An Acoustic Comparison of Taiwan Mandarin and Singapore Mandarin

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Abstract

This thesis compares similar phonological features across Táiwān Mandarin and Singapore Mandarin by measuring the acoustic properties of the variables in question. Despite both varieties' official claim of being identical to Běijīng Mandarin, they have developed a significant number of differences in parallel. I hypothesize that this is because both of these varieties grew out of having Mandarin imposed upon populations that were originally and largely Southern Mǐn speaking. To test this, I modified the Labovian sociolinguistic interview for an online survey format for easy distribution. I focused largely on four variables, the first three of which are theoretically available in both of the varieties of Mandarin under investigation: 1) dentalization of the retroflex sibilants, 2) dentalization of the velar nasal codas following mid to high front vowels, and 3) unrounding of the rounded high front vowel. The final variable under investigation was a possible fifth tone only available in Singapore Mandarin. Despite whatever ease this afforded in data collection, the online survey format also created a lot of disparity between recordings that could have been avoided by using a laboratory setting, or even just consistent recording equipment. Keeping this defect in mind, I found both the behaviors predicted in prior literature, but also its exact opposite, leading me to believe that an online survey format will need a lot of honing before it can reliably be applied to research based on measuring acoustics.

Introduction

The English word *Mandarin* has been used to cover so many different varieties inside of a single group of Chinese languages that writing the word without recounting its entire history renders it next to meaningless. Translating *Mandarin* back into Mandarin one finds many different words: *guānhuà*, *guóyǔ*, *huáyǔ*, and *pǔtōnghuà*. The first term, *guānhuà*, has been in use since the 16th century, and is the original translation of the term Mandarin, which literally translates as 'official's speech' (Wiedenhof, 2015). In the early 20th Century during the National Language Reform Movement, *guóyǔ* 国语 'national language' became the standard for Mandarin spoken in the Republic of China (which it remains to this day) (DeFrancis, 1950; Wiedenhof, 2015). *Guóyǔ*, although initially using an artificial pronunciation, eventually collapsed and borrows much of its pronunciation from the variety of Mandarin spoken in China's current capital city, Běijīng (DeFrancis, 1950; Duanmu, 2007; Wiedenhof, 2015). Since the government of the Republic of China has since been removed to Táiwān, *guóyǔ* has come to mean the standard language spoken in Táiwān (Duanmu, 2007). At nearly the same time, *huáyǔ* 华语 'Chinese language', which was initially based on Běijīng *guóyǔ*, evolved in Singapore (Duanmu, 2007; Lim, 2015; Wiedenhof, 2015). *Pǔtōnghuà* 普通话 'common talk', is what the People's Republic of China renamed *guóyǔ* in the 1950's, as this term was politically tied to the Republican government in exile in Táiwān (Wiedenhof, 2015). Despite Standard Mandarin's, Taiwan Mandarin's, and Singaporean Mandarin's basis on Běijīng Mandarin, since their separation in the first half of the 20th century, they've evolved differences in pronunciation, lexicon, and grammar that have transformed them into distinct varieties (Duanmu, 2007). I hypothesize that the

pronunciation of Taiwan Mandarin and Singapore Mandarin developed out of similar sociolinguistic settings and will acoustically vary little from each other. This pilot study will serve as a test of a methodology I have proposed to test this hypothesis. In this study, I will begin by presenting the history that may be responsible for said divergence from the Běijīng Mandarin for *guóyǔ* in Táiwān, and *huáyǔ* in Singapore, and compare and contrast these two varieties on the basis of pronunciation.

This thesis is divided into three sections: the first will recount the socio-historical setting in Táiwān, and the phonological features of *guóyǔ*/Táiwān Mandarin. The second will provide the same for Singapore and *huáyǔ*/Singaporean Mandarin. Lastly, the third and final section will compare the findings in the pilot study to the literature, discuss the the methodology employed for this project, and propose directions for potential future research.

Background

To begin, we must first be acquainted with the larger language situation of Mainland China. According to traditional theories, there exist seven dialect groups within the Sinitic language family, commonly referred to as Chinese. Modern research has found an additional three groups, making a total of ten. Here are languages within the Sinitic language family, listed by name and percent of the population in which each is spoken (de Sousa, 2015; Shen 2015; Tsao, 1999; Zhao, 2015):

1. Mandarin dialects, 70%
2. Wú dialects, 8.4%
3. Xiāng dialects, 5%

4. Cantonese or Yuè dialects, 5%
5. Mǐn dialects, 4.2%
6. Hakka or Kèjiā dialects, 4%
7. Gàn dialects, 2.4%
8. Jìn, <0.01%
9. Huī, <0.01%
10. Pínghuà,<0.01%

If one were to only regard the percentages given here, one might be mislead to believe that China is only a small step away from linguistic unity, when in actuality, even one of the ostensibly smallest dialect groups here, the Jìn dialects, represent as many as 62 million speakers (Shen, 2015). The varieties of Chinese, like their percentages within the population, are geographically unevenly distributed: Mandarin, Jìn and Huī dialects are sometimes known as Northern dialects, and the other groups are known as Southern dialects. While these generalized designations paint a poor representation of the history and nature of the varieties of Chinese, their rectification will have to wait for some future generation of linguists to sort out. The second misconception associated with these ten varieties of Chinese is that they only differ in pronunciation, when this could not be further from the truth. Inside one group, the Mǐn for example, there is so much variation in phonology, lexicon, and syntax, that speakers of Northern Mǐn dialects, cannot understand speakers of Southern Mǐn dialects: varieties that are related. In order to begin our analysis of Mandarin spoken in Táiwān or Singapore, we must understand the history of each sociolinguistic setting, and that the Chinese speakers that initially settled these islands spoke

languages belonging to southern varieties, namely the Southern Mǐn, Cantonese, and Hakka dialect groups (Chin, 1983; Kubler, 1981; Lim, 2015; Lock, 1988; Tsao, 1999; Wei, 2013).

Prior Studies

Linguistic setting in Táiwān

The human presence on the island now known as Táiwān began possibly as early as 10,000 years ago with the arrival of Austro-Polynesian settlers. Unfortunately, without written records, little is known about the history of these people until the much more recent arrival of European colonial forces, first from Portugal, and subsequently The Netherlands and Spain in 1624 and 1625 respectively (Tsao, 1999). Following relatively closely on the heels of these western invaders, Míng dynasty forces arrived in Táiwān, lead by the famous general, *Kok-sèng-iâ* (國姓爺) or simply Koxinga. With the help of the native Austro-Polynesians, Koxinga ousted these European forces only to set up his own military base in 1662 (Tsao, 1999). It is the arrival of these Han Chinese colonists and the history from then up till the present with which this section is concerned.

From Koxinga's arrival until the end of the 19th century the governance of the island remained Chinese, although the rulership of the Island would pass between dynasties, as the Míng Dynasty fell, and the Qīng rulers came to power. It is safe to say that Táiwān remained under Chinese control until 1895. It was during this time of original Chinese governance, especially during the war that brought the Qīng dynasty to power, that war-stricken, impoverished Han chinese from Fújiàn and Guǎngdōng provinces (especially Quánzhōu and Zhāngzhōu in Fújiàn, See *Figure 1*)

colonized Táiwān, which then in 1683, as designated by the Qīng emperor, became a prefecture of Fújiàn province (Tsao, 1999). From the initial settlement during the twilight years of the Míng dynasty, through most of the Qīng dynasty, the Southern Mǐn and Hakka dialects spoken on Táiwān were allowed to organically diverge from their mainland counterparts, with only a brief interruption of self-determination amongst the government officials of the island from 1728 to 1750. During these years, the Qīng Emperor found himself unable to understand the reports given by officials from Fújiàn and Guǎngdōng provinces, and therefore issued an imperial edict establishing language schools in these provinces (including in Táiwān) (Kubler, 1981). These schools were established to teach the correct pronunciation of *Guānhuà* (literally 'official's speech'), Mandarin based on the speech of officials in Nánjīng, the southern capital (Kubler, 1981; Wiedenhof, 2015). What caused the abandonment of these schools is unclear (Kubler, 1981). Although what impact these schools had on the Southern Mǐn speaking populace is unclear, this act by the Qīng government foreshadows the linguistic developments that would settle over Táiwān in the coming years.

Figure 1.Map of Immigration from China's Coastal Regions to Táiwān

In 1895, at the conclusion of the First Sino-Japanese War, Táiwān was ceded to Japan (Kubler, 1981; Tsao, 1999). This change marks the beginning of the oppressive linguistic climate that

would be visited upon Táiwān's inhabitants for the next one hundred years. The Japanese, with the goal of fully incorporating Táiwān and its citizens into the Japanese Empire, approached the task of Japanification carefully in three stages (Kubler, 1981; Tsao, 1999). Prior to the concession of Táiwān, there existed a small educated elite, educated through private schools, whom had learned to read classical literature with a Southern Mǐn pronunciation (Kubler, 1981). The Japanese allowed this private school tradition to continue while simultaneously opening public schools and adult education programs aimed at instructing the Taiwanese population in the use of Japanese (Tsao, 1999). Attendance was strongly encouraged. In one of those funny twists of history, Japanese was promulgated on Táiwān under the name *Kokugo*, which was written as 國語, presaging a similar development once Táiwān was returned to China in 1945 (Klöter, 2015).

At approximately the same time, back in Mainland China, the Qīng dynasty was taking its dying breaths. While most modern countries had growing literacy rates, it's possible that less than one third of China's population was able to read (Tsao, 1999). When the Qīng Dynasty finally collapsed and the Republic of China (ROC) was born in 1912, it was one of the priorities of the newly minted government to solve the literacy problem, which they believed had contributed to the stagnation of China's growth (DeFrancis, 1950). In the same year that the ROC was founded, the Ministry of Education (MOE) set to work on the problem of mass illiteracy by creating a committee to oversee the Conference on the Unification of Pronunciation (DeFrancis, 1950). This conference and its dozens of delegates capitalized on the momentum created by earlier movements for language and script reform to tackle these issues. The first hurdle the delegates of the Conference had to overcome was that of how best to represent the sounds of Chinese

graphically. This undertaking was connected to the idea that Chinese writing was in its current state (not to mention conveying a literary language spoken by no one) too complicated for most to dedicate the needed number of years to learning for literacy. DeFrancis' retelling of the three month long event is quite colorful: involving passionate linguists furiously inventing transcription systems on their napkins, and trading insults, and that in fact, one such exchange determined the linguistic fate of the entire nation (1950):

> One day, when... [Wang Jung-pao[1]] happened to use the colloquial Shanghai expression *huang-pao ch'e* 'rickshaw,' Wang Chao[2] mis-heard it as the Mandarin oath *wang-pa tan* 'turtle's egg,' whereupon he bared his arms and chased the speaker out of the hall. That was the last of Wang Jung-pao at the conference. The upshot of this controversy was a complete victory for the Mandarin group.

The results of these incredibly heated deliberations were two-fold:

1) The delegates agreed that the official transcription system for Chinese would not be a romanization, but instead a set of symbols resembling brush strokes from within the characters themselves. This system is called Zhùyīn fúhào 'phonetic symbols' or Bōpōmōfō (DeFrancis, 1950).
2) Despite the objections of the delegates who spoke Southern Dialects, the new national language (i.e. *Guóyǔ* 國語 abbreviated henceforth as GY) would be based on *Lánqīng Guānhuà*, a variety of artificial Mandarin that has "traces of all kinds of different dialect backgrounds in the speech of its speakers" (Tsao, 1999). This final decision would later

[1] Pīnyīn romanization Wāng Róngbǎo 汪榮寶
[2] Pīnyīn romanization Wáng Zhāo 王昭

> be quietly amended, so that the national language would be based on the pronunciation of Běijīng Mandarin (Tsao, 1999)

Although the Conference on the Unification of Pronunciation had concluded in 1913, the Republican government did next to nothing to set up the necessary infrastructure to promulgate the learning of the new phonetic system and national language. Therefore, the members of the National Language Movement took it upon themselves to do so (DeFrancis, 1950). It wasn't until 1918 that the MOE took up the cause of Zhùyīn and GY (Kubler, 1981).

While the MOE was fumbling with their new language policies, the educated elite of Táiwān watched intently. However, in 1919, just as interest in Táiwān for new methods of writing Chinese spiked, Japan implemented the second stage of their own language policies: banning the private schools that had taught the Chinese literary tradition, though they kept Chinese as an elective in public schools (Tsao, 1999). The Japanese method was effective, especially for urban residents. By 1935 1.4 million Taiwanese, representing 29.27% of the population of Táiwān spoke Japanese (Kubler, 1981).

If Japan was tightening their linguistic grip before, at the start of the Second Sino-Japanese War (which bloomed into the Asian theater of World War II) they closed their linguistic fist entirely: banning spoken and written Chinese in all public spaces (Kubler, 1981; Tsao, 1999). While they didn't ban Chinese at home, in 1938 they promoted an "only-Japanese-speaking-families" campaign, as this had been deemed the space wherein language maintenance occured (Tsao, 1999). This created a situation where Japanese functioned as the language of governance, education, and prestige, while Chinese and native Austro-Polynesian languages were associated with poor education, and low social class. This diglossic situation continued in this fashion until

the close of the second World War in 1945, when control of Táiwān was returned to China (Kubler, 1981).

To the Taiwanese, Táiwān's return to China was thought to herald an end to linguistically oppressive policies. Alas, it was not to be. Akin to when Japan had taken control of Táiwān, the ROC government took to the task of linguistically incorporating Táiwān into China, but unlike the careful language planning orchestrated by the Japanese government, the newly appointed governor of Táiwān, General Chén Yí, immediately banned all use of Japanese and promoted Mandarin as the new national language (i.e. *GY* 國語) (Kubler, 1981). The enthusiasm the Taiwanese populace felt in 1945 turned to resistance by 1946. Comparatively, Táiwān's populace was better educated than their mainland brethren who now governed them, some even having had the opportunity to study at prestigious Japanese universities (Kubler, 1981). However, this knowledge was suddenly rendered a waste as they had learned it in Japanese and did not know how to communicate it in their native Southern Mǐn or Hakka, no less in GY (Kubler, 1981). Although some Taiwanese intellectuals supported the National Language Movement (*Guóyǔ Yùndòng* 國語運動), for the moment GY seemed as foreign a language as Japanese had been fifty years earlier. The solution adopted by the ROC government was to establish Mandarin promotion centers, within which 296,150 people learned GY in 6,338 classes between 1946 and 1950 (Kubler, 1981). To create these centers, a group of 30 or so GY teachers arrived in Táiwān in November, 1945 (Kubler, 1981), however the quality of the instruction was quite poor (Tsao, 1999). Given that this group largely arrived from Fújiàn province, where Mǐn dialects are the dominant form of Chinese, GY was as much a second language for these teachers as it was for their would-be students. The friction felt between the Mainlanders who had come to govern and

the Taiwanese boiled over in 1947, when anti-government protests were met with deadly force (Tsao, 1999). By the end of the 1940s, Governor Chén Yí was executed, supposedly for being a communist conspirator, but more likely for bungling so completely the re-incorporation of Táiwān.

