

Chinese meets Malay meets English

Origins of Singaporean English word-final high tone*

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Submitted to *International Journal of Bilingualism* 16 July 2009. Accepted pending revisions 17 February 2010.

Current version 5.0. Note: Errata in the published paper have been corrected in this version.

Abstract. This article investigates the origins of the word-final high tone in Chinese speakers' Colloquial Singaporean English (CSE). Uniquely among Chinese Englishes, high tone is not attracted to stress, but to word-final position, e.g. *hi'biscus* [L'MH]. Since this tonal pattern has no convincing match in Singapore's major Chinese varieties, I propose that its ultimate source is indigenous Malay speakers' phrase-final intonational rise. New recordings provide evidence for transfer via the formerly widespread Malay-based pidgin known as Bazaar Malay, reinforced by the Baba Malay creole of earlier Chinese settlers as well as Indian English. This proposed path of transmission from indigenous Malay > Bazaar Malay > Chinese CSE begs two questions: why did transfer occur from a non-native language, and why did the final high boundary tone become more frequent with each transfer? I discuss these issues in the light of findings from SLA, third language acquisition and creole studies, which show that the emergence of this highly marked feature was in fact favoured by a number of known constraints on transfer. Thus CSE tone provides not only a test case for rigorous investigation within a highly multilingual context, but also appears to constitute the first documented case of L2 to L3 prosodic transfer. (203 words)

* I am most grateful to those who helped with this project; of course only I am to blame for its shortcomings.

- My former advisor Darya Kavitskaya; also Gaja Jarosz, Jelena Krivokapić, Ashwini Deo, Claire Bowern, Stanley Inslar, Maria Piñango and Stephen Anderson; beyond Yale, the editors of this special issue, Wee Lian Hee, Pasha Siraj, Mary Beckman, Sun-Ah Jun, Low Ee Ling, Diana Apoussidou, two anonymous reviewers and the PUFF group at HKBU, especially Monica Cheng;
- Participants in the UWE (Bristol) Language Transfer workshop, ESEA (2008) and SPCL (Winter, 2009);
- Raffles Junior College for the use of their music facilities; also the Tokyo University of Foreign Studies for special access to the Multilingual Spoken Corpus (Malay);
- Many many informants, and all others I have omitted by request or culpable forgetfulness.

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Key words: multilingualism, prosody, intonation, World Englishes, third language acquisition, phonology, language contact, creole genesis

1. Introduction

The origins of the word-final high boundary tone (WFH) in ethnic Chinese Singaporeans' colloquial English present a novel methodological challenge for contact linguistics. While Singaporean English (SgEng) is a non-native variety for many speakers, it has become a stable indigenized L1 for many others, no longer falling completely within the scope of second language acquisition (SLA). SLA researchers are also justly leery of experimenting on multiple Sino-Tibetan, Austronesian, Indo-European and Dravidian languages simultaneously. But these complications are commonplace in the related field of creole studies, where it has been argued that world Englishes should not be distinguished sharply from creoles (e.g. Mufwene, 2008, p. 134). Insights on contact between three or more languages are also emerging from the new field of third language acquisition (TLA). This problem is, in fact, an excellent opportunity to find points of contact between SLA, TLA and creole studies, while extending our limited understanding of prosody in multilingual contexts.

SLA and creole researchers agree that emerging contact grammars can in principle draw on three sources: (i) a previously known language (the substrate), (ii) the target language (the superstrate), and (iii) Universal Grammar. Jarvis (2000) has argued that the contact outcome must be unique and replicable to prove transfer from one particular language. Rewriting his criteria for a TLA situation, we have the conditions in (1) below, where L1 is the first language, L3 is the target language, L2 is any language acquired in the intervening time, and L_X is the source language.

- (1) *Criteria for proving transfer from L_X to L3*
 - a. **Congruity** of source/target: Intra- L_X group congruity in L_X and L3 performance;
 - b. **Replicability** of contact outcome: Intra- L_X group homogeneity in L3 performance;
 - c. **Uniqueness** of contact outcome: Inter- L_X group heterogeneity in L3 performance.

We will see that these criteria do not positively identify a single source of SgEng WFH, but do show that Chinese contact alone is insufficient. SgEng WFH turns out to be a natural development from the Bazaar Malay pidgin, probably reinforced by the Baba Malay creole and Indian English.

This complex case of language contact includes one great boon: the ability to distinguish transfer from interference as defined by Grosjean (this issue). Although strictly monolingual mode is well-nigh impossible in Singapore's multilingual context, interference from Malay specifically (as opposed to Chinese) can be eliminated because knowledge of the language is vanishingly rare among young Chinese Singaporeans. Any Malay features in their English must represent permanent traces inherited from earlier generations of bilinguals, not instances of code-switching.

This article begins with a brief description of Singapore's linguistic landscape and SgEng WFH (Section 2). I then examine Malay (Section 3), Chinese (Section 4), and English (Section 5) as potential source languages against the proof-of-transfer criteria in (1) above, and evaluate the proposed developments against known constraints on SLA, TLA and creole transfer (§6).

