more backed, THOUGHT moved lower and also more backed. Figure 20 also shows that MAN1’s vowel chart has six sections:

1. High front vowels (FLEECE, FACE, and KIT)
2. High central vowel (second half of GOOSE)
3. High back vowels (GOAT, first half of GOOSE, and FOOT)
4. Mid central vowel (NURSE)
5. Low front vowels (DRESS, TRAP, and STRUT)
6. Low back vowels (THOUGHT and LOT)

Table 3.

<table>
<thead>
<tr>
<th>Vowels</th>
<th>MAN1</th>
<th>MAN2</th>
<th>MAN3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F1</td>
<td>F2</td>
<td>F1</td>
</tr>
<tr>
<td>FLEECE</td>
<td>3.00</td>
<td>13.41</td>
<td>4.28/4.32</td>
</tr>
<tr>
<td>DRESS</td>
<td>6.59/6.23</td>
<td>11.10/11.88</td>
<td>7.00</td>
</tr>
<tr>
<td>TRAP</td>
<td>6.67</td>
<td>11.04</td>
<td>7.65</td>
</tr>
<tr>
<td>GOOSE</td>
<td>4.17/2.85</td>
<td>7.22/10.20</td>
<td>3.75</td>
</tr>
<tr>
<td>FOOT</td>
<td>4.10</td>
<td>8.22</td>
<td>4.25</td>
</tr>
<tr>
<td>THOUGHT</td>
<td>6.60/7.46</td>
<td>8.39/7.58</td>
<td>7.33</td>
</tr>
<tr>
<td>LOT</td>
<td>6.79</td>
<td>7.98</td>
<td>7.78</td>
</tr>
<tr>
<td>STRUT</td>
<td>6.98</td>
<td>10.20</td>
<td>7.09</td>
</tr>
<tr>
<td>NURSE</td>
<td>4.49</td>
<td>10.97</td>
<td>5.67/5.07</td>
</tr>
<tr>
<td>FACE</td>
<td>3.89/3.11</td>
<td>13.44/13.18</td>
<td>5.34/4.29</td>
</tr>
<tr>
<td>GOAT</td>
<td>4.06/3.64</td>
<td>7.16/6.90</td>
<td>4.48/4.22</td>
</tr>
</tbody>
</table>

MAN2, as illustrated by Figure 21, appears to have produced the 12 vowels as distinct vowels, but three of her diphthongs move toward and conflate with the other vowels. Her GOAT moved higher and slightly backed to meet her FOOT. As for her FLEECE and FACE, they both moved and met in the same place. FLEECE did not change much in its F1, but it moved back toward the central part of the mouth. FACE, on the other hand,
moved higher and back. Besides that, MAN2 also diphthongized KIT and NURSE. KIT, like FLEECE, did not change much in F1 value, but it moved slightly back in the mouth. NURSE moved higher and front, toward the high vowels.

*Figure 20.* Vowel chart for MAN1
Overall, MAN2’s vowel space can be divided into seven sections:

1. High front vowels (first half of FLEECE, KIT, and first half of FACE)
2. High central vowels (second half of FACE, second half of FLEECE, and second half of NURSE)
3. High back vowels (GOOSE, GOAT, and FOOT)
4. Mid central vowel (NURSE)
5. Low front vowels (DRESS and TRAP)
6. Low central vowel (STRUT)
7. Low back vowels (THOUGHT and LOT)

There appears to be conflation between MAN3’s THOUGHT and LOT, as can be seen in Figure 22. That suggests that MAN3 has only one vowel that represents both THOUGHT and LOT. Apart from that, MAN3 produced the other ten vowels as distinct vowels. The only two diphthongs for this participant are FACE and GOAT. FACE moved higher and slightly front, while GOAT also moved higher albeit slightly and back.

Overall, Figure 22 shows that MAN3’s vowel space has six sections:

1. High front vowels (FLEECE, second half of FACE, and KIT)
2. High central vowel (GOOSE)
3. High back vowels (FOOT and GOAT)
4. Mid front vowel (first half of FACE)
5. Low front vowels (NURSE, DRESS, TRAP, and STRUT)
6. Low back vowel (THOUGHT/LOT)
From Figure 23, the MAN vowel charts do not appear to line up well. There does not appear to be any intragroup conflation either. However, some of the vowels were produced with approximate formant values:

1. MAN3’s KIT and first half of MAN1’s FACE
2. MAN3 and MAN2’s (first half of diphthong) NURSE
3. MAN3’s TRAP and MAN1’s DRESS
4. MAN1 and MAN3’s FOOT
Figure 22. Vowel chart for MAN3
Pillai et al. (2010) found that vowel conflation is least apparent in ChMalE, when compared to MaMalE and InMalE. All of the monophthongs produced by Pillai et al.’s (2010) participants did not overlap, with only /ʌ/ and /ɑ/ being produced in close proximity to each other. Likewise, with the lack of intragroup conflation for MAN, it can...
be speculated that generally, in ChMalE, the 12 analyzed vowels are categories of their own.

![Graph](image)

**Figure 24.** Monophthong vowels of ChMalE (Pillai et al., 2010, p. 169)

**Indian-influenced Malaysian English**

Table 4 shows the formant values of the 12 vowels as produced by the TAM group. This group had the most demographically similar participants. They were all male speakers aged 21 or 22, who speak English as an L1 with Tamil influence. Surprisingly, none of them share many similarities in their diphthongizations of the vowels. The only intragroup similarity is the diphthongization of **FACE** and **GOAT**.