During the late 1940s, the political situation on the Mainland was even more dramatic, with the ROC's army losing more and more ground to the forces of the Chinese Communist Party, until 1949 when they were forced to retreat entirely to Táiwān (Tsao, 1999). However strict, Chén Yí's policies had been, the arrival of the Mainland's former government and the declaration of martial law furthered the diglossia, only with GY now serving in the place of Japanese. However, the new arrivals, referred to as the Mainlanders by the Taiwanese (*Wàishěngrén* 外省人 'outside province people'), although capable of speaking GY, did not arrive as a homogeneous linguistic group. Many of them had learned GY to varying degrees through mandatory service in the military, where GY served as the lingua franca, but had other Chinese varieties for their first language (Kubler, 1981). Due to the diverse language background of these settlers, the GY they spoke may have also been something other than the standard from Běijīng. Regardless, because of their ability to speak the national language, they formed an elite upper class.

The Committee for the Promotion of the National Language (*Guóyǔ Tuīxíng Wěiyuánhuì* 國語推行委員會, hereafter GTW), housed within the MOE began utilizing the infrastructure left behind by the Japanese and Chén Yí and promoted GY agressively. Although radio programs in Southern Mǐn were permitted initially, the GTW's strategy to promote GY was successful thanks in part to GY radio broadcasts and newspapers like the Mandarin Daily News, which the MOE

had founded in 1948 (Tsao, 1999). Although the GTW's plan initially included efforts to teach GY through a revival of the Chinese dialects native to Táiwān, this initiative proved impractical and was not followed with any sincere effort (Kubler,1981; Tsao, 1999).

Despite the massive endeavors undertaken between 1945 and 1959 to create linguistic unity under GY, these efforts suffered hugely due to a lack of qualified instructors, and a lack of appropriate reading material. These two defects go hand in hand. At the time, Báihuà (白話) (the term employed to refer to the writing style that most closely approximates spoken Mandarin) was being employed to produce literature in Mainland China, but because this literature had strong communist overtones, its use was not permitted in Republican Táiwān (Tsao, 1999). Therefore, would-be GY teachers were left with the Classical texts for teaching material, which are written in wényán (文言), the classical writing style that makes no attempt to approximate any form of spoken Chinese (Norman, 1988). To teach Mandarin this way could be easily compared to trying to teach Italian using Catullus. There was, however, one text owned ubiquitously by GY teachers in Táiwān, though it seemed to be of little help: The Dictionary of National Pronunciation, which was published in 1952 (Tsao, 1999). Combine these lacking textual materials with an inconsistent level of training of the teachers themselves, and an artificial sounding variety of GY is likely to be produced. In 1958, the national Táiwān Normal University established a Mandarin Education Center for training primary and secondary teachers to teach GY, and while this standardized the proficiency and methodology of the teachers, overall it did little to ameliorate the situation (Kubler, 1981). Tsao noted that the pedagogical education these teachers received emphasized reading and writing over speaking, due to the use of the Classics (1999). Regardless of this lackluster approach, the MOE felt the GTW had done its job and in 1959 abolished the

GTW, handing its responsibilities to a smaller and less-funded committee (Kubler, 1981; Tsao, 1999). In the intervening years between when the GTW was disbanded and when it was re-established as the Mandarin Propagation Committee (MPC) in 1980, the bickering between the upper class GY speaking Mainlanders (the second generation of which spoke GY as a first language) and the lower class Southern Mǐn speaking Taiwanese continued, even prompting the Minister of Education to issue this statement in 1973: "[L]inguistic unity is a national policy, but the government in no way plans to destroy the dialects" (Kubler, 1981). This reassurance was needed, for example, because children were physically punished for speaking anything besides GY while in school, to name just one criticism (Tsao, 1999). Despite approximately 80% of the population being Southern Mǐn speaking, the oppressive nature of the mostly Mainlander regime stifled the linguistic climate, which can be best illustrated by the ten point drop, from 80% Southern Mǐn speaking to 70% Southern Mǐn speaking one decade later (Kubler, 1981; Tsao, 1999).

Finally, in 1987, martial law was lifted, providing the other varieties of Chinese the breathing room they need to be perpetuated (Wei, 2013). Giving the power back to the people was the first step in repairing the damage done by the restrictive language policies of the prior 100 years. However, some damage cannot be undone. Diglossia, sometimes described as societal bilingualism, is an apt word to characterize Táiwān's sociolinguistic present. In diglossic situations like Táiwān's, different languages will index and serve different social functions within a variety of social spaces both public and private (Klöter, 2015). In Táiwān specifically, speaking English, Japanese, and Mandarin all serve as markers of high social class, and education. While Southern Mǐn, Hakka, Cantonese, and the Austro-Polynesian languages are

reserved for more intimate, or personal settings, as they are socially perceived to indicate low education and/or unsophistication (Wei, 2013). However, according to Wei, most people in Táiwān will code switch or code mix (2013). As a result, a speaker from Táiwān is in close contact with many language varieties and must therefore make careful choices about when and where to employ elements of the varieties with which they are familiar. The simplest example of this is in politics and entertainment where GY speakers will borrow lexical items out of Southern Mǐn to index a local identity, as a show of solidarity with the historically oppressed majority (Wei, 2013).

In summary, modern Táiwān's linguistic history and setting is cornucopic melange of languages in close contact, wherein linguistic borrowing is a regular occurrence. The importance of this history to the present study is an understanding of the phonological influence Southern Mǐn has exerted on Mandarin spoken in Táiwān, and furthermore the language attitudes which we will attempt to show are associated with phonological changes which resulted from said influence.

Taiwan Mandarin Phonology

Although, GY or Taiwan Mandarin (TM) phonology is supposedly based on the same standard as Mainland Standard Mandarin (SM), as we saw in the preceding section, its introduction into a primarily Southern Mǐn speaking island by other second language speakers of Mandarin who didn't use SM pronunciation has resulted in some considerable phonological differences between the two varieties. The following section is concerned with the phonology of TM, how it differs from SM and theories behind how these differences developed.

Kubler is generally thought of as having performed the landmark study on TM, and all subsequent research has paid homage to the observations he provided (Peng, 2016). In order to adequately represent the sounds of TM, it bares first mentioning the phonology of SM. Tables 1 & 2 show the scheme for SM initials and finals with Hànyǔ Pīnyīn on the left and the International Phonetic Alphabet (IPA) on the right in square brackets [ ] (adapted from Duamnu, 2007; Lee & Zee, 2003; Lin, 2007; Peng, 2016):

Bilabials	b [p]	p [p^h]	m [m]	f [f]
Alveolars	d [t]	t [t^h]	n [n]	l [l]
Dental Sibilants	z [ts]	c [ts^h]	s [s]	
Retroflexes	zh [ʈʂ]	ch [$ʈʂ^h$]	sh [ʂ]	r [ɻ]
Palatals	j [tɕ]	q [$tɕ^h$]	x [ɕ]	
Velars	g [k]	k [k^h]	h [x]	

Table 1. SM Initials

	i [i]	u [u]	ü [y]
a [a]	ia [ia]	ua [ua]	
o [o]		uo [uo]	

e [ɣ]			
ê [ɛ]	ie [iɛ]		üe [yɛ]
ai [ai]		uai [uai]	
ao [au]	iao [iau]		
ou [ou]	iou [iou]		
an [an]	ian [iɛn]	uan [uan]	üan [yɛn]
en [ən]	in [in]	uen [un]	ün [yn]
ang [aŋ]	iang [iaŋ]	uang [uaŋ]	
eng [əŋ]	ing [iŋ]	ueng [uəŋ]	
ong [uŋ]	iong [yŋ]		
er [ɚ]			

Table 2. SM finals

TM Mandarin phonology differs from SM phonology in many regards, according to different authors. Kubler's analysis, the go to point of departure for all other studies of TM, demonstrates that the retroflexes (zh [tʂ], ch [tʂ^{h}], sh [ʂ]) are often substituted or merged with their dental counterparts (z [ts], c [ts^{h}], s [s]) (1981). However, modern literature hesitates to call this feature a merger (Baran, 2007). This is because the retroflex initials are still taught as the standard pronunciation in Táiwān, which creates a tendency for TM speakers to hypercorrect while

attempting to live up to the standard (e.g. pronouncing what would be [ts] in SM as [ts̪]) (Baran, 2007; Kubler, 1981). The retroflexes' occurrence is also conditioned by level of formality. In formal contexts, speakers will attempt to pronounce the retroflexes more regularly, while the opposite is true of informal contexts. De-retroflexion is the most commonly cited example by local-speakers of the difference between SM and TM and the most distinct (Baran, 2007; Duanmu, 2007).

The second most distinct phonological feature that differentiates SM from TM is the merger of dental and velar nasal finals [in] and [iŋ], and [ən] and [əŋ] respectively (Duanmu, 2007). Kubler notes that this results in words like *jīnyú* 'gold fish' and *jīngyú* 'whale' becoming homophonous (1981). This feature is truly a merger, in the sense that not only are TM speakers unaware of the fronting of the velar final, but that the point of articulation seems to vary from utterance to utterance (Baran, 2007; Yang, 2010). TM speakers in one experiment fronted the velar nasal finals 95.93% of the time, though this does not mean they were acoustically identical to their dental counterparts at the same rate (Yang, 2010).

The third phonological feature that distinguishes TM relates to the second mentioned above. Syllables that would typically end with [əŋ] and therefore according to the second feature be dentalized, have said dentalization blocked if the initial is a labial (e.g. [p], [p^h], [m], [f], [w]) (Duanmu, 2007; Kubler, 1981; Yang, 2010). What occurs instead is that [əŋ] lowers, rounds, and backs to [oŋ] or [ɔŋ] (Duanmu, 2007; Kubler, 1981; Yang, 2010).

The final distinct feature of TM is the rounded front vowel [y] can become unrounded resembling instead [i] (Baran, 2007; Duanmu, 2007). This unrounding is most likely due to

native Taiwanese mostly retaining a Southern Mĭn dialect as their first language (Kubler, 1981), wherein the rounded front vowel does not exist (Lien, 2015).

The above features represent those that seem firmly agreed upon within the literature. The following features are only represented in some authors' work, and not that of others. This may be because TM exists on a continuum between SM and Taiwanese. Although not universally cited, initials [l] and [n] have been found to be interchangeable, or undistinguished ahead of finals ending in velar nasals (Duanmu, 2007). Yet another less common feature, initials [ɸ] and [h] will sometimes replace initial [f] (Baran, 2007). This may be the contribution of the Hakka speaking Taiwanese as Hakka [f] corresponds roughly to SM's [x] and [f] initials (Lau, 2015). Finally, in SM many disyllabic words neutralize the tone in the second syllable (Duanmu, 2007). In TM, many of these disyllabic words retain the tone in their second syllable (e.g. *māmā* instead of *māma*) (Kubler, 1981). As elaborated upon above, this is due to GY being initially taught from written materials by non-native speakers (Kubler, 1981). The existence of these features in an individual's speech is likely related to their sociolinguistic background, i.e. their education, class, other languages spoken, urban or rural environment, etc. (Kubler, 1981). Following Labovian intuitions about the stratification of these features would mean that the more rural, the lower the level of education, and the lower the class then the more of these non-standard features will be available in the environment, and vice versa (Meyerhoff, 2011).

Linguistic Setting in Singapore

Situated at the end of the Malaysian peninsula, Singapore is an island, which in 1819 was identified by the British as an ideal location to create a port of trade, and base of operations in

Southeast Asia (Chin, 1983; Lim 2015; Lock 1988). Although, initially a large part of the population was Malaysian, Chinese immigrants from Fújiàn and Guǎngdōng provinces began flocking to the new trading post, and by 1836 already made up 45.9% of the population (Lim; 2015; Lock, 1988). Although Teochew speakers from Cháozhōu initially made up the bulk of the population, Hokkien speakers from Xiàmén quickly overtook them (Lim, 2015). The breakdown of Chinese immigrants by dialect spoken was approximately (Lim, 2015; Lock, 1988):

1. Hokkien 40%
2. Teochew 20%
3. Cantonese 15%
4. Hakka 11%
5. Hainanese 5%

These divisions amongst the Chinese population were maintained by the formation of Huìguǎn, associations and/or secret societies based on shared heritage stemming from dialect, or even village from which the Chinese immigrants had arrived (Lim, 2015; Lock, 1988). These Huìguǎn were important for Chinese Singaporeans because the pre-world war British colonial government only found it important to support education in English and Malay (Lim, 2015). Therefore the Huìguǎn would raise money to fund schools, which would provide education in Chinese, allowing for Chinese language maintenance in an otherwise English and Malaysian settlement (Lock, 1988). As the Hokkien speakers were the largest group, and were largely merchants, Hokkien emerged as the lingua franca among Chinese Singaporeans (while a variety of Malay, Bazaar Malay, served as the inter-ethnic lingua franca) (Chin,1983; Lim, 2015; Lock, 1988).

As mentioned an earlier section, with the birth of the Republic of China in 1912 came the birth of the National Language Movement (Lim, 2015). The fervor felt for a unified language (and therefore culture) in Mainland China was soon felt in Singapore as well (Lim, 2015). In 1920, the already well established Huìguǎn system became instrumental in disseminating Guóyǔ (GY) based on the pronunciation in China's capital, but like the situation found later in Táiwān, teachers from China were the only source of GY available, and most still hailed from southern provinces, where the pronunciation did not match the sounds of the standard from Běijīng (Lock, 1988). Simultaneously, the colonial government became concerned with the spread of GY in Chinese medium schools, and passed a law requiring all teachers and schools register with the government (Lock, 1988). Later, in 1923, they began to provide grants-in-aid for those schools that 1) submitted to regular inspection, 2) kept their instruction in their native dialect and/or 3) changed their instruction medium to English (Lock, 1988). Schools that were caught teaching GY lost any aid they had received (Lock, 1988). As a further measure to curb the enthusiasm for GY, 1925 saw the Director of Education being given the authority to refuse registration to teachers, and punish teachers who taught without registration (Lock, 1988). Despite these efforts by the government, two thirds of schools still taught GY (Lock, 1988). This tension created a difficult choice for many Chinese Singaporean families: English medium education had the benefit of upward economic mobility, but at the cost of a cultural heritage in the process of being unified. The introduction of GY also softened the divisions between the dialect groups that had characterized Singaporean Chinese life prior, while the government's oppression created a new rift between those Chinese that chose Chinese medium education, and those that chose English

medium education (Lock, 1988). By 1941, half of the Chinese children in Singapore were enrolled in schools of either type (Lock, 1988).