2. Singaporean English (SgEng)

2.1. Linguistic landscape

Singapore's modern linguistic history is dominated by two landmarks: British colonization in 1819, and independence in 1965. The rich linguistic diversity of colonial times suffered attrition in the 1960s as supply and demand for English education shot up, and four literary standards were instituted as the current official languages: English, Mandarin Chinese, Malay and Tamil (Kuo, 1977). Census figures from 1957 and 2005 illustrate this drastic shift (Figure 1, Figure 2). English is now catching up with Mandarin's initial expansion; they are the dominant home languages for 48.8% and 49.0% of pre-primary Chinese children respectively (Singapore Dept. of Statistics, 2006).¹

Figure 1: Dominant home language in 1957 (Kuo, 1980, p. 41)

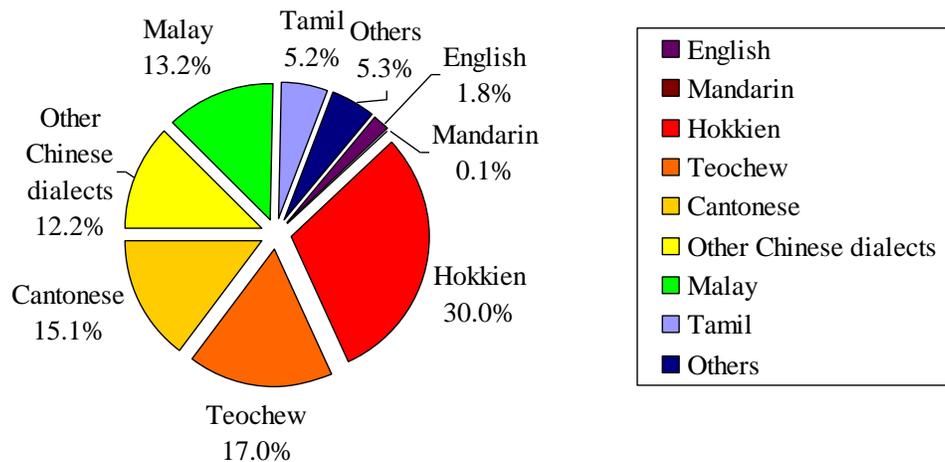
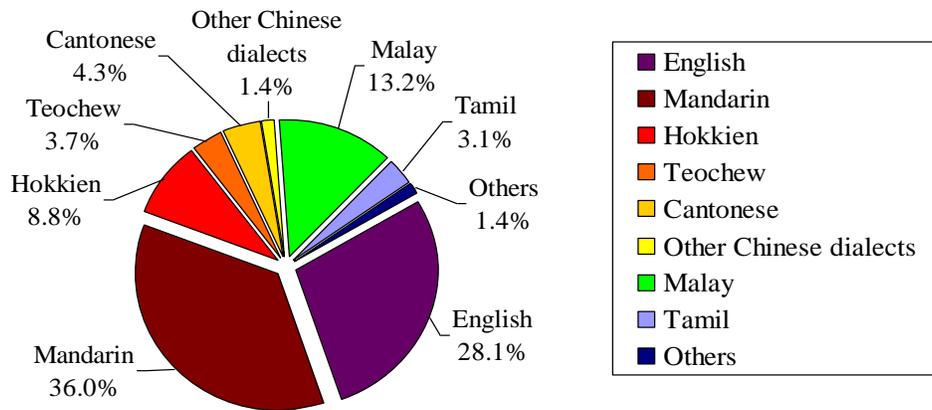


Figure 2: Dominant home language in 2005 (Singapore Dept. of Statistics, 2006)



Chinese. This study focuses on ethnic Chinese, who form a majority of the population. Singapore’s major Chinese languages, usually called dialects although the subfamilies are mutually unintelligible, appear in (2) below:

(2) *Singapore’s major Chinese dialects*

- a. **Hokkien** (or Taiwanese) and **Teochew**, often said to be mutually intelligible (**Min** subfamily)
- b. **Cantonese** (Yue subfamily)
- c. **Mandarin**, the official standard

An intra-ethnic lingua franca, **Hokkien** was spoken by over 90% of Chinese in 1974 (Platt, 1980). Hokkiens also predominated among pre-colonial Chinese settlers who intermarried with local women, forming small creolized communities called the Babas, Peranakans or Straits-born Chinese.

They were early adopters of English education (Gupta, 1998) and their **Baba Malay** creole probably exerted a founder effect (Mufwene, 2008, p. 134) on SgEng's development. To a lesser extent this may also be true of the **Cantonese**, who formed a majority of non-Baba Chinese in English schools as late as 1969 (Chia, 1977).

Malay. Singapore's lingua franca was once **Bazaar Malay**, a simplified contact variety which we will treat as a pidgin (Holm, 1989, p. 578), now little used except in Malay-Indian interactions. Several colloquial varieties of Malay are used in Singapore, but with the exception of Baba Malay most speakers consider them one language (Ansaldo, L. Lim, & Mufwene, 2007). Since formal comparisons are lacking we distinguish the varieties based on speaker identity (3) below.

(3) *Singapore's major varieties of colloquial Malay*

- a. **Indigenous Malay**, spoken natively by ethnic Malays. Has standard (Bahasa Baku) and colloquial (Bahasa Pasar) registers. This term encompasses indigenous Indonesian in this paper.
- b. **Baba Malay**, the creole spoken natively by Baba Chinese.
- c. **Bazaar Malay**, the non-native lingua franca. Distinct from Bahasa Pasar in (a) above.

Some form of Malay was spoken by 32.5% of ethnic Chinese in 1957, and understood by 58.1% in 1978 (Kuo, 1980, p. 48). Standard Malay was heavily promoted as a unifying language in the 1960s, though enthusiasm waned after separation from Malaysia (De Souza, 1980). From 1945 onwards Standard Malay also became the basis for Indonesian.

Others. The group which supplied the most teachers and students to early English schools were the **Eurasians**, descendants of Portuguese, Dutch and British colonisers and Asian women. Malaccan Eurasians brought a Portuguese creole; Indian Eurasians brought what is now called **Anglo-Indian English**. Ethnic Indians were also overrepresented in early English schools, though not to the same extent. The most desirable teachers were however 'Europeans', a term comprising Britons and Americans as well as continental Europeans.

Summary. Older Singaporeans were typically highly multilingual (Table 1), but most researchers agree, based on the sociolinguistic facts discussed above, that Hokkien and Malay were the most powerful influences on SgEng (Gupta, 1998; Ansaldo, 2004). To date, however, with the exception of numerous loanwords, none of SgEng's distinctive features *must* be ascribed to Malay; all can be linked to Chinese (Deterding, 2007, pp. 31, 55, 59, 62).