Of the 12 vowels, only 11 of them were produced distinctly by TAM1, as Figure 25 illustrates. TAM1’s **FACE** was produced in almost the same place in the mouth as his **KIT**, although the diphthongization of **FACE** brought it closer to **FLEECE** as it moved higher
and more front. The only other diphthong, GOAT, moved lower and more front, toward LOT.

**Table 4.**

*Formant values in Bark for TAM group*

<table>
<thead>
<tr>
<th>Vowels</th>
<th>TAM1</th>
<th>TAM2</th>
<th>TAM3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F1</td>
<td>F2</td>
<td>F1</td>
</tr>
<tr>
<td>FLEECE</td>
<td>3.35</td>
<td>13.84</td>
<td>2.71</td>
</tr>
<tr>
<td>KIT</td>
<td>4.30</td>
<td>13.06</td>
<td>4.56</td>
</tr>
<tr>
<td>DRESS</td>
<td>5.87</td>
<td>11.68</td>
<td>6.85</td>
</tr>
<tr>
<td>TRAP</td>
<td>6.87</td>
<td>11.07</td>
<td>7.66</td>
</tr>
<tr>
<td>GOOSE</td>
<td>3.14</td>
<td>8.23</td>
<td>3.29</td>
</tr>
<tr>
<td>FOOT</td>
<td>4.92</td>
<td>9.59</td>
<td>5.11/5.24</td>
</tr>
<tr>
<td>THOUGHT</td>
<td>7.05</td>
<td>8.29</td>
<td>8.01</td>
</tr>
<tr>
<td>LOT</td>
<td>5.90</td>
<td>8.97</td>
<td>8.08/7.73</td>
</tr>
<tr>
<td>STRUT</td>
<td>6.27</td>
<td>10.97</td>
<td>7.36</td>
</tr>
<tr>
<td>NURSE</td>
<td>5.44</td>
<td>12.27</td>
<td>5.69/5.48</td>
</tr>
<tr>
<td>GOAT</td>
<td>4.81/5.75</td>
<td>7.19/8.02</td>
<td>5.30/5.06</td>
</tr>
</tbody>
</table>

TAM1 has seven sections in his vowel space:

1. High front vowels (FLEECE, FACE, and KIT)
2. High back vowel (GOOSE)
3. Mid front vowels (NURSE, DRESS, and STRUT)
4. Mid central vowels (FOOT and LOT)
5. Mid back vowel (GOAT)
6. Low front vowel (TRAP)
7. Low back vowel (THOUGHT)

TAM2 appears to distinguish among ten of the 12 vowels, as shown in Figure 26. The two vowels that conflated are THOUGHT and LOT. Even as LOT, a diphthong, moved away from THOUGHT, the movement was slight and kept it in the same vicinity. Another diphthong movement occurred between FOOT and GOAT when they switched places. FOOT moved slightly lower and more front, and GOAT moved slightly higher and more back.
into the first half of FOOT. Besides LOT, FOOT, and GOAT, TAM2 also diphthongized FACE and NURSE. FACE moved higher and more front, maintaining its position in the front-most area of the vowel space. NURSE made the same movement higher and more front in the mouth, but its movement was less marked than FACE’s, keeping it as a mid central vowel.

*Figure 25.* Vowel chart for TAM1
TAM2’s vowel space thus appears to have eight sections:

1. High front vowel (FLEECE)
2. High back vowel (GOOSE)
3. Mid front vowels (FACE and KIT)
4. Mid central vowel (NURSE)
5. Mid back vowels (FOOT and GOAT)
6. Low front vowels (DRESS and TRAP)
7. Low central vowel (STRUT)
8. Low back vowels (LOT and THOUGHT)

As can be seen in Figure 27, TAM3’s vowel space is already visibly smaller than TAM1 and TAM2’s. He also seems to only distinguish among ten of the 12 vowels. His STRUT and TRAP were produced almost directly on top of each other, suggesting that he only has one vowel category to represent both of those vowels. In terms of diphthongization, TAM3 has four: FLEECE, FACE, NURSE, and GOAT. FLEECE moved from its position as a high front vowel into a higher but more backed position. FACE did not change much in terms of frontness, but it moved slightly higher to join the first half of FLEECE. NURSE maintained its height but moved from its position as a mid central vowel to a mid front vowel. GOAT moved slightly higher, with not much change in its F2 value, and stayed as a high back vowel.

Due to TAM3’s smaller vowel space, it came as no surprise that he only had six sections:

1. High front vowels (FLEECE, FACE, and KIT)
2. High back vowels (GOOSE, GOAT, and FOOT)
3. Mid front vowel (second half of NURSE)

4. Mid central vowels (first half of NURSE and DRESS)

5. Low front vowels (LOT, STRUT, and TRAP)

6. Low back vowel (THOUGHT)

Figure 26. Vowel chart for TAM2
Figure 27. Vowel chart for TAM3

The TAM participants appear to have similarly shaped vowel charts, as Figure 28 shows. This might be where the homogeneity of the participant demographics makes itself apparent. The TAM vowels also appear to be very peripheral in that they lean toward the sides of the vowel spaces instead of staying in the middle. Even the mid central vowels, except for TAM1’s FOOT, are closer to the front or back of the vowel
spaces than the middle. Intragroup conflation seems to be happening with high front vowels:

1. The second half of TAM2’s FACE and the first half of TAM3’s FLEECE
2. The first halves of TAM3 and TAM1’s FACE
3. TAM2 and TAM3’s KIT

*Figure 28.* Combined vowel chart for TAM
Figure 29 shows Pillai et al.’s (2010) findings that InMalE’s /e/ and /æ/ vowels are completely merged into one vowel. This vowel pair best corresponds to the DRESS and TRAP vowels respectively, so judging from Figure 28, DRESS and TRAP also show intragroup conflation. Figure 28 also shows intragroup conflation happening with the high front vowels FLEECE and KIT, which correspond to the /i/ and /ɪ/ vowels in Figure 29. Additionally, STRUT and LOT in Figure 28 overlap as well, and they correspond to the /ʌ/ and /ɒ/ vowels in Figure 29.