Then, from 1942 to the end of the war, the Japanese occupied Singapore (Lock, 1988). During this time, GY served as something of a badge of honor and resistance to Japanese authority (Lock, 1988). The post-war period saw a large number of changes to language policy in Singapore, the first of which was the Ten Years Programme, which aimed to fix the fragmented education system, introduced in 1947 (Lock, 1988). It was as colonial control was waning in the 1950's, that Singapore's now four official languages were chosen: English, Malay, Tamil, and Mandarin (called *huáyǔ* henceforth HY) (Lim, 2015). In 1955, Singapore had its first democratically elected government, a majority of whom were elected rather than appointed by the British government (Lock, 1988). Delegates from every political party convened to look at Chinese medium education, after which it was decided to provide universal free education in each of Singapore's official languages (Lock, 1988). Next, the Hokkien Huìguǎn donated the site for the founding of Nányáng University in 1956; this can be considered the height of Chinese medium education in Singapore (Lock, 1988). Within the same year, English was made compulsory as a first or second language in all schools (Lim, 2015). Despite the official and prestigious status afforded HY, according to a census taken in 1957, less than 0.1% of the Chinese population claimed to speak it (Chin, 1983). The largest Chinese language groups were still 30% Hokkien, 17% Teochew, and 15.1% Cantonese (Chin, 1983).

Come 1959, and The People's Action Party, led by Lee Kuan Yew, won a majority in the election, with their pro-Chinese, anti-English platform, and elected Lee Kuan Yew as Singapore's first Prime Minister (Lock, 1988). Lee Kuan Yew would remain in governance for

the next three decades and his party has won a majority in almost every election since (Lim, 2015). Lee Kuan Yew was educated in English medium education, and attended Cambridge University in the United Kingdom, yet managed to paint himself as anti-colonial and anti-English medium education (Lock, 1988). In 1965, after a brief membership within the Federation of Malaysia, which won independence from the British in 1963 (Kuo, 2003), Singapore became a fully independent, self-governing state (Lock, 1988). It was then, that bilingual education became mandatory (Chin, 1983). Alongside bilingual education, in 1966 the new government instituted leaving examinations at every level of education to better monitor the effects of the new language and education policies (Lock, 1988). These examinations found that students were not sufficiently proficient in HY as there was consistently a lack of qualified instructors, not only for Chinese, but also Tamil and Malay (Lock, 1988). As of 1968, science and math were taught in English, while history and civics were taught in one of the other three official languages (Lock, 1988). During this time, the government also took the opportunity to establish a firm grip on the media with acts like The Internal Security Act 1963, The Sedition Act 1964, and the Undesirable Publication Act 1967, all of which gave vague discretionary powers to the Minister of Home Affairs to prohibit public media that was deemed prejudicial, seditious, or counter to public order or interest (Kuo, 2003). A further law came into effect in 1974 that made the licensing of printing presses an annual affair, which the government had the right to revoke at any time (Kuo, 2003). Both the efforts in education and the governments hold on the media are important to the formation of the variety of Mandarin, HY, spoken in Singapore.

Despite the decline of HY education and Chinese medium education in general, this time served as the lead up to one of the most important efforts to promote HY in Singapore. In 1978, Singapore's state sponsored television station, owned by the Singapore Broadcasting Corporation (SBC), broadcast two two-hour long forums wherein Lee Kuan Yew discussed the necessity for bilingualism with three journalists, first in English, and then in Mandarin (Kuo, 2003). The Speak Mandarin Campaign (SMC) was then launched a year later, following on the heels of these broadcasts (Lim, 2015; Lock, 1988; Kuo, 2003). HY lessons were broadcast over the radio, published in newspapers, and students were heavily discouraged from the use of other Chinese varieties at home (except with their grandparents) (Lim, 2015; Kuo, 2003). A census of the Chinese population (76.9% of 2.4 million Singaporeans) taken in 1980 found the following Chinese varieties spoken at the following rates (Chin, 1983; Lock, 1988; Kuo, 2003):

1. Hokkien 43.1%
2. Teochew 22.1%
3. Cantonese 16.5%
4. Hainanese 7.1%
5. Hakka 7.4%
6. Fuzhounese 1.7%
7. Other <1%

Remarkably though (and perhaps in opposition to the claims made in the census) 10.3% of Chinese Singaporeans (8% of all Singaporeans) claimed to speak only HY at home as of the same year (Lim, 2015; Kuo, 2003). The success of the SMC in such a short time may be attributed to the ways in which it invaded the everyday life of Singaporeans. 80% of

Singaporeans had newspaper subscriptions at the time, and 90% owned television sets (Kuo, 2003). 65% regularly watched the programming on SBC's two channels (Kuo, 2003). Rediffusion, the Chinese cable radio service was excited to announce that 66% of its broadcasts were in HY and that by 1982, they planned to raise that rate to 80% (Kuo, 2003). Lee Kuan Yew continued to appear in televised forums throughout this time (Kuo, 2003). However, the SMC using the media as a mouthpiece was just the tip of the iceberg (Kuo, 2003). The press were the true heroes of the SMC in that they organized some of the most important strategies for promoting HY in everyday life: e.g. "public forums, student debates, a composition contest, a story-telling contest, distribution of pamphlets, free t-shirts with campaign slogans, and gifts and cash rewards to 'lucky' customers who were overheard speaking [HY]" (Kuo, 2003). To evaluate the efforts of the SMC, at the behest of the Minister of Culture, several newspapers conducted surveys in 1981 to identify how HY was used in differing public spaces, i.e. hawker centres (essentially groups of stalls selling street food), coffee shops, restaurants, supermarkets, and shopping centers (Kuo, 2003). The results of these surveys showed that although overall use of HY had increased, the other varieties of Chinese still dominated the hawker centres, coffee shops, and restaurants, while English reigned in supermarkets and shopping centers (Kuo, 2003). In 1982, October was declared Speak Mandarin Month, which is still celebrated to this day (Kuo, 2003).

Although English became the medium of instruction in all schools in 1987, in 1988 87% of Chinese Singaporeans claimed to be able to understand HY (Lim, 2015).

Year	Use of HY	Use of other Chinese varieties

1990	30%	50%
2000	45%	31%
2010	48%	19%

Table 3. Use of Huáyǔ vs. Other Chinese Varieties (Lim, 2015)

Table 3 shows the effectiveness of the SMC from decade to decade. An important factor to recognize in this data is the increasing number of Mandarin speaking Mainland Chinese who have immigrated to Singapore (Lim, 2015). From the 1980's to 2002, the number of Mainland Chinese immigrants have gone from around 100,000 to 1,000,000, practically one fifth of the population (Lim, 2015). This increase has dramatically changed the language ecology of Singapore, and therefore also the statistics concerning it, especially considering many of these newcomers do not speak English (Lim, 2015). However, there are some efforts to preserve the other Chinese varieties. The Huìguǎn, who for the second half of the 20th century had helped with the promulgation of HY in the populace changed their language curriculum again in 2000 to teach their native varieties (Lim, 2015). Filmmakers are using Hokkien to lend a sense of "authenticity" to their films, which is inspiring younger generations to learn it, and politicians are beginning to campaign not only in English and HY, but in other Chinese varieties as well (Lim, 2015).

Considering the dramatically changing language landscape in Singapore, HY's stability is uncertain. From it's adoption as GY in the early 20th century, to the SMC more recently it seems some variety of Mandarin is likely to stay, but whether it will remain uniquely Singaporean remains to be seen.

Singapore Mandarin Phonology

Just in naming this section we've already stumbled upon our initial difficulty: there are up to three types of Singaporean Mandarin (Chua, 2003; Duanmu, 2007; Lim, 2015; Lock, 1988). The first is Standard Singaporean Mandarin, the government endorsed stated norm based on the pronunciation of Běijīng Mandarin (Chua, 2003; Duanmu, 2007). The second, while also considered a standard, is not so much taught as it is the socially reinforced standard; this I will call the de-facto Standard Singaporean (Chua, 2003; Duanmu, 2007). The last is a vernacular variety characterized by the way it borrows pronunciations, lexical items, and grammatical particles from other varieties of Chinese spoken in Singapore (Chua, 2003; Duanmu, 2007). Several of the earlier studies of Singapore Mandarin noted that it is difficult to determine which of these last two varieties a speaker is employing as any of the following situations could apply (Lock, 1988):

I. Vernacular Singapore Mandarin speech
II. De-facto Standard Singapore Mandarin with code-switching/code-mixing with English, Singlish, Vernacular Singapore Mandarin, or another variety of Chinese.
III. A variety of Mainland Mandarin code-mixed with local expressions

A more apt description of the language might be, like TM, to characterize Singaporean Mandarin as existing on a continuum, but this makes finding a definitive list of distinguishing features challenging. For the purpose of discussing further the phonology of Singaporean Mandarin, I will list the features observed in II. De-facto Standard Singapore Mandarin (SgM). Though the

following features are not unique to SgM, and therefore not the defining features of the variety, their mention is necessary for a comparison with the phonology of TM.

Like TM, a chief distinguishing feature of SgM from SM is the self same de-retroflexion and subsequent hypercorrection of initials [tʂ], [tʂʰ], and [ʂ] (Chin, 1983;Chua, 2003; Duanmu, 2007; Lock, 1988). One the earliest studies of SgM found that of the three retroflex initials, the fricative [ʂ] was the most likely to be articulated correctly as a retroflex, but this was also true in words where it did not belong like *suoyi* [suoi˧˥], which would be hyper-corrected to [ʂuoi˧˥] (Chin, 1983). Furthermore, even when *sh–* was pronounced with retroflexion, it was far less retroflex than its SM counterpart (Chin, 1983). One researcher observed:

> "The place of articulation appears to vary from dental to alveolar to post-alveolar and the articulator from apical to laminal. All three [retroflexes] show this variation. However, laminal postalveolar realizations seem much more common with the affricates than the fricative, although the latter do occur" (Lock, 1988).

In addition, the level of retroflexion in SgM is connected to the language background of its speakers. English medium educated SgM speakers seem to pronounce the retroflex series as retroflex more often than their Chinese medium educated counterparts (Chin, 1983). SgM speakers whose L1 is Cantonese will tend to pronounce the retroflex series as [tʃ], [tʃʰ], and [ʃ] (Chua, 2003). A more recent study also found that speakers with an Hokkien L1 background tend towards a second non-distinction: not only do the retroflexes slip forward, but also the palatal series [tɕ], [tɕʰ], and [ɕ] (Chua, 2003; Lock, 1988). Of the three, the fricative [ɕ] becomes fronted and resembles [s] most often (Lock, 1988). Because the palatal series only occurs ahead of vowels [i] and [y], the dentalisation of the palatal series causes no confusion (Chua, 2003). Continuing to follow the trends of TM, SgM speakers associate the correct pronunciation of the

retroflexes with “foreignness” and would prefer to maintain their SgM pronunciation rather than risk sounding pretentious or “snobbish” (Chin, 1983; Duanmu, 2007; Lock, 1988). However, SgM speakers are aware of the stigma around de-retroflexion and when speaking to foreign Mandarin speakers will attempt to “elevate” their speech (Chin, 1983; Lock, 1988). As we’ve seen above, de-retroflexion is not unique to SgM, as this feature is shared with TM, and in fact, with Mandarin spoken by any speaker who’s L1 is a southern dialect, as most southern dialects do not distinguish been retroflex and non-retroflex sibilants (Chua, 2003; Lock, 1988).

Following in the footsteps of the last section, SgM, like TM, also includes the merger of dental and velar finals [n] and [ŋ] (Chua, 2003; Lock, 1988). Just as in TM, this merger is an unconscious one (Lock, 1988). One study posits that the unconscious selection of [n] or [ŋ] depends on the point of articulation for the following consonant, with the dividing line at the velum: any subsequent consonant forward from the velum will produce the dental [n] coda, while from the velum back will produce the velar [ŋ] coda (Lock, 1988).

The third feature of SgM is the wide variety of substitutions for retroflex initial [ɻ] (Chin, 1983; Chua, 2003; Lock, 1988):

1. A lateral approximant [l]
2. A dental nasal [n]
3. A post alveolar continuant
4. An apical flap [ɾ]
5. A voiced alveolar or dental affricate [dz]
6. A voiced dental fricative [z]
7. A palatal approximant [j]

The post alveolar continuant and the apical flap can occur in all [ɹ] syllables, while the lateral approximant and the dental nasal, occur similarly except in the syllable *rong* (Lock, 1988). The affricate occurs only in syllables *ri*, *re*, *ren*, and *reng* (Lock, 1988, Chua, 2003). The palatal approximant only appears in *rong* (Chua, 2003; Lock. 1988). Somehow, *rang* goes untouched and is regularly pronounced with retroflex initial [ɹ] (Lock, 1988).

Some less robust, but still frequent features of SgM include: the substitution of initial [n] with initial [l] (Lock, 1988), the unrounding of high front vowel [y] (Chin, 1983; Chua, 2003; Lock, 1988), final [uo] becomes a monophthong [ɔ] (Lock, 1988), and the backing of velar fricative [x] to glottal fricative [h] (Chin, 1983; Chua, 2003; Lock, 1988). The first of these features, the [l] and [n] substitution, is stigmatised for indicating a lower level of education (Lock, 1988). The last feature, the backing of velar [x] can undergo a further transformation, completely reversing course and becoming a bilabial fricative [ɸ] before final [u] (Chua, 2003).