Table 1: Typical verbal repertoire of a Singaporean Chinese. Source: Platt (1980).

<i>Usually includes</i>	<i>May include</i>
1. The native Chinese dialect	5. English
2. The dominant Chinese dialect	6. Mandarin
3. One or more additional Chinese dialects	7. Baba Malay
4. Bazaar Malay	8. Malay

2.2. SgEng tone assignment

Researchers often distinguish two varieties of SgEng: Colloquial Singaporean English (CSE) and educated SgEng (e.g. Pakir, 1991). Whereas educated SgEng departs from other standard Englishes chiefly in its prosody (Tay & Gupta, 1983), CSE syntax can be quite opaque to non-speakers, as (4) below demonstrates:

(4)

Reac already tell me can?

h

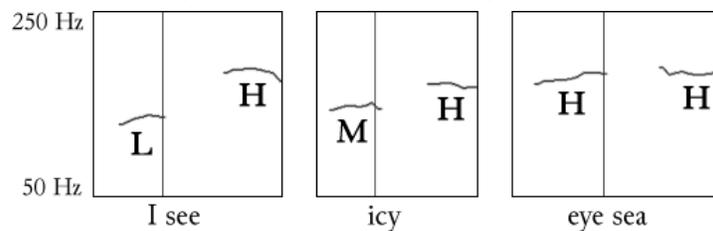
reac CHANGE-STATE tell me can

h

‘When we reach (that place), could you tell me?’ (Speak Good English campaign poster)

Both CSE and educated SgEng allow great prominence (loudness, length, high pitch) on utterance-final syllables (e.g. Low, 1998); within each word, pitch tends to rise in a series of level tones (e.g. Yeow, 1987, p. 87; Deterding, 1994). These observations have recently given rise to proposals that CSE should be transcribed with low, mid and high tones (Wee, 2008; Ng, 2008, 2009; Siraj, 2008), illustrated in Figure 3 below. Like all other tones in this study, these were labelled impressionistically based on comparison with Hokkien tones.

Figure 3: CSE low, mid and high tones



Ng's (2009) data and generalizations for tone assignment are given in (5) and (6) below. I transcribe low, mid and high tone with LMH respectively, and primary/secondary stress with the same stress mark ' since they behave similarly for these purposes. Note that tone assignment is sensitive to the phonological or prosodic word (Nespor & Vogel, 1986; Selkirk, 1995) rather than the grammatical word.

(5) *Tone assignment data*

a. 'see	'H	f. ma'chine	L'H
b. 'money	'MH	g. hi'biscus	L'MH
c. 'elephant	'MMH	h. A'merica	L'MMH
d. 'Indo'nesia	'MM'MH	i. elec'tronics	LL'MH
e. 'minimi'sation	'MMM'MH	j. res'ponsi'bility	L'MM'MMH

(6) *CSE tone assignment generalizations*

- a. H is assigned to the final syllable of the prosodic word.
- b. L is assigned to initial unstressed syllables.
- c. M is assigned to all remaining syllables.

Space does not permit full discussion of factors affecting tone assignment, such as SgEng's distinctive stress placement (e.g. Tongue, 1974, pp. 26ff.), acoustic correlates of stress (Ng, 2011), optional tonelessness (Ng, 2009) and morphological sensitivity (Ng, 2010). In my experience, though, except for a possible foot-final high tone in Siraj's (2008) data, CSE tone assignment is remarkably consistent and prevalent even in educated SgEng, and is even spreading to other ethnic groups. I will focus on two aspects of tone assignment: the fact that high tone is required word-finally (**WFH**), while mid tone is required on stressed syllables elsewhere (**mid stress**).

3. Malay

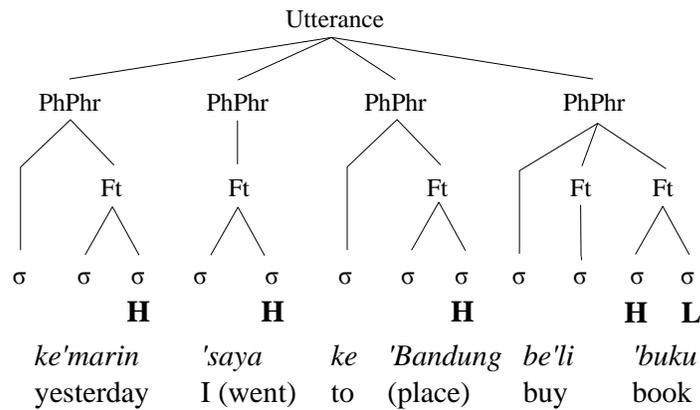
3.1. Indigenous Malay

Malay has occasionally been suggested as a source of SgEng sentence-final prominence, probably the most salient manifestation of WFH (Tongue, 1974, p. 21; Deterding, 2007, p. 38; L. Lim, 2008). Testing this claim is not straightforward given the heavy Chinese influence on modern Singaporean and urban Malaysian varieties of indigenous Malay (Uri Tadmor, p.c., 23 July 2008). But indigenous Malay in Singapore probably used to be quite heterogenous, because Singapore's population when colonised in 1819 was a mere several hundred, swelling to 5874 (including 4724

Malays) in just two years by sober estimates (Saw, 2007, p. 9). As such I will survey all varieties whose intonation has been studied so far, including Indonesian ones.

Existing studies of indigenous Malay do not find WFH, but they do point to a *phrase-final* high. Lorentz (1997) proposes that this high tone at the end of the phonological phrase (PhPhr: Nespor & Vogel, 1986; Selkirk, 1995) can shift one syllable to the left to make room for an utterance-final low, as in Figure 4 below. As in CSE, the boundary tones tend to anchor to distinct syllables.