![Figure 29](image)

**Figure 29.** Monophthong vowels of InMalE (Pillai et al., 2010, p. 169)

**Across-Group Comparison**

Table 5 summarizes the characteristics of MaMalE, ChMalE, and InMalE, as deduced from each group’s intragroup similarities. MAL appears to have the fewest sections in their vowel spaces, with only High Front, High Back, Mid Central, Low Front, Low Central, and Low Back. MAN has one more section, High Central. TAM has
the most number of sections. It has all of the six sections that MAL has plus Mid Front and Mid Back. It does not, however, have MAN’s High Central.

With this information, it can be speculated that Malay has the least number of vowel categories, followed by Mandarin, and Tamil has the most number of vowel categories. Also, MAN appears to show the most intragroup variation, with no intragroup conflation of vowels. This might be attributable to the more diverse L1s spoken by the Chinese communities. Without access to the vowel inventories of Malaysian Malay, Malaysian Mandarin, and Malaysian Tamil, however, direct comparisons cannot be made. As for diphthongization, it is consistent between MAN and TAM, but MAL does not diphthongize GOAT, possibly due to their smaller number of vowel categories.

Table 5.

<table>
<thead>
<tr>
<th>Characteristics of Malay-, Chinese-, and Indian-influenced Malaysian English</th>
<th>MAL</th>
<th>MAN</th>
<th>TAM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sections of vowel space</td>
<td>Five or six</td>
<td>Six or seven</td>
<td>Six to eight</td>
</tr>
<tr>
<td></td>
<td>High Front</td>
<td>High Front</td>
<td>High Front</td>
</tr>
<tr>
<td></td>
<td>High Back</td>
<td>High Central</td>
<td>High Back</td>
</tr>
<tr>
<td></td>
<td>Mid Central</td>
<td>High Back</td>
<td>Mid Front</td>
</tr>
<tr>
<td></td>
<td>Low Front</td>
<td>Mid Central</td>
<td>Mid Central</td>
</tr>
<tr>
<td></td>
<td>Low Central</td>
<td>Low Front</td>
<td>Mid Back</td>
</tr>
<tr>
<td></td>
<td>Low Back</td>
<td>Low Central</td>
<td>Low Front</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Low Central</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Low Back</td>
</tr>
<tr>
<td>Conflation</td>
<td>High vowels</td>
<td>None</td>
<td>High Front vowels</td>
</tr>
<tr>
<td></td>
<td>GOAT</td>
<td></td>
<td>FACE</td>
</tr>
<tr>
<td></td>
<td>GOOSE</td>
<td></td>
<td>FLEECE</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>KIT</td>
</tr>
<tr>
<td>Diphthongization</td>
<td>FACE</td>
<td>FACE</td>
<td>FACE</td>
</tr>
<tr>
<td></td>
<td>GOAT</td>
<td>GOAT</td>
<td></td>
</tr>
</tbody>
</table>

For an across-group comparison of the vowels, vowel charts were plotted for each individual vowel with all nine participants’ vowels on them. In each chart, the maroon squares represent vowels for the MAL participants, the green circles represent
vowels for the MAN participants, and the blue diamonds represent vowels for the TAM participants. Because FACE and GOAT are traditionally produced as diphthongs, their charts were used for diphthong comparison. The other ten vowels were used for monophthong comparison.

**Monophthong production**

It can be seen from Figure 30 that all of the participants produced FLEECE as a high front vowel. TAM appears to show the most consistency in F2 value, even after the diphthongization by one TAM participant. MAL, on the other hand, shows the most consistency in F1 value. Two of the participants even produced FLEECE close to each other. MAN, although two of the participants also produced FLEECE close to each other, the third participant not only produced it at a much lower position but also diphthongized the vowel.

An observation about Figure 31 is that KIT is a stable vowel in MalE. All of the groups produced KIT in intragroup clumps. They were all produced as high front vowels, but MAL’s KIT is the most fronted, followed by MAN’s and TAM’s after. The TAM participants were the most similar; two of their vowels are on the verge of conflation. KIT was only diphthongized by one participant from the MAN group.

There appears to be a noticeable difference in F1 value among the nine participants, as can be seen in Figure 32. That means that although all participants produced DRESS as a central vowel, they differed in how high or low they produced it. This might be attributable to the differences in the size of the participants’ vowel spaces. Referring back to Figures 18, 23, and 28 for the combined vowel charts for each group, even among the three participants in each group, there are differences in vowel space
size. For the productions of DRESS, there appears to be two outliers: one MAL participant produced DRESS closer to TAM’s, and one MAN participant, again, diphthongized the vowel.

Figure 30. Productions of FLEECE in MalE
Figure 31. Productions of KIT in MalE
Figure 32. Productions of DRESS in MalE
The same observation can be made about Figure 33 where the participants produced TRAP with approximately the same F2 value, as a central vowel, but they differed in height. Most prominently, among the TAM participants, TRAP was produced with virtually the same F2 value, but the difference in F1 values among them is almost exactly 0.7 Bark between the highest and the second highest and between the second highest and the lowest. The other groups were not as consistent in their productions, with an outlier MAL participant producing TRAP closer to where the MAN participants did, and an outlier MAN participant producing it closer to where the MAL participants did.