Rhotacization in *-r* finals not only lack rhoticity, but are sometimes actively avoided (Chua, 2003; Lock, 1988). Technically, even SM is a bit "fuzzy" on the appropriate level of *erhua*, the Běijīng Mandarin suffix that originated as a dimunitive (Lock, 1988). In SgM, it seems the *-r* coda becomes an open [ə] and will only be used in the case that there is a semantic-lexical distinction made between the word with and without its *erhua* ending (Lock, 1988; Chua, 2003).

SgM's tonal system also has much in common with TM. There are far fewer neutral tones, and T3 is realised in its 211 form more often than its 214 form (Chua, 2003). However, there is one final tonal feature, which may be SgM's feature that distinguishes it most from other similar varieties of Mandarin, a fifth tone (T5), which supposedly is the remnant of the entering or checked tone in the classical tone system (Chin, 1983; Chua, 2003; Duanmu, 2007; Lock, 1988).

SgM T5 originates from a Hokkien reading of wényán and replaces what would ordinarily be one of the first three SM tones (level, rising, falling-rising) (Lock, 1988). It's characterized by being a slightly shorter falling tone than T4, a 42 or 41, which may or may not include a glottal stop coda (Lock, 1988; Chua, 2003). Of the three tones T5 replaces, T1 was found to be most susceptible to a T5 reading (Chua, 2003). SgM T5 was first observed by Chen Ching-Yu who wrote in 1982 that there is an "obscure and flickering borderline between the 4th tone and the 5th tone" (as cited in Chin, 1983). This may be due to the fact that in these early studies, the researchers found the SgM T5 more often in more the more formal or reading parts of the interviews they conducted, while the informal, free speech they recorded included T5 less (Chin, 1983; Lock, 1988). The speakers who demonstrated this feature most prominently were of Hokkien background, with a 89.4% rate of correlation (Duanmu, 2007). As more and more Mandarin speakers from Mainland China are moving to Singapore, SgM T5 seems to be reallocating to T4 and disappearing as a category (Lock, 1988). The future is uncertain for this distinct feature of SgM.

While the phonological features of SgM are very similar to those of TM, they are more commonly thought of as stereotypes and markers of TM than they are of SgM (Chua, 2003). Despite these variables close ties to TM, none of these features are truly unique to either TM or SgM (Chua, 2003). In the following section I will examine how recordings of speakers of TM and SgM compare to the features described here as part of a pilot study.

The Pilot Study

The most recent studies of TM and SgM Mandarin are now at least a decade old. It seems appropriate to develop a easily distributable method for checking on the stability of the variables mentioned in the section prior. The purpose of this pilot is to test the viability of an online survey designed to replicate the same kind of results as an in-person Labovian sociolinguistic interview.

Methodology

As several of the studies mentioned above employed some version of the Labovian Sociolinguistic interview (Chin, 1983; Chua, 2003; Kubler, 1981), I considered modifying a similar approach in order to elicit different styles of speech (Meyerhoff, 2011). Labov's survey would typically involve interviewing a participant in their home and record them reading a minimal pair list of sounds, short words or phrases, a short passage, and then conclude with an informal discussion of their life (Meyerhoff, 2011). The formality of the interview would gradually lower in order to capture each individual's understanding of the standard at the beginning, and then relax them into speaking naturally their own variety of the language under investigation (Meyerhoff, 2011). To expedite data collection, I created an online survey modeled methodologically on Labov's Linguistic interview combined with the Pear Story methodology. The Pear Story, originally employed by Wallace Chafe, and used to collect data on Chinese languages by Mary Erbaugh, asks participants to watch a short video with no dialogue (Erbaugh, 2001). After the participant has finished viewing the Pear Story video (available on YouTube: https://www.youtube.com/watch?v=bRNSTxTpG7U), an interviewer from the same language

background of the participant would ask the participant to describe what had occurred in the video, and otherwise make no further inquiry (Erbaugh, 2001). Originally this was used to compare how speakers of different languages create narratives (Erbaugh, 2001). Given the narrowness and brief time in which I could perform the current investigation, I opted to use a survey format rather than an interview. In order to obtain similar data of both what is considered standard speech, and what is natural speech by each participant, I substituted the informal interview at the end with the Pear Story methodology. The hope is that the break from recording more formal speech provided by watching the Pear Story video, combined with the effort of remembering what they watched, will create the flow of more natural speech filled with all the typical pauses, stutters, and incomplete thoughts that accompany it.

Because I am by no means a native, or even a fluent speaker of any variety of Mandarin, to analyze the data, I chose an acoustic approach. Initially, as a first trial of the design of the online survey, I asked a self-identified speaker of SM to take the survey. The recordings provided by this speaker also serve as the sole sample of SM with which to compare the acoustic data of the TM and SgM speakers. The fallibility of this single-speaker base line will be further addressed in the results and discussion sections.

Procedure

8 participants, 5 Taiwanese and 3 Singaporeans, recorded themselves reading a series of 34 randomly sorted monosyllabic minimal pairs, of which 27 were homophonous pairs (inside of which one may receive a Singaporean Mandarin T5 reading). The remaining 7 are intended to elicit the most prominent phonological features of TM and SgM described above. Next,

participants were directed to watch the Pear Story video, after which they recorded themselves describing or narrating what they witnessed. Finally, participants were asked to read an informational letter informing them that their participation is entirely voluntary, and that if they understand, and consented to participate, to indicate this by checking the coinciding box. Participants optionally could supply their email address, if they would like to participate in further surveys.

Results

1. Retroflex Sibilants *zh– ch– sh–*

Of the features noted above, the dentalization of the retroflex sibilants is the most salient in both of the Mandarin varieties under investigation. Therefore, the retroflex sibilants will be the first variables under consideration. The possible articulatory features of a retroflex in any language are fourfold (Hamann, 2003):

A. Apicality - the use of the of the tongue tip as the lower articulator
B. Posteriority - the point of articulation for the upper articulator (alveolar, post-alveolar, or palatal)
C. Sublingual cavity - the space created beneath the tongue by the tip of the tongue making contact with posterior regions of the upper articulator
D. Retraction - the movement of the entire tongue towards the back of the oral cavity

Of these four features, A and C are perhaps the most important for distinguishing retroflexes from similar sounds that are localized in the same areas of the mouth (Hamann, 2003).

Non-retroflex alveolar and palatal consonants can be distinguished from retroflexes by their use of the blade of the tongue as opposed to the tip (Hamann, 2003). This use of the tip of the tongue is also responsible for creating the sublingual cavity (Hamann, 2003). While still important, B represents a range of places on the upper articulator that the retroflexes have in common with many other consonants (Hamann, 2003). Of the four, D is somewhat optional, and is not present in the Mandarin retroflexes (Hamann, 2003; Lee, 1999). Acoustically, C is the feature most easily recognized. The sublingual cavity increases the spectral energy between 2000 Hz and 14000 Hz (Lee, 1999).

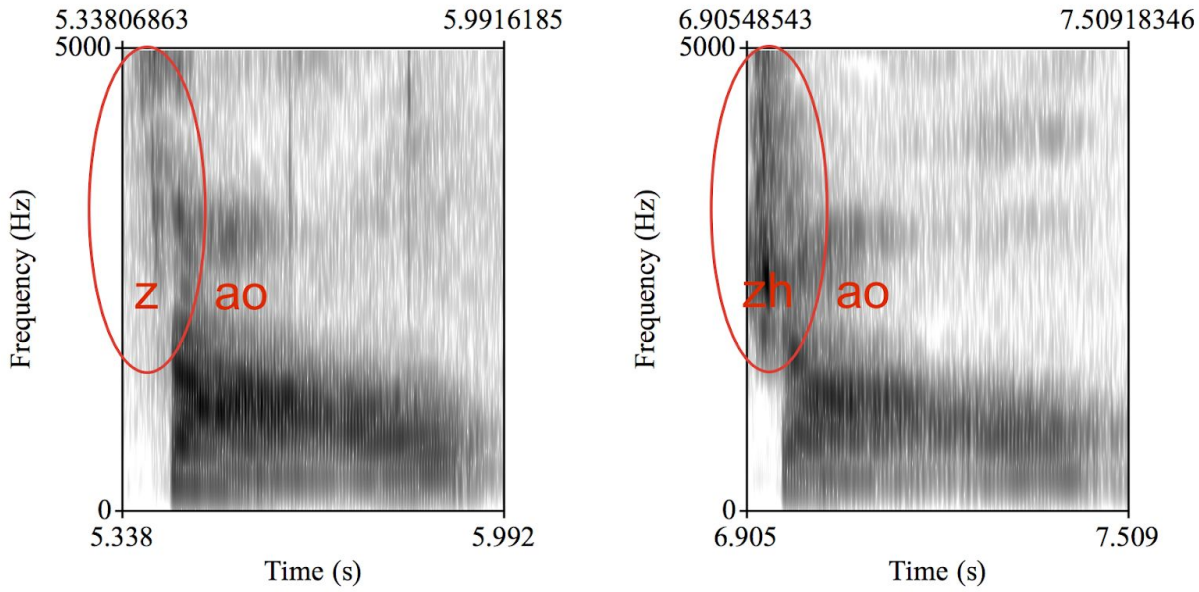

Figure 2. SM minimal pairs task spectrograms of /zǎo/ and /zhǎo/

Originally, because of the high level of variance in the sibilants' acoustic realizations between speakers, the retroflexes pronounced in the minimal pairs were intended to serve as a baseline against which to measure the tokens of retroflex sibilants captured in the Pear Story. As a known

and commonly cited stereotype of TM and SgM, I expected that the retroflexes in the minimal pairs task would be pronounced approximating SM, given that minimal pair tasks generally target standard pronunciation. This, however, seems to be far from the case.

Speaker	*zh–*	*z–*	*ch–*	*c–*	*sh–*	*s–*
SMmp	70.07	61.51	62.64	61.03	68.19	56.07
TM1mp	71.37	75.38	71.80	71.31	65.81	68.41
TM2mp	75.37	71.20	71.17	73.90	71.38	71.99
TM3mp	72.14	60.48	70.52	63.03	75.51	66.43
TM4mp	70.82	72.84	79.16	75.98	71.96	69.42
TM5mp	60.52	58.87	60.94	61.42	60.45	50.03
SgM1mp	67.92	66.96	62.90	62.75	62.18	59.06
SgM2mp	62.88	60.25	66.29	65.67	70.45	63.1
SgM3mp	70.39	66.94	70.43	68.21	65.81	68.41

Table 4. Comparison of retroflex sibilants in the minimal pairs task (dB)

In *Table 4*, I offer a comparison of the spectral energy (measured in dB) for the consonants in /zhao/ and /zao/, /chao/ and /cao/, and /shao/ and /sao/ for each speaker. Values that contradict the literature (i.e. the dental sibilants have more spectral energy than their retroflex counterparts) are highlighted red. Values that are nearly equal in spectral energy are highlighted in yellow. Although the literature predicts that the retroflex and dental sibilants can level and therefore become equal in spectral energy, the context of the minimal pairs task was meant to elicit clear distinctions between the two. Without a clear distinction in the minimal pairs, reliance on intraspeaker comparison becomes problematic.

The SM speaker in row 1, against which I intended to compare the TM and SgM speakers, varies as much as 12.11dB and as little as 1.61dB between retroflex and dental sibilants, making it challenging to establish a base range within which retroflexes should fall. Since the data tells a

different story than the literature, this leads me to consider some methodological weakness which may account for the unclear picture the data creates. This will be considered below in the Discussion section.

If we tentatively take the data provided in *Table 4* to be modeling the standard, then in Table 5 we find how the retroflex sibilants behave in less formal speech.

Speaker	*zh*–:# of tokens	*z*–:# of tokens	*ch*–:# of tokens	*c*–:# of tokens	*sh*–:# of tokens	*s*–:# of tokens
SMps	64.58:10	56.94:6	64.52:4	60.62:3	67.24:16	59.04:7
TM1ps	65.6:23	66.79:25	67.45:7	68.08:5	68.69:27	68.09:16
TM2ps	67.26:21	64.53:23	65.17:7		68.49:12	64.33:7
TM3ps	66.85:16	61.26:20	64.53:8	66.94:1	67.44:30	64.19:6
TM4ps	69.97:6	68.12:12	74.24:3	72.25:9	69.28:16	72.82:1
TM5ps	62.69:12	56.57:14	62.19:4	60.08:4	63.43:27	57.53:7
SgM1ps	61.54:3	59:10	61.45:2		62.77:24	58.39:5
SgM2ps	65.98:60	61.98:37	63.84:17	61.21:10	67.98:65	62.46
SgM3ps	63.66:4	62.49:7	62.32:1		67.61:3	

Table 5. Comparison of average dB of tokens of the retroflex sibilants in the Pear Story

As with *Table 4*, *Table 5* has red highlights where the relationship between the energy of the retroflex and the dental is inverse, and yellow highlights where the energy is nearly equal. The difference between the two tables is that in *Table 4* we have a single token of each variable, whereas in *Table 5* we have an average of all tokens. The blanks in *Table 5* represent a lack of

tokens on behalf of the speaker in question. To compare the tokens of the minimal pairs task with the Pear Story, I overlay the information provided in *Tables 4* and *5* together in *Table 6*.

Speaker	*zh–*	*z–*	*ch–*	*c–*	*sh–*	*s–*
SMmp	70.07	61.51	62.64	61.03	68.19	56.07
SMps	64.58	56.94	64.52	60.62	67.24	59.04
TM1mp	71.37	75.38	71.80	71.31	65.81	68.41
TM1ps	65.6	66.79	67.45	68.08	68.69	68.09
TM2mp	75.37	71.20	71.17	73.90	71.38	71.99
TM2ps	67.26	64.53	65.17		68.49	64.33
TM3mp	72.14	60.48	70.52	63.03	75.51	66.43
TM3ps	66.85	61.26	64.53	66.94	67.44	64.19
TM4mp	70.82	72.84	79.16	75.98	71.96	69.42
TM4ps	69.97	68.12	74.24	72.25	69.28	72.82
TM5mp	60.52	58.87	60.94	61.42	60.45	50.03
TM5ps	62.69	56.57	62.19	60.08	63.43	57.53
SgM1mp	67.92	66.96	62.90	62.75	62.18	59.06
SgM1ps	61.54	59	61.45		62.77	58.39
SgM2mp	62.88	60.25	66.29	65.67	70.45	63.1
SgM2ps	65.98	61.98	63.84	61.21	67.98	62.46
SgM3mp	70.39	66.94	70.43	68.21	65.81	68.41
SgM3ps	63.66	62.49	62.32		67.61	

Table 6. Comparison of minimal pair and Pear Story retroflex sibilants (dB)

Looking at the individual speakers in Table 6, TM1's minimal pair reading and Pear Story tokens exhibit greater spectral energy in the dental consonants rather than the retroflex consonants. One possible explanation is that all the retroflexes in TM1's speech were dentalized. Equally possible

is that some TM1's tokens of the dental sibilants were hyper-corrected to become retroflex, however, according to this author's articulatory judgement, neither of these can fully be the case. TM2 appears to exhibit the behavior promoted in the literature (i.e. the retroflex sibilants are dentalized), if the dB values found in the minimal pair reading are indeed standard. TM3 behaves similarly to TM2, following the expected behavior. TM4 seems not to distinguish between retroflexes in all cases but that of the fricatives (as opposed to the affricates). This is in line with the proposition that in both TM and SgM of all the retroflexes, the fricatives are the most likely to be pronounced according to the standard (Kubler, 1981; Chin, 1983). TM5 also distinguishes very little between the affricates, with only a large difference between the two fricatives.