Figure 4: Standard Indonesian boundary tones. Source: Lorentz (1997).



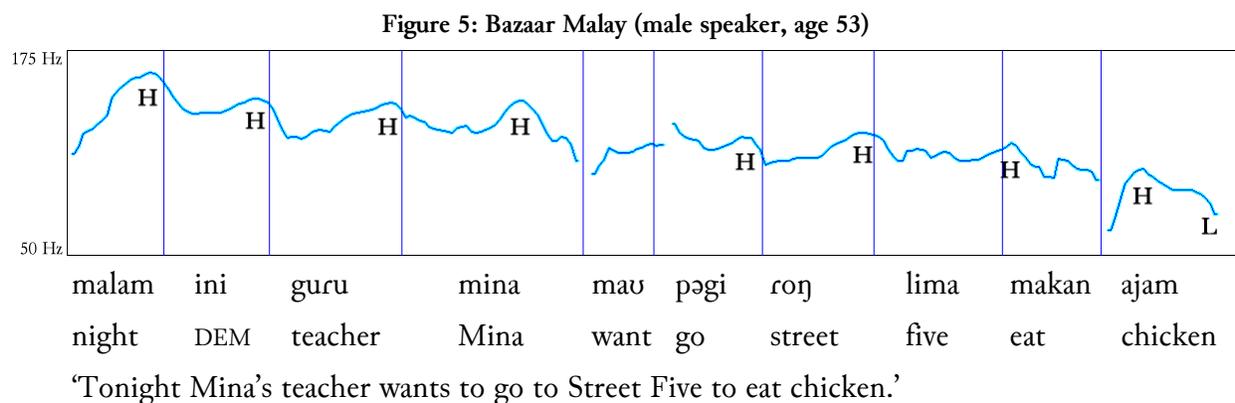
Lorentz's account is supported by numerous independent proposals for these two boundary tones in different varieties (7):

- (7) *Final high vs. final high-low boundary tones*
- a. Singaporean Malay: utterance-initial vs. -final words (Tan, 1998, p. 35)
 - b. Kuala Lumpur Malay: phrase breaks vs. declaratives (Hashim, 1981), continuation vs. breaks (Zuraidah, 1996, pp. 48, 56, 230)
 - c. South Sumatra Indonesian: topic vs. comment (Amran, 1974, p. 112)
 - d. Standard Indonesian: subject vs. sentence (Wolff, Oetomo, & Fietkiewicz, 1992, p. 127)

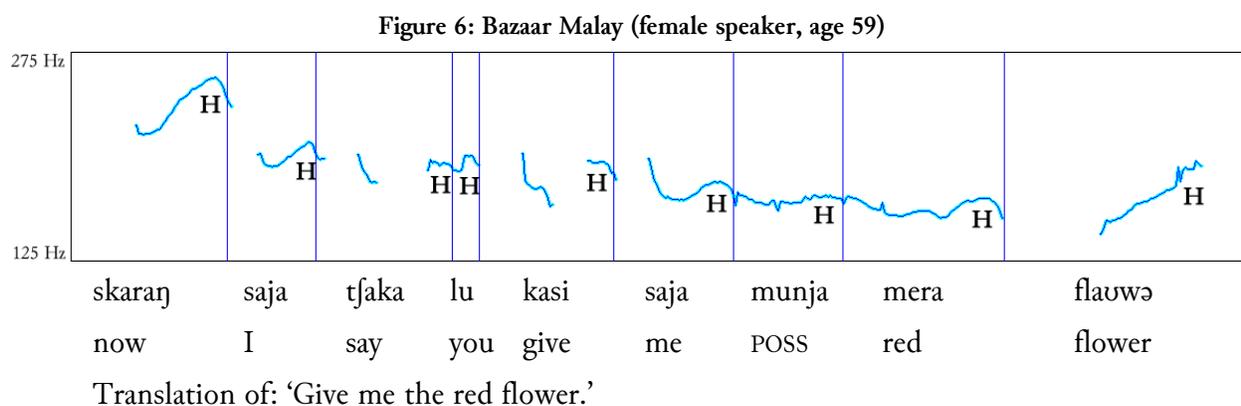
Sometimes the distinction is not so neat. In (Jakarta) Betawi Malay both patterns are found but the conditioning is unclear (van Heuven, Roosman, & van Zanten, 2008), while Gil (2008) does not specify the direction of pitch movement on final prominence in Riau Indonesian intonation groups. Some studies find no utterance-final low at all, only an invariant final high (e.g. Nik Safiah, Farid, Hashim, & Abdul, 1996, p. 434). But certainly a high boundary tone seems widespread in Malay and Indonesian, though it is phrase-final rather than WFH. Hence indigenous Malay satisfies the congruity criterion (1), albeit only imperfectly.

3.2. Bazaar Malay

The earliest Chinese CSE speakers would not have spoken indigenous Malay, but rather non-native Bazaar Malay, whose intonation has not previously been described. My recordings show that Bazaar Malay has a high boundary tone which is more frequent than the indigenous Malay phrase-final high, but less frequent than SgEng WFH. For instance, as shown in Figure 5 below, constituents like [malam ini] ‘tonight’ and [guru mina] ‘Mina’s teacher’ are interrupted by a phrase-internal high tone, unlike native-speaker Malay. Yet there is no internal WFH in [makan ayam] ‘eat chicken’, unlike CSE.



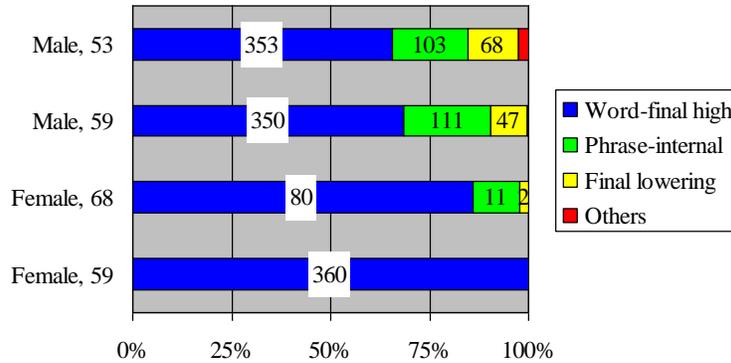
Only one of my informants defied this pattern, consistently using CSE-like WFH even in rapid speech (Figure 6).