From Figure 34, GOOSE appears to be produced by all participants as a high back vowel. Up to this point, there has only been one MAN participant diphthongizing traditionally monophthongal vowels. GOOSE is no different for MAN, but the participant is now joined by a MAL outlier who also diphthongized GOOSE. Additionally, this MAL outlier also produced GOOSE closer to MAN, while the other two MAL participants produced it closely to each other.

FOOT, in Figure 35, appears to have been produced consistently among all of the participants. They all produced FOOT as a high back vowel, and MAL and MAN seem to realize FOOT at the same height, just with the majority of MAL producing it more fronted than the majority of MAN. As for TAM, although their productions of FOOT were still in the same general vicinity as the other two groups, their productions appear lower. One TAM participant also diphthongized FOOT, moving it from a position closer to one other TAM participant to a position closer to the remaining TAM participant.

All participants, for THOUGHT, produced it with approximately the same F2 values, in the back of the mouth, as Figure 36 delineates. Reminiscent of Figure 33,
which shows the productions of TRAP, the TAM participants’ THOUGHT, produced with only a slight difference in F2 value, are relatively evenly spaced in terms of their F1 values. MAL and MAN also maintained this similarity in F2 value, save for two MAN outliers, one of whom produced it closer to MAL, and the other one diphthongized THOUGHT.

Figure 33. Productions of TRAP in MalE
Figure 34. Productions of GOOSE in MalE
Figure 35. Productions of FOOT in MalE
Figure 36. Productions of THOUGHT in MalE
Figure 37 shows that the productions of LOT are scattered throughout the low back area of the mouth. While MAL and MAN’s productions are clumped, TAM’s LOT exhibits some intragroup and intergroup variation. The intragroup variation is that two TAM participants produced LOT higher than any other participant did. The other participant produced it lower than the other participants did. There is also one TAM participant who produced LOT in a much more fronted position than the other participants did. As for intergroup variation, TAM is the only group with diphthongization of LOT.

From Figure 38, it can be observed that STRUT is produced as a low central vowel in MalE. Unlike MAL, of which the participants exhibited even intragroup dispersion, MAN and TAM both had two participants who produced the vowel closely to each other. They both also have one outlier each. The MAN outlier produced STRUT closer together with the TAM participants, while the TAM outlier produced it closer together with the MAN participants, which seems to be a trend across several vowels. STRUT is also, up to this point, the only stable monophthong apart from TRAP, and none of the participants diphthongized it.

There appears to be intergroup conflation in the production of NURSE, as Figure 39 shows. NURSE appears to generally be clustered in one small section in the mid central part of the mouth. One MAL participant, one MAN participant, and two TAM participants diphthongized NURSE. All of the diphthongs also appear to move toward the front of the mouth. The only exception is the MAL participant whose NURSE diphthong moved towards the back.
Figure 37. Productions of LOT in MalE
Figure 38. Productions of STRUT in MalE
Figure 39. Productions of NURSE in MalE
RQ1: What differences exist in the production of monophthongs among Malay-, Chinese-, and Indian-influenced Malaysian English?

Table 6. 

Summary of monophthong productions

<table>
<thead>
<tr>
<th>Vowels</th>
<th>MAL</th>
<th>MAN</th>
<th>TAM</th>
</tr>
</thead>
<tbody>
<tr>
<td>FLEECE</td>
<td>High Front MT</td>
<td>High Front MT</td>
<td>High Front MT</td>
</tr>
<tr>
<td>KIT</td>
<td>High Front MT</td>
<td>High Front MT</td>
<td>High Front MT</td>
</tr>
<tr>
<td>DRESS*</td>
<td>Low Front MT</td>
<td>Low Front MT</td>
<td>Mid Front MT</td>
</tr>
<tr>
<td>TRAP</td>
<td>Low Front MT</td>
<td>Low Front MT</td>
<td>Low Front MT</td>
</tr>
<tr>
<td>GOOSE</td>
<td>High Back MT</td>
<td>High Back MT</td>
<td>High Back MT</td>
</tr>
<tr>
<td>FOOT*</td>
<td>High Back MT</td>
<td>High Back MT</td>
<td>Mid Back MT</td>
</tr>
<tr>
<td>THOUGHT</td>
<td>Low Back MT</td>
<td>Low Back MT</td>
<td>Low Back MT</td>
</tr>
<tr>
<td>LOT*</td>
<td>Low Back MT</td>
<td>Low Back MT</td>
<td>Low Central MT</td>
</tr>
<tr>
<td>STRUT</td>
<td>Low Front MT</td>
<td>Low Front MT</td>
<td>Low Front MT</td>
</tr>
<tr>
<td>NURSE</td>
<td>Mid Central MT</td>
<td>Mid Central MT</td>
<td>Mid Central MT</td>
</tr>
</tbody>
</table>

MT = monophthong, DT = diphthong

The ten monophthongs that were analyzed are FLEECE, KIT, DRESS, TRAP, GOOSE, FOOT, THOUGHT, LOT, STRUT, and NURSE. For a more detailed look at the intergroup differences in the production of the monophthongs and to support the derivations in Table 6, averages for the formant values were also calculated. The values were taken from Table 2 for MAL, from Table 3 for MAN, and from Table 4 for TAM. For monophthongs that were diphthongized by one participant in the group, both monophthongs and diphthongs were included. The findings are presented in Table 7. Asterisks next to the vowels show that there are intergroup variations in their productions. The diverging production is bolded.