SgM1 doesn't differ in energy more than 4dB, where the retroflexes are nearly equal or louder than their dental counterparts. SgM2 also keeps the difference small between the types of consonants except for the case of the fricative where there is a 7 dB difference, once again demonstrating the tendency for the fricative to be the most likely to be pronounced according to the standard. SgM3 provided so little data there is hardly anything that can be said about it, but in the case of the unaspirated affricate we can see that the difference in energy in the minimal pairs looks as though they were pronounced in approximation of the standard, while in the Pear Story, the retroflexes became dentalized. Though the data is not presented here, SgM3 also dentalized the palatal fricative [ɕ] to [s], which is a common occurrence for SgM speakers with a Southern Mǐn background (Chua, 2003).

Of all the variables, the aspirated retroflex affricates and their dental counterparts seemed to show the smallest differences in energy (although they also had fewest tokens), with even our SM model showing only a difference of 1.16dB between the two.

2. Velar *–ing* and *–eng* vs. Dental *–in* and *–en*

Unlike the preceding section, which may have suffered from varying audio quality, analyzing the acoustic properties of the velar nasal finals and their dental counterparts rely on formant frequencies, and therefore should still be reasonably accomplishable. Because the prior research on these variables is robust, it is easy to create a definition to distinguish the velar finals from the dentals. Often enough, the velar finals can be visually identified in the spectrogram by the presence of a "velar pinch" (*Figure 3)*: a shorthand developed to describe F2 and F3 converging on each other as the vowel transitions to the velar nasal consonant (Yang, 2010).

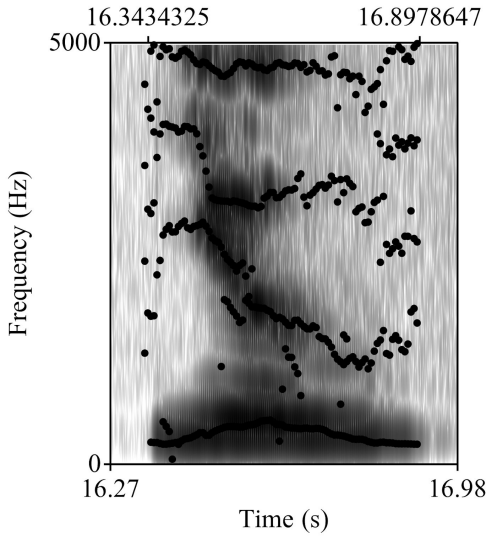

Figure 3. The Velar Pinch (from SM speaker /ying/)

However, other researchers have reported that this feature alone is not enough to distinguish velar and dental nasals (Yang, 2010). Following in the footsteps of the study cited above, I noted that the most reliable method to distinguish velar and nasal finals is by measuring the F3 in the

vowel, which tends to be lower in vowels followed by a velar final, which is illustrated in *Figure 4* (Yang, 2010).

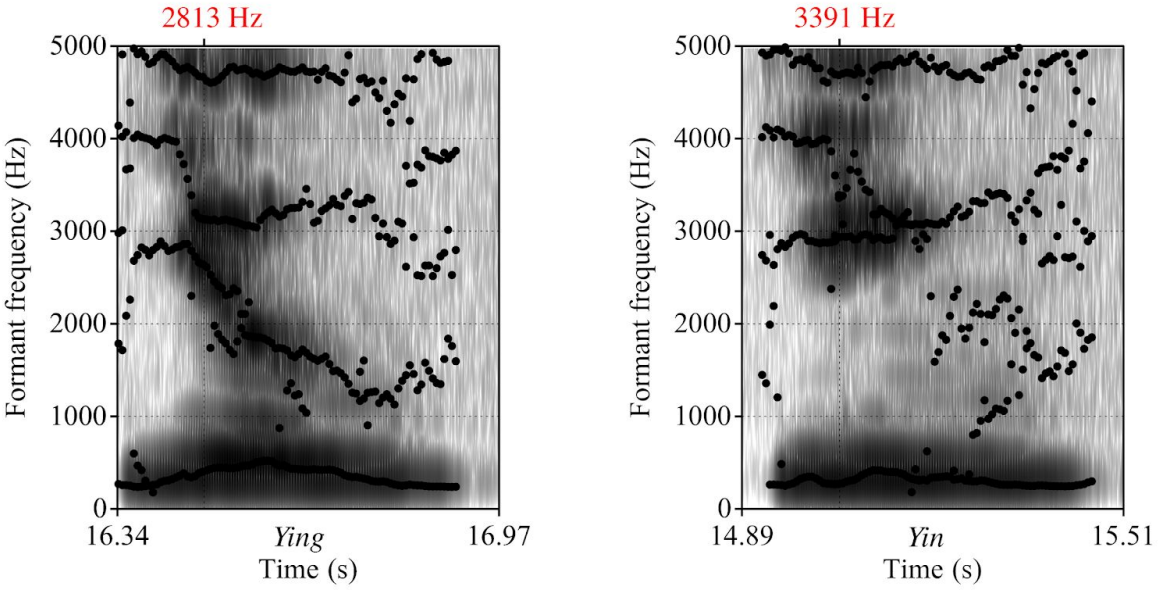

Figure 4. F3 in velar and dental nasal finals (from SM speaker /ying/ and /yin)

Because the fronting of velar finals is an unconscious feature in both TM and SgM (Lock, 1988), the separation between formal and informal results need not be included, as speakers will neglect this distinction regardless of setting. Therefore, tokens were collected from both the minimal pairs and the Pear Story. Using our SM speaker as a model to provide the boundaries between dental and velar, we obtained the following results, which can be found below in *Table 7*.

Speaker	Fronted velars/# Tokens	Backed dentals/# Tokens	% Fronted / % Backed
TM1	9/16	0/13	56.25% / 0%
TM2	6/11	2/11	54.55% / 18.18%
TM3	21/23	0/13	91.30% / 0%
TM4	8/9	0/5	88.89% / 0%
TM5	2/15	2/11	13.33% / 18.18%
SgM1	2/22	2/4	9.09% / 50%
SgM2	47/50	0/39	94% 0 %
SgM3	0/6	4/4	0% / 100%

Table 7. Velar Final Results

Dividing the above results by *–ing* and *–in*, and *–eng* and *–en* we find that the velar final with the more open vowel are more often fronted than its high front vowel counterpart.

Speaker	Fronted velars/# Tokens	Backed dentals/# Tokens	% Fronted / % Backed
TM1	2/8	0/3	25% / 0%
TM2	3/7	0/2	42.86% / 0%
TM3	2/4	0/6	50% / 0%
TM4	2/3	0/1	66.67% / 0%
TM5	2/9	1/2	22.22% / 50%
SgM1	0/6	2/2	0% / 100%
SgM2	26/29	0/11	89.66% / 0%
SgM3	0/2	3/3	0% / 100%

Table 8. –ing and –in Results

Speaker	Fronted velars/# Tokens	Backed dentals/# Tokens	% Fronted / % Backed
TM1	7/8	0/10	87.50% / 0%
TM2	3/4	2/9	75% / 22.22%
TM3	19/19	0/7	100% / 0%
TM4	6/6	0/4	100% / 0%
TM5	0/6	1/9	0% / 11.11%
SgM1	2/16	0/0	12.50% / 0%
SgM2	21/21	0/28	100% / 0%
SgM3	0/4	1/1	0% / 100%

Table 9. –eng and –en Results

In the data for my participants, we don't see any clear preference overall for dentalization over velarization or vice versa. Yang proposed in his study that the selection of a fronted velar final was conditioned by the following sound, i.e. if a consonant or vowel is articulated at the velum or further back in the mouth, then the preceding velar final is more likely to remain velar, and if a consonant or vowel is articulated forward of the velum than it was more likely to be dentalized (2010). For example, one of TM1's two tokens of dentalized *–ing*, *tíng*, occurred ahead of *xià*. *Xià* starts with a palatal fricative, which involves the blade of the tongue pressed against the sides of the teeth, leaving the tip of the tongue near the teeth of the upper articulator. However, contrary to this observation, TM1's first two tokens of *–ing* also preceded consonants articulated ahead of the velum, but retained sufficiently low F3 to be considered velar rather than dental.

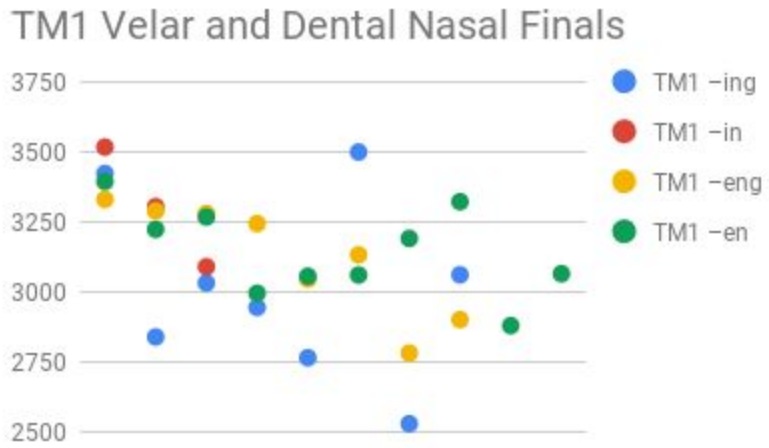

Figure 5. TM1 Velar and Dental Nasal Finals

Considering TM1's *–eng* tokens on the other hand, we find the behavior attested to in the literature. Also, most of TM1's tokens of *–eng* are followed by dental plosives, thus lending credence to Yang's theory regarding the conditioning effects of the sounds following a velar final.

Unlike TM1, TM2 displays perfectly the above rule regarding the following sound.

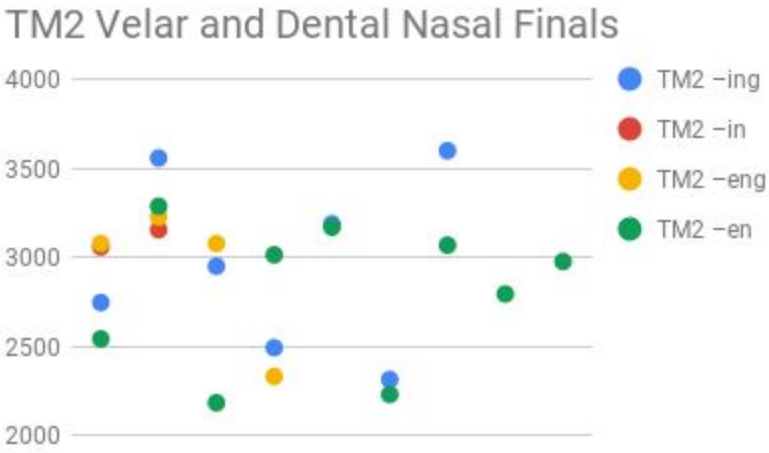

Figure 6. TM2 Velar and Dental Nasal Finals

When TM2 selects a dentalized velar final, it is always followed by a sound articulated ahead of the velum. After sounds articulated at the velum and further back, velar final remains velar. TM2 only produced four tokens of *–eng*, three of which were in the minimal pairs. These three are also the three which were dentalized. Considering that the minimal pairs were designed to elicit the "correct" pronunciation of the variable, it is unclear what could be conditioning the dentalization of these syllables pronounced out of context. TM2's one token of *–eng* within the Pear Story is followed by the aspirated retroflex affricate, but as this sound is forward of the velum it is not clear why it remained velar.

TM3's tokens of *–ing* held to the conditioning rule, but the tokens of *–eng* were all dentalized, even ahead of velar plosives. This pattern of the conditioning effect only applying to *–ing* is also true for TM4. As with TM2, TM3 and TM4's minimal pair tokens of *–eng* were also dentalized.

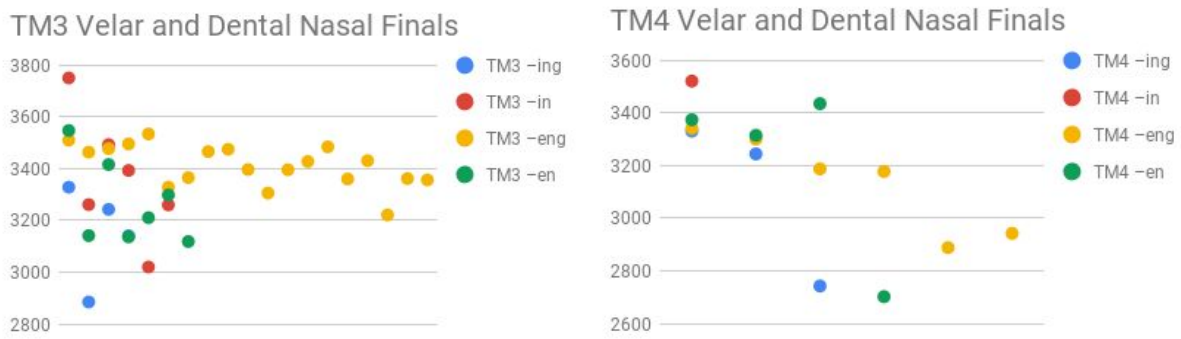

Figure 7. TM3 & 4 Velar and Dental Nasal Finals

With TM5, any resemblance of the behavior described in the literature breaks down. TM5's only two dentalized tokens occur ahead of velar plosives, entirely contradicting the predicted behavior. Furthermore, TM5 exhibits two dental final tokens (one *–in* and one *–en*), which become hyper-corrected and therefore velarized, but once again ahead of syllables that, according to the literature, should elicit dental finals.