A tally of audible word-final rises appears in Figure 7 below, based on translations and conversations elicited in 2008-9, excluding informants with Baba heritage and those who learnt English before Bazaar Malay. Reduplicants and compounds were considered multiple words, while monosyllables and dubiously syllabified words like [saja] ‘I’ were excluded. NPs, VPs and silences

were used to gauge phrase boundaries. English words were used frequently only by the last speaker and were excluded from her data.

Figure 7: Bazaar Malay: Word-final high and exceptions

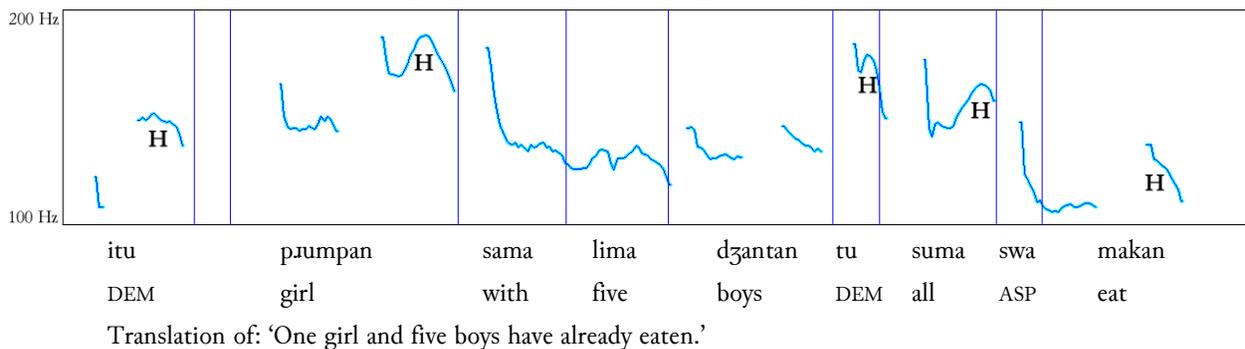


The tally is crude because halting initial attempts and more fluent repetitions are pooled, but we can nonetheless conclude that Bazaar Malay satisfies the congruity criterion (1) better than native-speaker Malay, albeit not perfectly. Note however that Bazaar Malay tended to be produced with level tones, though not as consistently as CSE, and words with WFH usually also had the CSE (L)(M)H melody, unlike native-speaker Malay.

3.3. Baba Malay

While Bazaar Malay was spoken by more Singaporeans, Baba Malay almost certainly exerted a founder effect, and has been proposed as the source of the CSE word-final high (L. Lim, to appear). Wee (2000, p. 41) finds that Baba Malay and Baba English share a characteristic ‘step-up progression’ within the word, unlike indigenous Malay’s long low sequences before the final high. However, his Baba Malay data do include such low sequences (pp. 28, 39, 40, 55, 90, 91), which are often quite long in my own recordings, e.g. [sama lima dzantan] ‘with five boys’ (Figure 8).

Figure 8: Baba Malay (male speaker, age 51)



Similarly, Wee also failed to find the indigenous Malay rise-fall-rise tone on word-final syllables (Wee, 2000, pp. 41-2), but this occurs in my Baba Malay recordings. Finally, level CSE-like tones are frequent but not as common as in Bazaar Malay. I conclude that Baba Malay satisfies the congruity criterion (1) partially, but Bazaar Malay is a better match. This is hardly surprising because CSE and Bazaar Malay have low prestige (Cavallero & Ng, 2009) whereas Babas have historically had high socio-economic status (Ansaldo, L. Lim, & Mufwene, 2007).

3.4. Discussion

Increasing similarity (1a) to CSE WFH suggests the following chain of transmission (8) from indigenous Malay:

(8) Indigenous Malay > Baba Malay > Bazaar Malay > Chinese CSE

But the imperfect match at each stage implies some missing factor. Our search can be guided by the replicability criterion (1b): where else is CSE-like prosody found? The common denominator between CSE, Baba and Bazaar Malay is L1 Chinese. And indeed WFH does surface in Malay loanwords into Chinese, at a rate of 90.2% for my informants' Hokkien and Teochew. The role of Chinese also explains an apparent contradiction: Malaysian English and SgEng are similar or identical (Bloom, 1986, p. 413), yet ethnic Malay SgEng lacks WFH (Tan, 1998, p. 35; L. Lim, 2000). The key is Chinese-Malay contact, not Malay alone. Of course, these similar contact outcomes may result from shared ancestry rather than replicated circumstances. This possibility would be difficult to escape even if we sought evidence in Chinese Indonesian communities like Medan, where Chinese influence might be strong enough to compare with Singapore.

4. Chinese

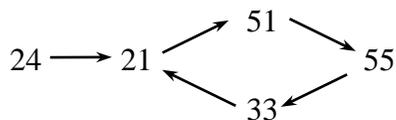
CSE shares one obvious feature with Chinese: the use of categorical tone. Singapore's major Chinese dialects all distinguish at least three level tones (Hokkien: Bodman, 1955; Teochew: Bao, 1999; Cantonese: Matthews & Yip, 1994). Hong Kong English, like CSE, has stress-sensitive assignment of low, mid and high tone (Wee, 2008; Cheung, 2008). Thus Chinese satisfies the congruity and replicability criteria, although uniqueness is still lacking since tonal substrates also produce tone in various creoles (e.g. Devonish, 2002) and even Nigerian English (Gut, 2005). We will see that Chinese provides only tantalising near misses for CSE WFH and mid stress specifically.