The values in Table 7 were then used to plot a combined vowel chart for MalE monophthongs. MaMalE is denoted by the maroon chart, ChMalE is denoted by the green chart, and InMalE is denoted by the blue chart in Figure 40. (M) and (D) were used to mark vowels produced as monophthongs and diphthongs respectively. Vowels that
were not tagged with (M) or (D) are ones that were unanimously produced as monophthongs.

Table 7.

*Average formant values in Bark for monophthong productions*

<table>
<thead>
<tr>
<th>Vowels</th>
<th>MAL</th>
<th></th>
<th></th>
<th>MAN</th>
<th></th>
<th></th>
<th>TAM</th>
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<tr>
<td></td>
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<td></td>
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<td>F2</td>
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<td>F1</td>
<td>F2</td>
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<tr>
<td>FLEECE (M)</td>
<td>3.61</td>
<td>14.90</td>
<td>2.94</td>
<td>13.79</td>
<td>3.03</td>
<td>13.90</td>
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<tr>
<td>FLEECE (D)</td>
<td>4.28/4.32</td>
<td>15.29/11.73</td>
<td>4.04/3.01</td>
<td>14.20/13.04</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>KIT (M)</td>
<td>4.08</td>
<td>14.94</td>
<td>3.72</td>
<td>13.55</td>
<td>4.49</td>
<td>13.05</td>
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<tr>
<td>KIT (D)</td>
<td>4.38/4.28</td>
<td>14.56/13.98</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>DRESS (M)</td>
<td>6.80</td>
<td>13.05</td>
<td>6.51</td>
<td>12.17</td>
<td>6.01</td>
<td>11.56</td>
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<td>DRESS (D)</td>
<td>6.59/6.23</td>
<td>11.10/11.88</td>
<td></td>
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<tr>
<td>TRAP</td>
<td>7.31</td>
<td>12.71</td>
<td>6.93</td>
<td>11.54</td>
<td>6.88</td>
<td>11.07</td>
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<td>3.72</td>
<td>8.36</td>
<td>3.82</td>
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<td>3.48</td>
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<td>3.95/4.59</td>
<td>10.06/10.33</td>
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<tr>
<td>FOOT (M)</td>
<td>4.23</td>
<td>8.92</td>
<td>4.20</td>
<td>8.80</td>
<td>4.81</td>
<td>8.85</td>
<td></td>
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<tr>
<td>FOOT (D)</td>
<td>5.11/7.73</td>
<td>8.34/8.34</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>THOUGHT</td>
<td>6.91</td>
<td>9.24</td>
<td>6.76</td>
<td>8.60</td>
<td>6.94</td>
<td>8.42</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>LOT (M)</td>
<td>7.04</td>
<td>9.37</td>
<td>6.91</td>
<td>8.71</td>
<td>5.87</td>
<td>10.62</td>
<td></td>
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<tr>
<td>LOT (D)</td>
<td>8.08/7.73</td>
<td>8.34/8.34</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>STRUT</td>
<td>6.92</td>
<td>10.99</td>
<td>6.77</td>
<td>10.54</td>
<td>6.60</td>
<td>10.67</td>
<td></td>
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<tr>
<td>NURSE (M)</td>
<td>5.10</td>
<td>12.32</td>
<td>5.01</td>
<td>11.26</td>
<td>5.44</td>
<td>12.27</td>
<td></td>
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<td></td>
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<tr>
<td>NURSE (D)</td>
<td>6.66/5.60</td>
<td>12.20/11.31</td>
<td>5.67/5.07</td>
<td>11.59/12.63</td>
<td>5.32/5.24</td>
<td>11.23/12.41</td>
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<td></td>
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</tbody>
</table>
Figure 40. Combined vowel chart for MalE monophthongs
By cross-referencing Tables 6 and 7 and Figure 40, it can be hypothesized that TRAP, THOUGHT, and STRUT are stable vowels in MalE in that there is no variation in their productions among speakers of MaMalE, ChMalE, and InMalE. TRAP was consistently produced as a low front monophthong with an F1 Bark value ranging from 6.88 to 7.31 and an F2 Bark value ranging from 11.07 to 12.71. THOUGHT was consistently produced as a low back monophthong with an F1 Bark value ranging from 6.76 to 6.94 and an F2 Bark value ranging from 8.42 to 9.24. STRUT was consistently produced as a low front monophthong with an F1 Bark value ranging from 6.60 to 6.92 and an F2 Bark value ranging from 10.54 to 10.99.

As for the seven other monophthongs, TAM varied the most from the other two groups in its productions of the vowels. First, TAM produced KIT lower and more backed than the other two groups. Second, TAM realized the low front vowel DRESS as a mid front vowel, producing it higher and more backed than MAL and MAN did. Third, TAM realized the high back vowel FOOT as a mid back vowel, producing it lower and more fronted than MAL and MAN did. Fourth, TAM realized the low back vowel LOT as a low central vowel, producing it higher and in a more fronted position than MAL and MAN did. Last, TAM produced NURSE lower than the other two groups. These divergences can also be seen in Figure 40, where the blue InMalE vowel chart appears to have more vowels in the mid central area of the overall combined chart. Apart from that, MAL produced FLEECE lower and more fronted than MAN and TAM did, and MAN produced GOOSE lower and more fronted than the other two groups did.
Diphthong production

As Figure 41 illustrates, the FACE diphthong moved a relatively large distance, but they all remained as high front vowels. For MAL, FACE moved higher and more front, the only exception being the participant whose FACE moved lower and more back, almost parallel to one of the other MAL participants. MAL also had the majority of its participants produce FACE more fronted than any of the other participants did. For MAN, FACE moved higher and more back, with the exception of one participant whose FACE moved higher too but more front. TAM, however, appears to be the most consistent in its production of the FACE diphthong. Not only do they move FACE higher and slightly to the front, but they also produce the diphthongs very close to one another.