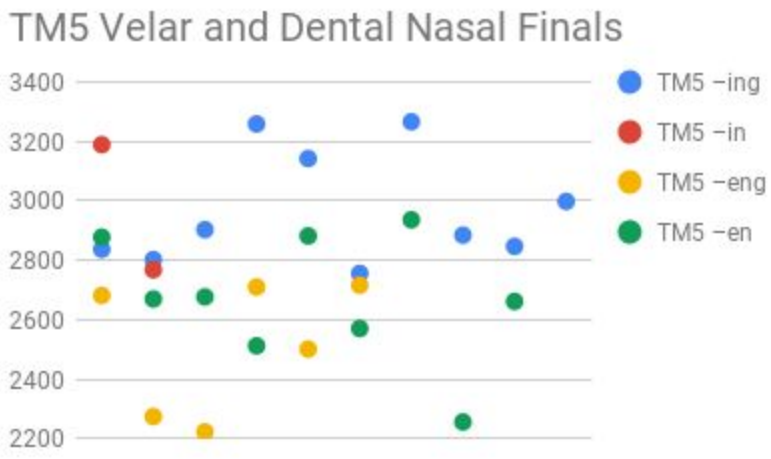

Figure 8. TM5 Velar and Dental Nasal Finals

SgM1 lack of dentalization of velar finals could be fully attributed to the fact that SgM1 never once utters a velar final not followed by a velar plosive or retroflex approximant.

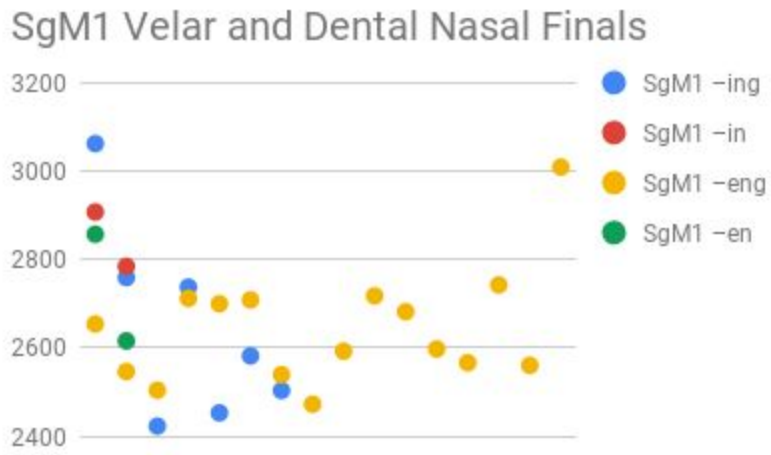

Figure 9. SgM1 Velar and Dental Nasal Finals

With so few utterances of either dental final under investigation, little can be said about the two tokens wherein the dental final is velarized; it could be a case of hyper-correction, but this is unlikely because of the unmarked nature of the variable.

SgM2, once again having provided the largest quantity of data, offers us only two velar finals that did not undergo dentalization.

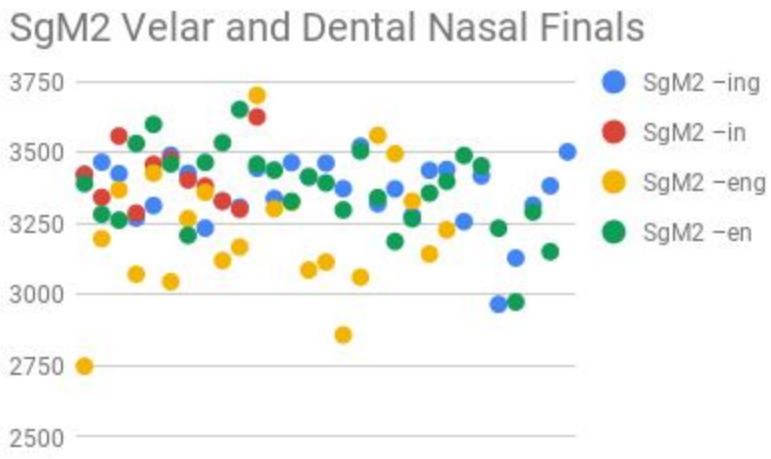

Figure 10. SgM2 Velar and Dental Nasal Finals

These two velar finals occur ahead of palatal sibilants, but it should be further taken into account that SgM2 is stuttering at the time, which may have changed the pronunciation. SgM2 dentalizes the velar finals regardless of whether the following consonant is labial or glottal, both of which can be seen in the transcript in Appendix B. Unlike the other two SgM speakers, SgM2 does not velarize any of the dental finals.

Finally, SgM3 barely gives us any tokens to work with, but pronounces all the dental finals as velar even in the formal setting created by reading minimal pairs.

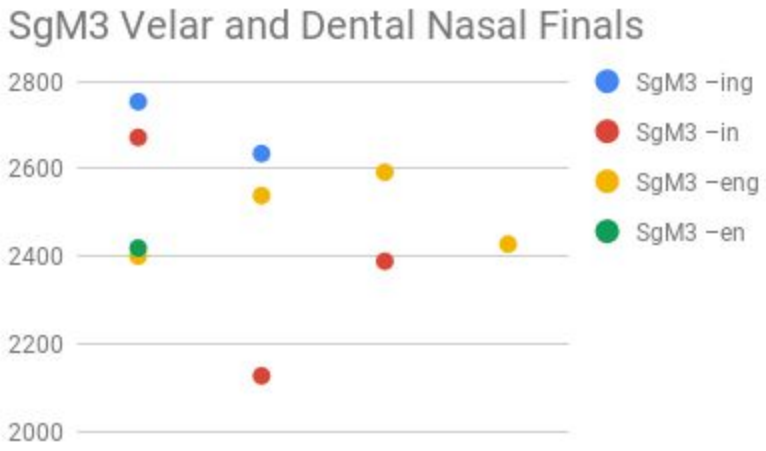

Figure 11. SgM3 Velar and Dental Nasal Finals

Generally, speakers seem to fall into two groups, but surprisingly, they are not divided along lines of regiolect. The first group are those that front the velar finals in half or more of the tokens collected: TM1-4 and SgM2. The remaining speakers, TM5, SgM1 & 3, not only front the velar finals in less than half of the tokens, but generally in less than 20% of the tokens. Furthermore, the two SgM speakers in the group also back their dental finals far more often than the speakers in the first group.

The dividing line between these groups is in fact gender. Stereotypes of how speakers of different genders speak regard women as the group more likely to attempt to approximate the standard language of their region (Meyerhoff, 2011). However, do to the sociolinguistic setting in both islands, it is unclear which standard women will be more likely to approximate. The language attitudes of TM and SgM speakers in prior studies suggest that attempting to approximate too closely the Běijīng accent will result in sounding "put-on" (Baran, 2007; Chin, 1983; Kubler, 1981; Lock, 1988). Given the age of this language attitudes data, a new assessment may better capture what is considered "correct" or "standard" pronunciation

according to locals on both of these islands. The stance in Singapore may have changed considerably when considering that immigrants from Mainland China now make up a large proportion of the Chinese speaking community in Singapore (Lim, 2015). It is also challenging to say how such attitude changes may affect a variable of which speakers are not consciously aware. Despite this speculation, the most likely reason for this difference will be addressed below in the discussion section.

Obviously, as we can see from *Tables 8* and *9* we must take any results with a considerably large grain of salt; it seems some speakers choose to use one variable much more than another, so a great deal more intraspeaker data would be needed to consider any of these results representative of even that speaker's tendencies.

3. Velar *–eng* Preceded by a Labial Consonant

Mentioned in the literature alongside the fronting of velar nasals, is the blocking of this fronting by a labial initial in front of the *–eng* final in TM (Chin, 1983; Kubler, 1981; Yang, 2010). In this case, the [ɛ] or [ə] will back and round to [o] (Yang, 2010). Acoustically, this would be easily registered as a lowering of F2 associated with a back vowel and lowering of F3 associated with rounding. However, amongst all the tokens of *–eng*, only one token was sufficiently lowered and rounded. TM1 provided this token in the minimal pair designed to capture this variable: the labial initial blocked the fronting and resulted in a rounded back instead of the unrounded front vowel.

4. Rounded *–ü* vs. Unrounded *–i*

As presented above there is a tendency for in TM and SgM for the high front vowel [y] to become unrounded and resemble [i] (Chua, 2003; Duanmu, 2007). Although this feature is frequently commented on in studies of both varieties, none go very far into the environments that facilitate this variation. One author simply explains "that the vowel [y] is rarely found in most of Southern Chinese coastal dialect[s], except Cantonese" (Chua, 2003). While this information helps us understand why this unrounding may occur generally, it does nothing to explain whether speakers consciously choose to unround the high front vowel, the markedness of the variable, and how to predict its behavior. What we do know from the literature is that these vowels occur after the palatal sibilants, *n–*, and the zero initial (Baran, 2007; Chua, 2003; Duanmu, 2007). That said, the number of tokens of *–ü* that were unrounded compared to those that weren't is quite low as seen in *Table 10*.

Speaker	unrounded tokens of –ü/total tokens	% Unrounded tokens
TM1	0/11	0%
TM2	0/8	0%
TM3	0/8	0%
TM4	1/9	11%
TM5	0/8	0%
SgM1	3/6	50%
SgM2	7/21	33.33%
SgM3	0/6	0%

Table 10. Unrounded tokens of –ü

Amongst the TM speakers only one token of unrounded *–ü* was found. A few more were found in the speech of two of the three SgM speakers, which begs the question of why not the third? The literature regarding this variable in TM is far more robust than for SgM, but in these TM speakers, the variable appears virtually non-existent. Figures 12 through 20 display the relationship between each speakers' realizations of *–i* and *–ü*.

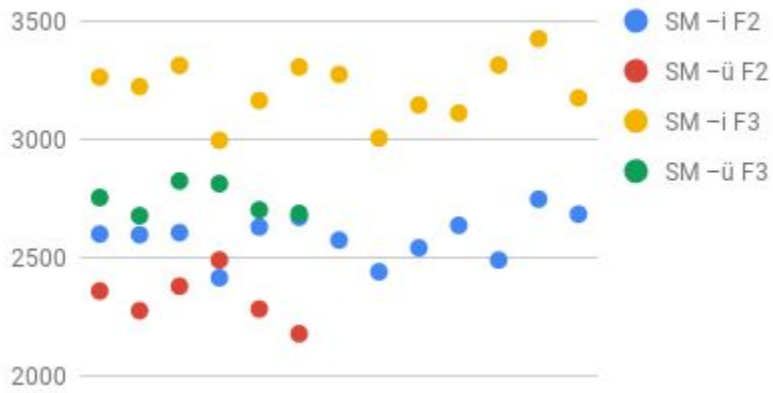

Figure 12. SM Post Palatal High Front Vowels

Of course our SM model shows no crossover between the two variables with the F3 being much higher than the rounded high front vowel.

TM1 follows our SM model and keeps the F3 of *–ü* below 3000 Hz. Two of the tokens of *–i* appear with a slightly lower F3, nothing approaching the level of *–ü.*

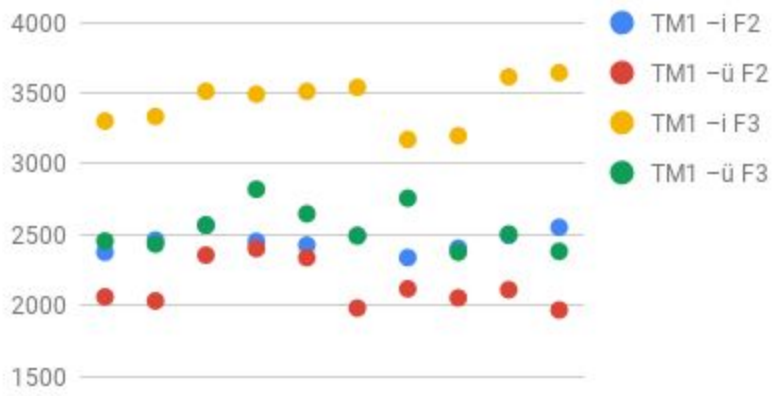

Figure 13. TM1 Post Palatal High Front Vowels

However, looking at TM2, we see a different picture. Rather than seeing any of the tokens of *–ü* rising to the level of *–i*, there are five tokens drifting towards an F3 that would indicate the rounded high front vowel instead.

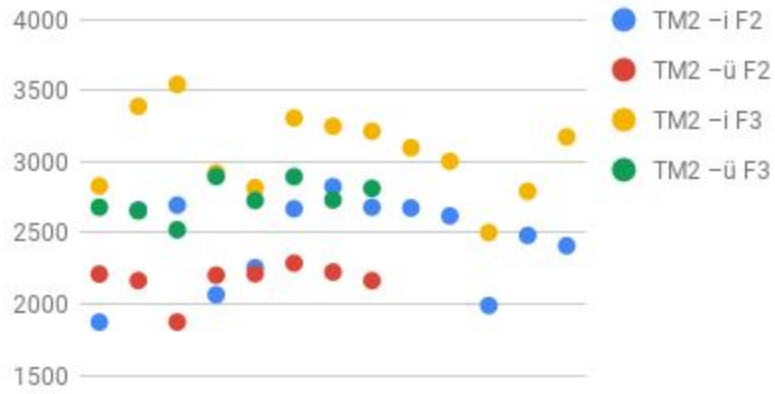

Figure 14. TM2 Post Palatal High Front Vowels

While this is uncommon, at least one author noted that this variation could occur moving in either direction (Baran, 2003). Whether this is a case of hypercorrection is unclear, because, as mentioned above, none of the prior literature reviewed mentions the sociolinguistic salience of this variable

TM3, like TM1, maintains the clean separation between these two vowels, though at a much higher frequency than our SM speaker or TM1.

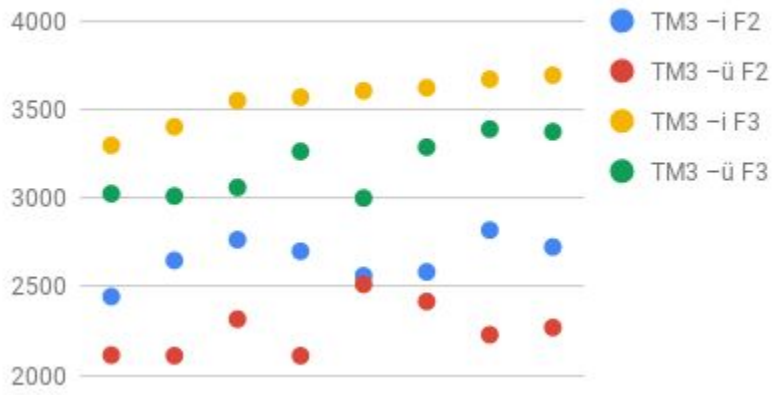

Figure 15. TM3 Post Palatal High Front Vowels

TM4, also mostly maintains this pattern, but for several tokens of *–i* having lowered F3, perhaps on the way to becoming rounded, and one token of *–ü* rising and entering the F3 range for unrounded high front vowel.