(Please note that in all Chinese data cited in the following paragraphs, tone is transcribed on the conventional 1-5 scale from lowest to highest pitch, and transcriptions from different sources are normalised.)

4.1. Min (Hokkien and Teochew)

Hokkien and Teochew have no preference for word- or phrase-final high tone, but they do possess a famously unnatural tone sandhi process called the Min tone circle, affecting every syllable except the final syllable of a prosodic unit which Chen (2000, pp. 431ff) describes as the phonological phrase. In my father's Hokkien, the Min tone circle takes the specific form shown in (9) and (10) below, though other speakers differ (Gil, 2001; Bao, 1999).

(9) *The Min tone circle in open syllables (male speaker, age 59)*



Note: The rules for closed syllables are slightly different and have been excluded from this diagram.

(10) *Base form (final)*

a. [ɔ̃ kaw⁵¹] ‘black dog’

c. [maj kjã²⁴] ‘don’t want to walk’

With sandhi (non-final)

b. [kaw⁵⁵ mŋ] ‘dog fur’

d. [maj kjã²¹ lɔ̃] ‘don’t want to travel by walking’

Min’s tonal faithfulness at right edges utterly fails the congruity criterion (1a), but may have predisposed speakers to mark boundaries with tone when acquiring English.

4.2. Cantonese

Cantonese ‘changed tone’ (pin³³ jəm⁵⁵) has different realizations, complex conditioning and regional variation, but the key point for our purposes is that it usually imposes a rising or high level tone, often on the last syllable of an expression. Its usage is highly idiomatic, conveying familiarity and other speaker attitudes, colloquial flavour, and often semantic modification (11).

(11) *Cantonese changed tone* (Bauer & Benedict, 1997, p. 169)

a. Rising: [t^hɔ̃ŋ²⁵] ‘sweets, candy’ ← /t^hɔ̃ŋ²¹/ ‘sugar’

b. High level: [ka⁵⁵ tse⁵⁵] ‘older sister (in my family)’ ← /ka⁵⁵/ ‘family’ + /tse²⁵/ ‘older sister’

The rising form is also common in English loanwords (12).

(12) *English loanwords with changed tone (rising)*

a. [ɔ̃⁵⁵ da²⁵] ← *order* (Matthews & Yip, 1994, p. 25)

b. [kep⁵ fa²⁵], [kep⁵ fa²¹] ← *cover* (Yip, 2002)

Comparing Cantonese changed tone to SgEng, note firstly that its semantic/pragmatic content prevents it from applying across an entire lexicon, whereas CSE WFH is completely regular. Secondly, English non-final stress invariably corresponds to high tone in Cantonese loanwords (12), so Cantonese influence cannot explain why CSE mid stress in words like *hi'biscus* [L'MH] runs counter to the cross-linguistic affinity between stress and high tone (De Lacy, 2002). I conclude that Cantonese does not sufficiently satisfy the congruity criterion (1) for either CSE WFH or mid stress, though it would certainly predispose speakers towards acquiring WFH.

4.3. Discussion

Neither Min nor Cantonese Chinese satisfies the congruity criterion (1a) for CSE WFH or mid stress, though we have seen how they might predispose speakers to acquire WFH. Both fail decisively on the replicability criterion (1b): if Chinese were the source of CSE tone, we should see these features in other Chinese Englishes, but we do not. Hong Kong English does allow changed tone, but only in very limited usages (e.g. names of intimates), unlike CSE (Wee, 2008). Other Chinese Englishes, L2 varieties and loanwords consistently reflect English stress using high pitch, not mid (e.g. Wang, 2008; Zhang, Nissen, & Francis, 2008), which I have also noticed with Singaporean Chinese radio announcers and teachers using isolated English words in Mandarin sentences. WFH is specific to Malay-Chinese contact situations: these alone satisfy the uniqueness criterion (1c) for transfer. But since we find *phrase*-final tonal processes in both indigenous Malay and the most influential Chinese dialect (Hokkien), we must ask why the high tone became more frequent at each stage of transfer (8), terminating in CSE WFH.

5. English

It is possible that Chinese CSE acquired mid stress and WFH not from any L1 Chinese or L2 Malay varieties, but from the input while learning L3 English. I limit my discussion to varieties of English possessing some intonation pattern similar to WFH, with some significant presence in Singapore before the first description of SgEng final prominence (Tongue, 1974, p. 20). This excludes Welsh English rise-fall (Walters, 2003) and the post-1960s development of High Rising Terminal or 'uptalk' (Guy, Horvath, Vonwiller, Daisley, & Rogers, 1986).

5.1. Normal transmission from English

Many varieties of English include a pitch accent which ToBI labels as L*+H: a pitch valley on a stressed syllable followed by a fairly sharp rise, indicating pragmatic uncertainty (Pitrelli, Beckman,

& Hirschberg, 1994). The pitch contour of L*+H is similar to CSE (L)(M)H, but L*+H rarely predominates in contact Englishes (except Indian English: §5.3). In some Atlantic creoles certain words do show right-shifted high tone, possibly originating in a vocative intonation (Devonish, 2002, ch. 9), but the rule is that high tones anchor to stress, not the end of the word. This is not surprising since H* is the unmarked pitch accent in English compared to L*+H (Fry, 1958). CSE's uniqueness (1c) argues that its prosody derives from some variety involved in few other contact situations.