With the exception of two MAL participants, everyone produced GOAT as a diphthong, as shown in Figure 42. Since the majority of MAL participants produced GOAT as a monophthong instead of as a diphthong like MAN and TAM, it can be hypothesized that there is an L1 factor in play. For the diphthongs, there appears to be a trend across all of the participants in which the diphthong moves higher and more back in the mouth, even for the one MAL participant who diphthongized GOAT. The only participant whose diphthong did not move higher and more back is one of the TAM participants, who moved GOAT on an opposite trajectory: lower and more front. A similarity that carried across all participants is that GOAT was produced in the high back region of the mouth.
RQ2: What differences exist in the production of diphthongs among Malay-, Chinese-, and Indian-influenced Malaysian English?

Table 8.

Summary of diphthong productions

<table>
<thead>
<tr>
<th>Vowels</th>
<th>MAL</th>
<th>MAN</th>
<th>TAM</th>
</tr>
</thead>
<tbody>
<tr>
<td>FACE*</td>
<td>High</td>
<td>Front</td>
<td>DT</td>
</tr>
<tr>
<td></td>
<td>Mid</td>
<td>Front</td>
<td>DT</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>Front</td>
<td>DT</td>
</tr>
<tr>
<td>GOAT*</td>
<td>High</td>
<td>Back</td>
<td>MT</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>Back</td>
<td>MT</td>
</tr>
<tr>
<td></td>
<td>Mid</td>
<td>Back</td>
<td>DT</td>
</tr>
</tbody>
</table>

MT = monophthong, DT = diphthong

Figure 41. Productions of FACE in MalE
Figure 42. Productions of GOAT in MalE
The two diphthongs that were analyzed are FACE and GOAT. For a more detailed look at the intergroup differences in the production of the diphthongs and to support the derivations in Table 8, averages for the formant values were also calculated. As was mentioned previously, the values were taken from Table 2 for MAL, from Table 3 for MAN, and from Table 4 for TAM. For diphthongs that were not diphthongized by one participant in the group, both monophthongs and diphthongs were included. The findings are presented in Table 9. Asterisks next to the vowels show that there are intergroup variations in their productions. The diverging production is bolded.

Table 9.

<table>
<thead>
<tr>
<th>Vowels</th>
<th>MAL</th>
<th>MAN</th>
<th>TAM</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>F1</td>
<td>F2</td>
<td>F1</td>
</tr>
<tr>
<td>GOAT (M)</td>
<td>4.08</td>
<td>8.27</td>
<td></td>
</tr>
<tr>
<td>GOAT (D)</td>
<td>4.77/4.44</td>
<td>8.74/8.33</td>
<td>4.57/4.18</td>
</tr>
</tbody>
</table>

M = monophthong, D = diphthong

The values in Table 9 were then used to plot a combined vowel chart for MalE diphthongs. MaMalE is denoted by the maroon chart, ChMalE is denoted by the green chart, and InMalE is denoted by the blue chart in Figure 43. (M) and (D) were used to mark vowels produced as monophthongs and diphthongs respectively. Vowels that were not tagged with (M) or (D) are ones that were unanimously produced as diphthongs.

It appears, by consulting Figure 43, that the productions of FACE and GOAT are consistent across MaMalE, ChMalE, and InMalE only in which section of the vowel chart they were produced in. For FACE, MAN and TAM both moved the diphthong higher, but MAN moved it to the back while TAM moved it to the front. MAL’s FACE did not change noticeably in height, but it moved slightly to the front, being realized more as
a monophthong than a diphthong. For GOAT, MAL and MAN’s GOAT both moved higher and towards the back of the mouth. MAL, however, has participants who produced GOAT as a monophthong, and TAM’s GOAT did not change much in F1 or F2 value and remained static.

Regarding diphthongization in general, MAL diphthongized less often than MAN did. Only MAL1 diphthongized more than one vowel, whereas MAN collectively diphthongized FACE and GOAT. MAN1 and MAN2 even diphthongized an additional three vowels and MAN3 an additional two.

While MAN diphthongized more of the vowels than MAL did, it still did not do so more than TAM did. TAM, like MAN, collectively diphthongized FACE and GOAT, but TAM2 diphthongized four more vowels, and TAM3 diphthongized five more. MAN’s diphthongization was also more sporadic and seemingly random, with the only agreements being THOUGHT, FACE, and GOAT. TAM, however, agreed on GOOSE, FOOT, LOT, and NURSE, on top of FACE and GOAT. This intragroup variation among the MAN participants might be due to the many language backgrounds that Chinese Malaysians are influenced by. In a Chinese household in Malaysia, even if Mandarin is the primary language spoken, speakers might still use a different language such as Hokkien or Cantonese with their extended families or, especially, grandparents.
Figure 43. Combined vowel chart for MalE diphthongs
Figure 44. Combined vowel chart for MalE
CHAPTER 5. CONCLUSION

English may have once been the language of power in Malaysia, but after it gained its independence from Britain, there was a push to regain its identity as a Malay-dominated country. Even though the Malays were not the only major ethnicity in Malaysia at the time, theirs is an ethnicity whose culture was influenced the most by the geography of the area, earning them the *bumiputra* label. This history, coupled with the still disproportionate population distribution among the different ethnicities, has had an impact on the language policies in Malaysia. Because these language policies dictated that Malay is the official language and should be taught in schools, with English taking the backseat as a second language and Mandarin and Tamil largely ignored, many Malays in the current language climate are monolingual Malay speakers, while many Chinese and Indians are bilingual speakers at the very least of Mandarin or Tamil and Malay. These different language influences housed in one small peninsular country have given MalE a distinctive flavor.