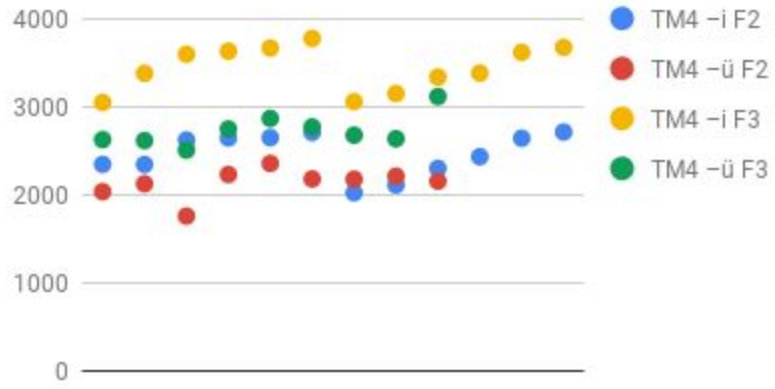

Figure 16. TM4 Post Palatal High Front Vowels

TM5 also has a less clear divide between *–i* and *–ü*. Given that the range within which the tokens of *–ü* fall, it seems as if there also exists the tendency to round some of the unrounded vowels,

rather than the un-rounding of the rounded vowels that the literature describes. There are at least two tokens of *–i* that descend to the level of a rounded high front vowel.

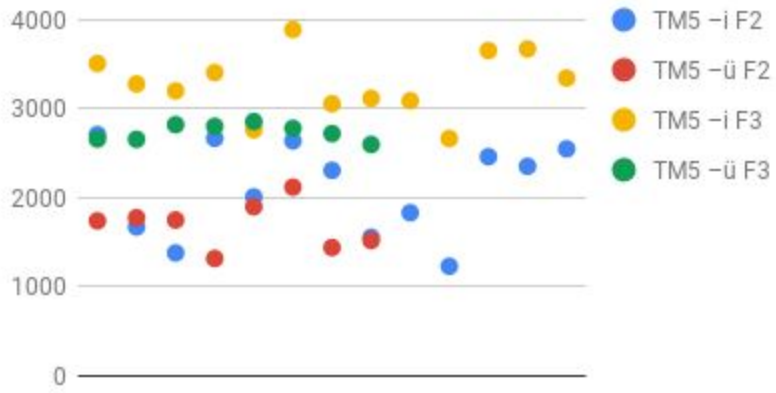

Figure 17. TM5 Post Palatal High Front Vowels

With most of our SgM speaking group, we see a very muddy picture. The F3 range covered by SgM1 tokens of *–i* overlaps quite a bit with the range covered by the tokens of *–ü.*

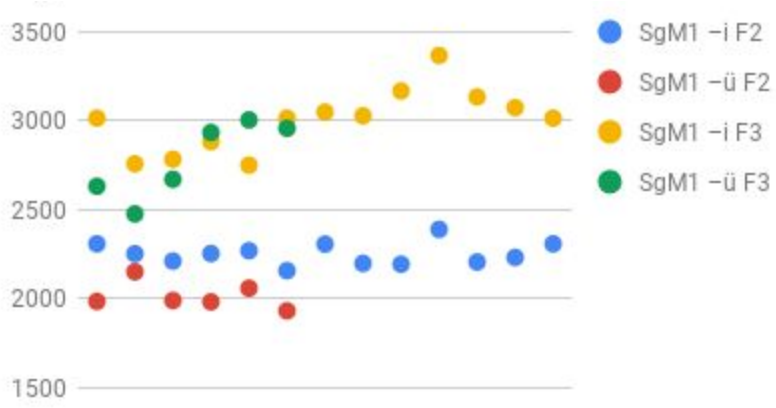

Figure 18. SgM1 Post Palatal High Front Vowels

The same can be said for SgM2. In both speakers we see tokens of both high front vowels that are rounded and unrounded. When comparing these speakers to the rest of our participants, SgM1 also speaks a Wú dialect, Shanghainese, and SgM2 speaks another Mandarin dialect from Dàlián. Both of these varieties of Chinese maintain the distinction between rounded and

unrounded high front vowels, so their overlapping F3 values is entirely counter to the idea that a speaker's language background will influence how the non-standard features of a particular variety are expressed (You, 2015). This idea is further broken down when we see that the language background of our other six participants belong to Southern Mǐn and Hakka languages, in which there is no rounded high front vowel (Chua, 2003).

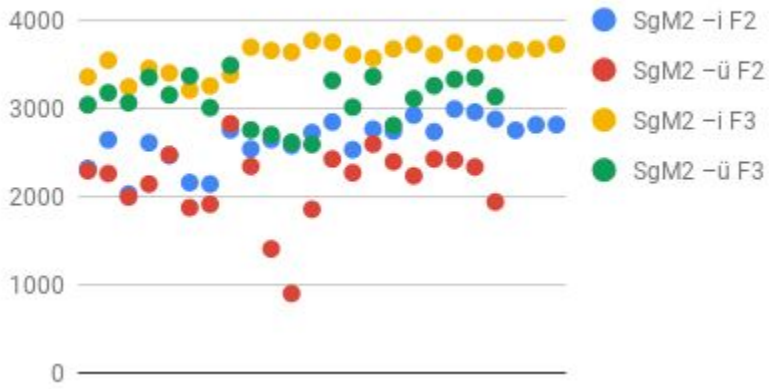

Figure 19. SgM2 Post Palatal High Front Vowels

With SgM3, who's language background is Fúzhōu dialect, we see a return to the norms dictated by the Běijīng standard.

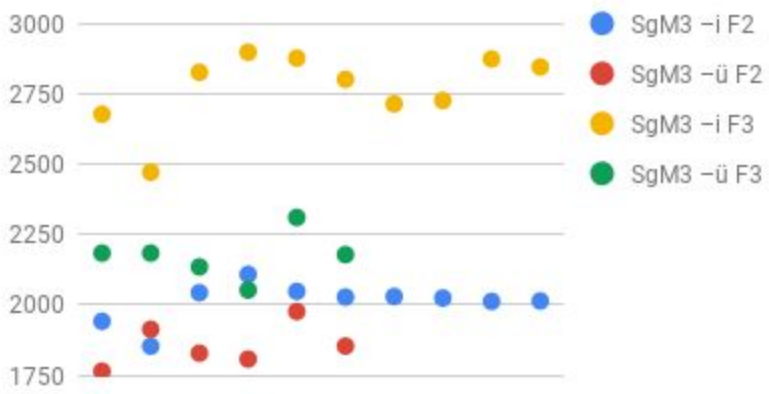

Figure 20. SgM3 Post Palatal High Front Vowels

5. Singapore Mandarin Fifth Tone

The minimal pairs used as fillers between the other target variables coincidentally served a second function: to probe the continued existence of the SgM fifth tone (SgM T5). Below in *Table 10* are the meager tokens that exhibit SgM T5-like behavior: what would otherwise be cited in the dictionary as T1, T2, or T3 is takes on the characteristics of a falling tone, with the possibility of a final glottal stop in open syllables. Of all of the tones T1 is supposedly the most susceptible to a T5 reading (Chua, 2003). The data below in *Table 11* doesn't support this claim, but it is admittedly a tiny sample.

Speaker	Syllable	Character Pīnyīn	Linguistic Pīnyīn	Minimal Pairs or Pear Story?	Final Glottal Stop? Y/N
SgM1	绩 骑 筐	jī qí kuāng	jì qì kuàng	MP PS PS	N N N
SgM2	匹 别 蜂 平 稳 来 撒	pǐ bié fēng píng wěn lái sā	pì biè fèng pìng wèn lài sà	MP PS PS PS PS PS PS	N N N N N N N
SgM3	实 频	shí pín	shì pìn	MP PS	N N

Table 11. Singapore Mandarin Fifth Tone

It could be argued that the two T3 syllables in this list may in fact be abbreviated 211 T3, however this author found them to be sufficiently short that they had more of the T4 falling tone quality that SgM T5 exhibits.

It was noted in prior studies that of all the places SgM T5 was likely to occur, it was actually more likely to appear in formal settings or reading tasks than in informal speech (Chua, 2003; Lock, 1988). My sample size is not sufficient to say whether this remains true one way or another.

Discussion

In the introduction of this thesis, this researcher proposed that based on an acoustic analysis of phonological variables in TM and SgM, the two would not differ, and that the phonological features are not what distinguish these varieties. This is based on the what this researcher considers to be similar sociolinguistic settings, whereby SM (based on Běijīng Mandarin) is imposed upon a population that mostly speaks Hokkien, Hakka, and Cantonese. Though both varieties of Mandarin have many features in common, this study chose to focus on four variables, three of which are shared across the two varieties, and one exclusively present in SgM: 1) the dentalization of the retroflex sibilants, 2) the dentalization of velar nasals with the optional blocking by labial consonants, 3) the unrounding of high front vowel *–ü*, and 4) the existence of a fifth tone in SgM. While the low number of participants disallows for meaningful claims about TM and SgM, I will now review how well the methodology was able to capture the variables under investigation.

The principle advantage of conducting a survey online is that the researcher need not be physically present in order to collect data, thus expediting the collection process. However, without being able to offer participants compensation, or being able to guide participants' participation directly, I found there was little incentive to actually complete the survey. In the

future, to address this problem, I strongly recommend making funds available to offer participants monetary payment: not so low that participants don't take the research seriously, and not so high that participants might feel incentivized to produce results that reinforce whatever they imagine you intend to study.

Without such an incentive it's not only possible that participants will be difficult to find, but also may not take the survey seriously. Because the filler minimal pairs were identical syllables, and there were a large number of pairs (34) participants may have thought that each half of the pair being identical constituted the pattern and subsequently became inattentive during the minimal pairs task. This is especially troublesome because according to the literature, the target minimal pairs may merge and level in both of the varieties under investigation, making it impossible to determine whether a target minimal pair was pronounced identically because the speaker spoke one of the two varieties, or because they just had stopped paying attention.

Another challenge in finding participants occurred while trying to find speakers of SgM. Unlike sociolinguistic settings in other nations, Singapore's unique mix of people means that simply asking for Singaporean speakers of Mandarin, does not result in one obtaining SgM speakers. SgM2 was conflicted about her participation in the survey because she was born in Dàlián in mainland China and moved with her family to Singapore at the age of six. She claimed the ability to speak both Dàliánese and SgM and said that she code switched between the two depending on the social context. Given the fact that a large proportion of Singapore's Chinese speaking community now comes from Mainland China and speaks SM, the challenge of finding authentic SgM speakers grows all the more difficult. With all these factors at play, what

constitutes SgM must be changing rapidly, but as far as this thesis is concerned, the SgM speakers displayed at least some of the phonological variation attested to as far back as 1988.

In considering further weaknesses of the methodology, asking participants to use the recording software provided on their mobile smart phones created problems with the quality of recording, as well as different levels of background noise, different distances between the speaker and microphone, etc. There are some obvious solutions to this problem, e.g. using the same devices, and space to record participants, keeping them similarly distant or proximate to the microphone, but this would limit the ability to disseminate the survey online. Although slightly more involved, another approach would be to ask participants for the make and model of their smartphones in the survey and for participants to use their devices at a precise distance from their mouths. Furnished with this information, one could then record white noise on each model of phone and then perform a fourier analysis on the recordings to obtain a baseline with which to compare the audio.

Another weakness comes from the lack of SM data with which to compare TM and SgM. Having a larger number of SM speakers would better reinforce the dB range and F3 frequency in which "standard" retroflexes and velar finals will fall. A larger sample size from every type of speaker may create the ability to find a better average dB range for SM, TM and SgM. This will also solve the problematic observations found regarding the velar finals.

The obvious weakness evident in the analysis of the velar finals, was the lack of male SM speakers with which to compare. This resulted in the division along the lines of gender. This author's lack of consideration for the different dimensions of vocal tract between male and female vocal tracts created the division more than the data itself. The infinitesimally few data

points provided by male participants that showed no fronted velars, and significantly more backed dentals is most likely a result of the lack of attention paid to this difference. Having a larger pool of SM speakers from both sexes would easily solve this problem.

Regarding the means to capture SgM T5 better, the survey could benefit from more reading tasks, so that more potential tokens of T5 could be captured. As it stands, most of the tokens of T5 elicited were in the section of the survey designed to elicit informal speech, but as mentioned above, T5 is more likely to occur in readings tasks than in informal speech (Chua, 2003; Lock, 1988).

Finally, as a solution to all problems, one could combine the acoustic data with articulatory judgements provided by a panel of native speakers from each group. Yang reinforced his acoustic findings on velar nasals' dentalization by also presenting his data to a panel of native speakers, and asking them to write down what they had heard (2010). This would make determinations regarding all the finals examined in this thesis much clearer. By employing multiple methodologies, articulatory judgements and acoustic data can combine to create a full picture of the state of a variable.

Conclusion

At the inception of this thesis, I noted two different islands which have developed two varieties of Mandarin that I judged according to my non-native ear to be similar sounding. Though Táiwān's history with China began much earlier than Singapore's, both islands developed first thriving populations of Southern Mǐn speakers and Cantonese speakers before an authoritarian regime imposed restrictions on the language that could be employed on these islands while

promoting a standard to which no one could immediately conform. In both islands, though Mandarin was promoted with much gusto, the quality of the teaching provided to enforce this new standard tongue was not sufficient to lead new learners of the language to speak it without marked features that would distinguish them from Mainland Mandarin speakers. This in turn evolved into a local variety of the language in both locations that both populations identified with, perhaps even to the extent of choosing to reject the standard upon which the language they were taught was based. Though the features that distinguish these varieties from Běijīng Mandarin or Standard Mandarin range across all the areas of study within linguistics, this thesis chose to focus solely on the phonological features.