5.2. Irish English

Irish Catholic nuns were among the earliest to educate Singaporean girls, and convent-reared orphans acquired such recognisable accents that strangers would ask if they were Irish (R. Lim, 2008, p. 60). Among the diversity of Irish accents, a fairly close acoustic match for CSE WFH presents itself in the County Cork fall on multiple stresses (Hickey, 2007, p. 309). However, even if some minimum number of nuns had Cork accents and their pupils had a founder effect as SgEng-speaking mothers, the numbers are still minuscule. We might make the necessary leap of faith if CSE WFH was associated with convent graduates, but in my experience quite the opposite is the case today. Passing the congruity criterion, in this case, is not enough; sociolinguistic plausibility is necessary too.

5.3. (Anglo)-Indian English

We have seen that the L*+H pitch accent is rare in normal transmission from English (Section 5.1), but this CSE-like pitch contour turns out to be the dominant pitch accent in at least some South Asian languages (13).

(13) *Dominant L*+H*

- a. Tamil (Keane, forthcoming), including Singaporean Tamil (Tan, 1998, p. 38)
- b. Bengali (Khan, 2008)
- c. Malayalam, Kannada (Mohan, 1986, p. 126)

L*+H is also common among South Asian speakers of English, e.g. Indian English (Wiltshire & Harnsberger, 2006) and Indian-influenced Trinidadian English Creole (Gooden, Drayton, & Beckman, 2009). Insofar as L*+H resembles (L)(M)H, then, Indian English L*+H satisfies both congruity and replicability.

One key difference between the two patterns shows up in stressed monosyllables. Indian L*+H freely permits a fall and rise within one syllable (Elinor Keane, p.c., 17 July 2009), whereas CSE normally requires level tones: fall-rise contours are limited to vocative monosyllables like *boy* or *girl*, depressor obstruent contexts like *don't* or *damn* (adj.), and emphatic exclamations such as “Can!” Another divergence occurs in words with multiple stresses: L*+H allows multiple high tones, (L)(M)H only one. However, Siraj (2008) reports that some Chinese CSE speakers do have multiple foot-final high boundary tones within one word. These minority patterns are very close to Indian L*+H.

This similarity between Chinese SgEng and Singaporean Tamil was previously noted by two undergraduate theses (Tan, 1999, p. 42; Wee, 2000, p. 42), but both stopped short of suggesting a link because Tamil speakers do not seem numerous or influential enough to effect such a development among Chinese Singaporeans. After an estimated peak of 16% in 1860, the Indian population has remained in the 6-10% range from 1880 onwards (Saw, 2007, p. 29). In early English schools, Indian teachers were overrepresented but still outnumbered by expensive and scarce European teachers (Gupta, 1994, p. 40). To be a really plausible source for such a ubiquitous CSE pattern, L*+H would have to be common not only among native speakers of Indian languages, but also the more influential Anglo-Indian Eurasians.

A 1915 report on education implies a distinctive Eurasian phonology: “the home language of the [Eurasians] ... even where it professes to be English, is distinguished by a peculiar accent and idiom, and in many respects must be classed as a different language” (Gupta, 1994, p. 39). However, the only study focusing on Anglo-Indian suprasegmentals mentions nothing analogous to L*+H, except possibly a frequent ‘CLIMB-FALL’ instead of ‘FALL’ in statements (Valentine, 1978). This was probably a non-deaccented sentence-final H*, not L*, given the comments that British English suppresses inherent stress/tonicity in such contexts, and that this pattern “may make the AIE speaker sound quite lively”. More conclusively, another Anglo-Indian English study states that “all [British and American judges] were of the opinion that the intonation pattern indicated that they were native speakers of English ... [this] explained why other Indian speakers of English find [it] different” (Bayer, 1986, p. 7). Since Anglo-Indian speakers evidently sounded non-Indian precisely because they did not favour this intonation pattern, I tentatively conclude that the L*+H pitch accent was more characteristic of non-Eurasian native speakers of South Asian languages.

5.4. Discussion

Comparing varieties of English as sources for CSE tone, the congruity criterion (1a) rules out British and Anglo-Indian English, while sociolinguistic history makes it unlikely that the small Irish and Indian populations could have had such a pervasive effect among Chinese Singaporeans. However, certain exceptional patterns do suggest that the Indian English L*+H pitch accent played some role in Chinese CSE's development.

6. Constraints on transfer

It seems likely that CSE WFH derives, via Bazaar Malay, from Chinese contact with indigenous Malay's phrase-final high boundary tone, with possible reinforcement from Indian English. But two questions remain:

(14) *Issues in transfer to Bazaar Malay and CSE*

- a. Why does the high boundary tone become more frequent with each transfer in (8)?
- b. Why would L1 Chinese speakers transfer L2 Malay prosody to L3 English?

We will consider the developments in two stages: first L1-L2, then L2-L3.

6.1. L1-L2: Chinese to Bazaar Malay

The foreigner talk hypothesis. Here only question (14a) is relevant: why does the phrase-final high become more frequent in Bazaar Malay? One answer comes from the foreigner talk hypothesis (e.g. Bloomfield, 1933, p. 472). Non-native directed speech is slower, with more pauses and sometimes exaggerated intonation (Hatch, 1983, p. 155), indicating shorter phonological and intonational phrases (Avery, Ehrlich, & Yorio, 1985). If indigenous Malay speakers did try to maximise Chinese immigrants' comprehension using very short phrases, perhaps Bazaar Malay is accurately reproducing the resultant frequent high tones.² According to my informants Bazaar Malay was usually acquired not by children but by young adults starting work, and adult learners in the laboratory reproduce variable input instead of levelling it (Hudson Kam & Newport, 2005), so perhaps it is not surprising that only one informant levelled this variable input to WFH (Figure 7).