From this study, it was found that InMalE exhibited the most variation in vowel production among the three accents of MalE. The monophthongs KIT, DRESS, FOOT, LOT, and NURSE were produced differently by InMalE than by MaMalE and ChMalE. InMalE produced KIT lower and more backed, DRESS higher and more backed, FOOT lower and more fronted, LOT higher and more fronted, and NURSE lower. For FLEECE, MaMalE produced it lower and more fronted, and for GOOSE, ChMalE produced it lower and more fronted. The monophthongs TRAP, THOUGHT, AND STRUT did not appear to vary in production among the three accents.
As for the diphthong \textit{FACE}, MaMalE did not diphthongize the vowel, ChMalE moved the diphthong higher and more backed, and InMalE moved it higher and more fronted. The diphthong \textit{GOAT} was produced as a monophthong by InMalE, setting it apart from MaMalE and ChMalE.

These findings show that something about InMalE sets it apart from MaMalE and ChMalE more often than MaMalE and ChMalE are set apart. First, it can be speculated that the language policy to use Malay as the language of instruction in public schools might affect the different accents’ productions of MalE vowels. Indian Malaysians, being more and more likely Dominant Users of English, have English as their L1s as opposed to an Indian language, making the Malay that they learn at school a second language (L2). Whereas Malay Malaysians and Chinese Malaysians have Malay as a language between their L1 and L2, Indian Malaysians do not. Because of that, there is no Malay “filter” (p. 20) in the language transfer process, as Phoon et al. (2013) put it. For the Malay and Chinese ethnic groups, because there is a higher possibility for Malay to be the language learned before English, that filter exists, marking their production of MalE vowels.

Another reason could be the power imbalance among the ethnic groups in Malaysia. Since the Malays have the most political influence in the country, with the Chinese following not far behind, sounding Malay might be an advantage for the Chinese to bridge that gap. That could explain why there are fewer variations that exist between MaMalE and ChMalE. Rindal (2010), for example, has argued that pronunciation is used as an identity marker and that speakers who wish to associate with a certain group would use that group’s pronunciation when socializing in order to fit in.
Limitations of the Study and Future Research

Due to the small-scale nature of this study, there were numerous limitations that can be addressed in potential replications. First, three participants to each group is a modest number even for a study on phonology. Because the recruitment advertisement did not manage to reach all of the Malaysian students on campus, finding participants for the study was challenging. In order to make the results more generalizable to the larger Malaysian populace, it would have been ideal to have recruited four to five participants for each group.

Second, another side effect of the small number of participants is that inferential statistics could not be conducted. With a larger participant pool of perhaps ten participants to each group, statistics such as \( t \)-tests can be used to describe the vowel variations in more concrete detail. \( t \)-tests would have allowed for the determination of the significance of the variations and whether the variations that were found are actually differences that would distinguish among the three groups.

Third, it became apparent during data analysis that merely asking participants for their L1 was not sufficient to fully answer the research questions. More comprehensive language background information should be collected to explore whether participants frequently came into contact with languages different from their L1s. For example, a Tamil speaker who attends a Chinese vernacular school might be more strongly influenced by Mandarin speakers than by Tamil speakers.

Last, it would have been beneficial to the study if the vowel inventories of Malaysian Malay, Malaysian Mandarin, and Malaysian Tamil were available and accessible. They would have allowed for direct comparisons with their MaMalE,
ChMalE, and InMalE counterparts to state with more certainty instead of just speculate about whether there is L1 influence causing the variations in monophthong and diphthong productions.
NOMENCLATURE

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<td>CMalE</td>
<td>Colloquial Malaysian English</td>
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<td>First Formant</td>
</tr>
<tr>
<td>F2</td>
<td>Second Formant</td>
</tr>
<tr>
<td>InMalE</td>
<td>Indian-Influenced Malaysian English</td>
</tr>
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<td>TAM</td>
<td>Tamil Speakers</td>
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REFERENCES


Tan, R. S. K., & Low, E-L. (2010). How different are the monophthongs of Malaysian and Singapore English? *English World-Wide*, 31(2), 162-189. [https://doi.org/10.1075/eww.31.2.03tan](https://doi.org/10.1075/eww.31.2.03tan)


APPENDIX A

PARTICIPANT RECRUITMENT FACEBOOK POST

Hi everyone! For my master’s thesis, I am conducting a study that investigates the vowel sounds of Malaysian English to see if our most common first languages (Malay, Mandarin, and Tamil) have an effect on how we pronounce English words. In order to do that, I need to recruit Malaysians who speak Malay, Mandarin, or Tamil as a first language, which means that you speak Malay, Mandarin, or Tamil with your family.

As a participant, all that you will need to do is meet with me for about 30 minutes. During this time, you will read a short passage and a few short sentences for a recording. As a thank-you for your participation, you will be entered into a lucky draw for one of three $25 gift cards of your choice.

I will be forever grateful to anyone who is able to help me out with my study! By participating, you are technically helping me to graduate! If you are interested, please send me an email at sphng@iastate.edu or just message me here on Facebook, and I will get back to you.

You must be at least 18 years old in order to participate. Thank you so much!
APPENDIX B
SCREENING SURVEY

Participant’s Name (printed):

Participant’s Signature ___________________________ Date __________________

Screening Information

1. Are you at least 18 years old? Yes / No

2. What is your age? _________

3. What is your first language? Malay / Mandarin / Tamil / Other: __________
Hi (Name)! Thank you for agreeing to participate in my study! Before we start, let me turn on my audio recorder.