Processing. Another explanation comes from Pienemann's (2005) Processability Theory, which states that learners must be able to process the word/lemma (lexical item) before progressing to syntactic categories, which in turn precede syntactic phrases of increasing complexity. This hypothesis has implications for syntax-sensitive phonology, such as Malay and Min's shared tendency to right-align phonological phrases with syntactic phrases (Amran, 1974, p. 126; Chen,

2000, p. 439). Perhaps Bazaar Malay speakers are able to process the lemma, but not syntactic categories, and therefore cannot systematically apply phonological processes that depend on syntactic phrasing. This fits with my informants' frequent omission of a phrase-medial high in common compounds which probably comprised single lemmas, e.g. *pasar malam* 'night market', and one informant's statement that Bazaar Malay speakers weren't really speaking Malay, they were simply translating Chinese.³

With more fluent Bazaar Malay speakers, the foreigner talk hypothesis might be verified by comparing the final high in Bazaar Malay and indigenous Malay non-native directed speech, and the processing hypothesis by comparing Bazaar Malay phrase-medial high in cases of like and unlike word order in Malay and Chinese. It is also quite possible that L*+H among Indian Bazaar Malay speakers reinforced frequent final high in both Malay and Chinese speakers. In either case, Bazaar Malay's frequent and variable final high is no longer a mystery.

6.2. L2-L3: Bazaar Malay to CSE

Transfer. SLA, TLA and creole studies offer two broad hypotheses which may apply to L2-L3 transfer. One is the '**foreign language effect**', encouraging transfer from L2 while blocking L1 (Hammarberg, 2001). Another is that speakers tend to transfer when they perceive languages as typologically similar, generally or in specific features. In SLA/TLA this principle has been called **psychotypology** (e.g. Kellerman, 1983) or transfer to somewhere (Andersen, 1983); in creole studies, the typological constraint (e.g. Thomason & Kaufman, 1988, p. 72) or congruity (e.g. Mufwene, 2008, p. 119). Chinese-Malay-English contact is a textbook example of this, since my informants know that lexical tone is present in only one of these three unrelated languages. Note that perceived Malay-English congruity would be enhanced by congruous minority patterns in the English input (Andersen, 1983), i.e. Indian English L*+H and Bazaar Malay's final high. Choosing between the two hypotheses would require L1 SgEng learners of L3 Malay who knew an unrelated L2 lacking WFH-like features, i.e. not French. Psychotypology would predict that WFH should resurface in their L3; the foreign language effect would not.

Levelling. Besides congruence with Indian English L*+H, a host of other factors could have encouraged levelling towards WFH instead of a phrase-final high tone. **Semantic transparency** or one-to-one correspondence between form and meaning (e.g. Andersen, 1984; Seuren & Wekker, 1986) favours WFH because it makes for salient word segmentation. Bazaar Malay's final high also passes two other filters identified by creolists, perceptual **salience** (e.g. Naro, 1978) and high **frequency** (e.g. Siegel, 2008, p. 161). The final high scores lower on the most-discussed constraint

on creole transfer, **markedness** (e.g. Thomason & Kaufman, 1988, p. 51); but as Mufwene (2008, p. 152) has argued, it may be more important that a feature is unmarked within the substrate, and high tone in any position is certainly commonplace in these tonally dense Chinese dialects. Given the combined pressure of these constraints on transfer, WFH's emergence begins to resemble not so much a freak of nature as a conspiracy.⁴

7. Conclusion

By combining insights from SLA, TLA and creole studies, I have shown that Chinese-Malay contact is a necessary and sufficient explanation for the word-final high boundary tone (WFH) in ethnic Chinese Singaporean English (SgEng). The ultimate source of CSE's word-final high boundary tone is probably indigenous Malay phrase-final high tone via transfer and levelling from Bazaar Malay, reinforced by Baba Malay and Indian English.

I have mentioned several experiments which could further confirm this chain of transmission. Perhaps the most pressing is further fieldwork on Bazaar Malay conducted by monolingual Malay interviewers, though monolingual mode may ultimately be an impossibility given Bazaar Malay's decline amidst Singapore's multilingualism. As aforementioned, however, this was also an advantage to my research: knowledge of Bazaar Malay is now so scarce among young Chinese Singaporeans that its influence on CSE can be unambiguously characterised as transfer rather than interference (Grosjean, this issue). The question arises whether other stable indigenized varieties should also be considered cases of transfer rather than interference, even in cases such as Indian English where most speakers are also fluent in a source language.

As an example of Chinese-Malay-English tonal transfer, CSE appears to constitute the first documented case of L2-L3 prosodic transfer. If counted as a case of creole genesis, CSE also shows that substrate transfer can be rigorously proven in phonology as well as syntax (Singler, 1988). SgEng linguistics has also gained politically useful affirmation that other speech communities besides the Chinese shaped today's lingua franca. The propagandists of my childhood had it right: Singaporean culture is indeed well-represented by their awkwardly named CIMO-CIMO dance, a mongrel union of Chinese, Indian, Malay and Others.

Notes

¹ Esther de Leeuw points out that simultaneous L1 bilingualism (Sundara, Polka, & Baum, 2006) is common in Singapore. However I am aware of no literature on simultaneous L2 acquisition, which probably applied among ethnic Chinese while the lingua franca was changing from Bazaar Malay to English.

² Often my informants spoke haltingly, possibly utilising word-sized phonological phrases, but Figure 6 is not the only case of frequent high tones in rapid fluent speech.

³ Lefebvre's (1998) relexification hypothesis suggests itself as another account of Bazaar Malay's frequent final high, but it seems to predict complete copying of the L1 phonology as per Schwartz and Sprouse's (1996) Full Transfer/Full Access model. This would produce lexical or at least consistent tone in Bazaar Malay, which was not the case either in informants' production or perception.

⁴ It is even possible that levelling from Baba English input could account for CSE WFH unassisted by L2-L3 transfer from Bazaar Malay, i.e. Indigenous Malay > Baba Malay > Baba English > Chinese CSE (Lim, to appear). However, I hesitate to dismiss Bazaar Malay so lightly, as it matches CSE better in terms of number of speakers and prestige.

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Note: Pending an official APA policy on patronymics, Malay/Indonesian names are given in full.

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