1. How is your day going so far?
2. What are you studying at Iowa State?
3. How did you decide to do that?
4. Why did you choose to come to Iowa State?

Okay, let’s move on to the first task, the passage-reading task.
Instructions: Please read through the passage silently once. When you are ready, please read it aloud.

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 to 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 of 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.” The wolf had a feast.
APPENDIX E

SENTENCE-READING TASK

Instructions: You will see a series of 12 words in the sentence, “Now I say _______. “ Read each sentence as they appear on the screen.

Example slides:

Now I say  

Now I say  
KIT
Click the mouse when you are ready to proceed to the next sentence.

Now I say  

Now I say  
DRESS
Click the mouse when you are ready to proceed to the next sentence.

All of the words included in this task are:

1. FLEECE
2. KIT
3. DRESS
4. TRAP
5. GOOSE
6. FOOT
7. THOUGHT
8. LOT
9. STRUT
10. NURSE
11. FACE
12. GOAT
#MAL1 BARK
Erase all
12
Black
Select outer viewport: 0, 8, 0, 8
Axes: 17, 7, 10, 2
Draw inner box
Marks left every: 1, 1, "yes", "yes", "yes"
Marks bottom every: 1, 1, "yes", "yes", "yes"
Text left: "yes", "F1 (Bark)"
Text bottom: "yes", "F2 (Bark)"
Text: 15.66, "Centre", 3.89, "Half", "FLEECE"
Text: 15.56, "Centre", 4.44, "Half", "KIT"
Text: 13.53, "Centre", 7.47, "Half", "DRESS"
Text: 13.38, "Centre", 8.1, "Half", "TRAP"
Text: 10.06, "Centre", 3.95, "Half", "GOOSE"
Text: 10.33, "Centre", 4.59, "Half", "GOOSE"
Draw arrow: 10.06, 3.95, 10.33, 4.59
Text: 9.91, "Centre", 4.56, "Half", "FOOT"
Text: 9.13, "Centre", 7.28, "Half", "THOUGHT"
Text: 10.51, "Centre", 8.02, "Half", "LOT"
Text: 11.18, "Centre", 7.84, "Half", "STRUT"
Text: 12.2, "Centre", 6.66, "Half", "NURSE"
Text: 11.31, "Centre", 5.6, "Half", "NURSE"
Draw arrow: 12.2, 6.66, 11.31, 5.6
Text: 15.01, "Centre", 4.71, "Half", "FACE"
Text: 15.31, "Centre", 4.04, "Half", "FACE"
Draw arrow: 15.01, 4.71, 15.31, 4.04
Text: 8.74, "Centre", 4.77, "Half", "GOAT"
Text: 8.33, "Centre", 4.44, "Half", "GOAT"
Draw arrow: 8.74, 4.77, 8.33, 4.44
Draw line: 15.66, 3.89, 10.06, 3.95
Draw line: 10.06, 3.95, 8.33, 4.44
Draw line: 8.33, 4.44, 9.13, 7.28
Draw line: 9.13, 7.28, 10.51, 8.02
Draw line: 10.51, 8.02, 13.38, 8.1
Draw line: 13.38, 8.1, 15.56, 4.44
Draw line: 15.56, 4.44, 15.66, 3.89
APPENDIX G

IRB APPROVAL

IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Date: 2/14/2017
To: Sock Wun Phng
326 Ross Hall

CC: Dr. John Lewis
337 Ross Hall

From: Office for Responsible Research

Title: Vowel Variations Among Speakers of Malaysian English

IRB ID: 18-571

Approval Date: 2/14/2017
Date for Continuing Review: 2/13/2019
Submission Type: New
Review Type: Expedited

The project referenced above has received approval from the Institutional Review Board (IRB) at Iowa State University according to the dates shown above. Please refer to the IRB ID number shown above in all correspondence regarding this study.

To ensure compliance with federal regulations (45 CFR 46 & 21 CFR 50), please be sure to:

- Use only the approved study materials in your research, including the recruitment materials and informed consent documents that have the IRB approval stamp.
- Retain signed informed consent documents for 3 years after the close of the study, when documented consent is required.
- Obtain IRB approval prior to implementing any changes to the study by submitting a Modification Form for Non-Exempt Research or Amendment for Personnel Changes form, as necessary.
- Immediately inform the IRB of (1) all serious and/or unexpected adverse experiences involving risks to subjects or others, and (2) any other unanticipated problems involving risks to subjects or others.
- Stop all research activity if IRB approval lapses, unless continuation is necessary to prevent harm to research participants. Research activity can resume once IRB approval is reestablished.
- Complete a new continuing review form at least three to four weeks prior to the date for continuing review as noted above to provide sufficient time for the IRB to review and approve continuation of the study. We will send a courtesy reminder as this date approaches.

Please be aware that IRB approval means that you have met the requirements of federal regulations and ISU policies governing human subjects research. Approval from other entities may also be needed. For example, access to data from private records (e.g., student, medical, or employment records, etc.) that are protected by FERPA, HIPAA, or other confidentiality policies requires permission from the holders of those records. Similarly, for research conducted in institutions other than ISU (e.g., schools, other colleges or universities, medical facilities, companies, etc.), Investigators must obtain permission from the institution(s) as required by their policies. IRB approval in no way implies or guarantees that permission from these other entities will be granted.

Upon completion of the project, please submit a Project Closure Form to the Office for Responsible Research, 202 Kingland, to officially close the project.

Please don't hesitate to contact us if you have questions or concerns at 515-294-4566 or IRB@iastate.edu.