The most marked feature of TM and SgM attested to in the literature is the retroflex sibilants tendency to become post-alveolar, alveolar, or dental consonants. It is suggested that this is due to the fact that Southern Mǐn and Cantonese dialects don't include retroflex sounds. Unfortunately, due to improper recording methodology, and too few samples of SM retroflexes, I was unable to provide any thorough comparison between the two varieties. The errors in the data revealed where the methodology I employed was not sufficient.

Though not a variable speakers consciously choose to employ, the next most often cited variable is the merger of the velar nasal finals with their counterparts. Similarly, the data in this section suffered from too few samples that could be considered standard, which created what appeared to be two different sets of behaviors for the nasal final mergers divided along lines of gender. However, this is simply a matter of the physical differences between men and women and should not be regarded as significant.

In analyzing the rounded high front vowel, which tends to become unrounded, it seemed that the feature only remained in the speech of the speakers least likely to display it: those who also spoke other varieties of Chinese wherein [y] is in the phonological repertoire. While at the same time, those speakers who also spoke varieties of Chinese with no [y], clearly made the distinction in all but one case. This suggests that at least for these six speakers, the rounded high front vowel becoming unrounded is no longer a marked feature of TM or SgM. On the other hand, the data showed several speakers rounding their unrounded high front vowels, which is the opposite of the behavior for this variable described in the literature. Because I only used acoustic data and no articulatory judgements from native speakers, it was challenging to decide whether a token belonged to the unrounded variable or rounded variable.

The last phonological feature investigated here was the existence of SgM T5. Though at least one example of SgM T5 was found in all three SgM speaking participants, the findings are not robust enough to make a claim regarding the status of SgM T5 in these three speakers speech. Supposedly SgM T5 is most likely to occur in a reading task, as it grew out a Hokkien reading pronunciation of wényán. Although the minimal pairs task in the survey gave these speakers 27 opportunities to provide SgM T5 tokens, each speaker only pronounced one half of one minimal pair with a falling tone rather than the citation tone. All the other tokens of SgM T5 were found in the informal speech of the Pear Story.

Had this researcher had the time and a larger sample size, the intention was then to use the update on the status of these phonological variables in TM and SgM to then study language attitudes. Because these varieties' histories are so intimately tied to the politics on these islands, studying the language attitudes of these groups would provide fascinating insight into the

political climate in Southeast Asia. I would propose using a matched guise methodology isolating the phonological variables that these two varieties have in common to first discover what TM speakers think about SgM speakers and vice versa. My prediction would be that if a sufficiently neutral text was read displaying only the phonological features the two varieties have in common, the results amongst the two groups would be quite different: the TM group would more likely find the speaker perfectly acceptable, while the SgM group might be more conflicted in how they rate the speaker.

Ultimately, the defects in the methodology outweighed any expediency it may have afforded. However, even if this research did not result in testing what I wanted to learn, it is just as important to know that it doesn't adequately test these variables. My own failings can still expand the frontiers of human knowledge just by helping future researchers avoid using this precise methodology. If this thesis has proven anything, it's that there are no shortcuts in science.

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Appendix A: Participants Sociolinguistic Information

Participant	Age	Sex	Other Languages Spoken	City of Birth/City of Current Residence
SM1	27	F	Mandarin, Nanchangese	Nanchang, China/Leiden, Netherlands
TM1	42	F	Taiwanese, English	Kaohsiung, Taiwan/New York City, USA
TM2	35	F	Hakka	Hsinchu, Taiwan/Berlin, Germany
TM3	25	F	Taiwanese	Changhua, Taiwan/Hsinchu, Taiwan
TM4	25	F	Taiwanese	New Taipei, Taiwan/Hsinchu, Taiwan

TM5	26	M	Taiwanese, English, Japanese	Tainan, Taiwan/Hsinchu, Taiwan
SgM1	28	M	Shanghainese	Singapore/The Hague, Netherlands
SgM2	21	F	Dalianese, Standard Mandarin, English, French	Dalian, China/Singapore
SgM3	35	M	Fuzhounese	Singapore/Singapore

Appendix B: Pear Story Transcripts

These transcriptions are provided in characters and character pīnyīn. After my initial transcription, they were edited by my SM native speaker and represent their phonological judgements of the acoustic data. Without the native SM judgements provided in these transcriptions, some of the utterances of the TM and SgM speakers would have remained ambiguous and therefore useless to analysis.

SM

这个视频的内容是一个人在树上摘梨

然后把所有的梨装进三个篓子里

但是突然出现了一个骑着自行车的小男孩偷走了一筐梨

在骑车离开的时候为了躲避迎面而来的另外三个小孩儿撞上了地面的大石头摔了一跤

筐里的梨全部都散落一地

三个小孩帮他把梨重新装好

又帮他把掉在地上的草帽捡了回来 为了感谢他们小男孩送了几个梨给他们

当摘梨的人从树上下来发现少了一筐

而此时正好遇上那三个手中拿着梨的小孩路过

Zhège shìpín de nèiróng shì yīgè rén zài shù shàng zhāi lí

ránhòu bǎ suǒyǒu de lí zhuāng jìn sān gè lǒuzi lǐ

dànshì túrán chūxiànle yīgè qízhe zìxíngchē de xiǎo nánhái tōu zǒule yī kuāng lí

zài qí chē líkāi de shíhòu wèile duǒbì yíngmiàn ér lái de lìngwài sān gè xiǎohái'ér zhuàng shàngle dìmiàn de dà shítou shuāile yī jiāo

kuāng lǐ de lí quánbù dōu sànluò yī dì

sān gè xiǎohái bāng tā bǎ lí chóngxīn zhuāng hǎo

yòu bāng tā bǎ diào zài dìshàng de cǎomào jiǎnle huílái wèile gǎnxiè tāmen xiǎo nánhái sòngle jǐ gè lí gěi tāmen

dāng zhāi lí de rén cóng shù shàng xiàlái fāxiàn shǎole yī kuāng

ér cǐ shí zhènghǎo yù shàng nà sān gè shǒu zhōng názhe lí de xiǎo hái lùguò

TW1

這個影片是在講說一大清早有一位農夫在樹上採收梨枝

然後就有一位農夫牽著一隻驢子經過了這棵樹下

不久之後有一位小男孩騎的腳踏車從另外一頭過來

小男孩看到樹下有兩三桶的梨子

變起的偷竊之心

所以那趁著農夫在樹上採收的時候小男孩就把其中的一通梨子給載走了

不久之後小男孩看到一位女小女生就不小心撞到的這位女生的肩膀所以自己就摔了一地的

所以這個梨子也都散了到處都是

旁邊有剛好有三位小朋友看到了他 所以就過來幫忙把三了一地的梨子給撿了回來也把腳踏車給扶了起來

那不久之後他們就各走各的路

這三位小男孩就發現那個騎腳踏車的小男孩忘了他的帽子

所以就吹口哨叫小男孩停下來過去還了他這個帽子

小男孩就感謝他們的幫忙 所以就給了這三位三顆梨子

以表示感謝之恩

所以就各走各的這三個人也就自己往前走

就不久就看到了這位農夫在採收梨子的農夫

農夫剛好那就從樹上爬了下來就莫名其妙發現自己的一桶的梨子不見了那也很納悶說這三位小朋友為什麼在吃著他們的梨子

那就應該是懷疑是不是這三位小男生偷的呢還是其他的人偷了

Zhège yǐngpiàn shì zài jiǎng shuō yī dà qīngzǎo yǒuyī wèi nóngfū zài shù shàng cǎi shōu lízhī

ránhòu jiù yǒuyī wèi nóngfū qiānzhe yī zhī lǘzi jīngguòle zhè kē shùxià

bùjiǔ zhīhòu yǒuyī wèi xiǎo nánhái qí de jiǎotàchē cóng lìngwài yītóu guòlái

xiǎo nánhái kàn dào shùxià yǒu liǎng sān tǒng de lízi

biàn qǐ de tōuqiè zhī xīn

suǒyǐ nà chènzhe nóngfū zài shù shàng cǎi shōu de shíhòu xiǎo nánhái jiù bǎ qízhōng de yītòng lízi gěi zài zǒule

bùjiǔ zhīhòu xiǎo nánhái kàn dào yī wèi nǚ xiǎo nǚshēng jiù bù xiǎoxīn zhuàng dào de zhè wèi nǚshēng de jiānbǎng suǒyǐ zìjǐ jiù shuāile yī dì de

suǒyǐ zhège lízi yě dū sànle dàochù dōu shì

páng biān yǒu gānghǎo yǒusān wèi xiǎopéngyǒu kàn dàole tā suǒyǐ jiù guòlái bāngmáng bǎ sānle yī dì de lízi gěi jiǎnle huílái yě bǎ jiǎotàchē gěi fúle qǐlái

nà bùjiǔ zhīhòu tāmen jiù gè zǒu gè de lù

zhè sān wèi xiǎo nánhái jiù fāxiàn nàgè qí jiǎotàchē de xiǎo nánhái wàngle tā de màozi

suǒyǐ jiù chuī kǒushào jiào xiǎo nánhái tíng xiàlái guòqù háile tā zhège màozi

xiǎo nánhái jiù gǎnxiè tāmen de bāngmáng suǒyǐ jiù gěile zhè sān wèi sān kē lízi

yǐ biǎoshì gǎnxiè zhī ēn

suǒyǐ jiù gè zǒu gè de zhè sān gèrén yě jiù zìjǐ wǎng qián zǒu

jiù bùjiǔ jiù kàn dàole zhè wèi nóngfū zài cǎi shōu lízi de nóngfū

nóngfū gānghǎo nà jiù cóng shù shàng pále xiàlái jiù mòmíngqímiào fāxiàn zìjǐ de yī tǒng de lízi bùjiànle

nà yě hěn nàmèn shuō zhè sān wèi xiǎopéngyǒu wèishéme zài chīzhe tāmen de lízi

nà jiù yīnggāi shì huáiyí shì bùshì zhè sān wèi xiǎo nánshēng tōu de ne háishì qítā de rén tōule

TW2

影片中有一個果農他爬上樹而他摘了很多梨子

他摘了很多梨

在他摘梨的時候有一個人牽著一頭驢走過去

接著有一個孩子騎著自行車或是腳踏車來了

他要把一籮筐的梨載到別的地方去

他載著梨騎著腳踏車騎著騎著因為路上有很多小石子不太好騎

所以他就摔倒了

那他摔倒的時候剛好那個時候有三個孩子在那玩

他們幫助他把梨子撿起來

撿好了以後他們都要離開那兒

他們走著相反的方向

那牽著自行車的孩子忘了他的帽子

所以呢這三個孩子當中有一個孩子就對著他吹口哨的提醒他他忘了他的帽子

然後呢這三個孩子當中有個孩子就把帽子拿給他撐著自行車的孩子送給他們三個梨

好

影片的內容大概是這樣

Yǐngpiàn zhōng yǒuyīgè guǒnóng tā pá shàng shù ér tā zhāile hěnduō lízi

tā zhāile hěnduō lí

zài tā zhāi lí de shíhòu yǒu yīgèrén qiānzhe yītóu lǘ zǒu guòqù

jiēzhe yǒu yīgè háizi qízhe zìxíngchē huò shì jiǎotàchē láile

tā yào bǎ yī luókuāng de lí zài dào bié dì dìfāng qù

tā zàizhe lí qízhe jiǎotàchē qízhe qízhe yīnwèi lùshàng yǒu hěnduō xiǎo shízǐ bù tài hǎo qí

suǒyǐ tā jiù shuāi dǎo le

nà tā shuāi dǎo de shíhòu gānghǎo nàgè shíhòu yǒusān gè háizi zài nà wán

tāmen bāngzhù tā bǎ lízi jiǎn qǐlái

jiǎn hǎole yǐhòu tāmen dōu yào líkāi nà'er

tāmen zǒuzhe xiāngfǎn de fāngxiàng

nà qiānzhe zìxíngchē de háizi wàngle tā de màozi

suǒyǐ ne zhè sān gè háizi dāngzhōng yǒu yī gè háizi jiù duìzhe tā chuī kǒushào de tíxǐng tā tā wàngle tā de màozi

ránhòu ne zhè sān gè háizi dāngzhōng yǒu gè háizi jiù bǎ màozi ná gěi tā chēngzhe zìxíngchē de háizi

sòng gěi tāmen sān gè lí

hǎo

yǐngpiàn de nèiróng dàgài shì zhèyàng

TW3

有一個小男生他在騎腳踏車的時候經過一棵梨子樹然後梨子樹上面有人摘梨子

然後小男生就偷了其中一籃梨子把它放在腳踏車上面

然後他離開了之後在路上遇到一個小女生然後因為他轉頭看小女生一眼就他的帽子被風吹走

然後因為他轉頭的時候腳踏車撞到地上的石頭所以腳踏車就倒了所以那一籃梨子也掉到地上

然後旁邊有三個小男生看到這個小男生跌倒最後面就過來幫他把梨子撿起來然後把腳踏車扶起來

把籃子放回腳踏車上面

然後這時候因為剛好摘梨子的人他從樹上下來

然後就看到

他發現少了一籃梨子

然後正覺得

就想到為什麼不見了

然後看到這三個小男孩一人拿著一個梨子在吃

但是他可能也覺得很奇怪

因為他弄丟的是一整籃的梨子而不是三顆

所以他只是看著他們經過

也沒有上去問是不是他們偷了梨子

Yǒu yīgè xiǎo nánshēng tā zài qí jiǎotàchē de shíhòu jīngguò yī kē lí zǐ shù ránhòu lí zǐ shù shàngmiàn

yǒurén zhāi lízi

ránhòu xiǎo nánshēng jiù tōule qízhōng yī lán lízi bǎ tā fàng zài jiǎotàchē shàngmiàn

ránhòu tā lí kāi liǎo zhīhòu zài lùshàng yù dào yīgè xiǎo nǚshēng ránhòu yīnwèi tā zhuǎn tóu kàn xiǎo nǚshēng yīyǎn jiù tā de màozi bèi fēngchuī zǒu

ránhòu yīnwèi tā zhuǎn tóu de shíhòu jiǎotàchē zhuàng dào dìshàng de shítou suǒyǐ jiǎotàchē jiù dàole suǒyǐ nà yī lán lízi yě diào dào dìshàng

ránhòu pángbiān yǒusān gè xiǎo nánshēng kàn dào zhège xiǎo nánshēng diédǎo zuìhòu miàn jiù guòlái bāng tā bǎ lízi jiǎn qǐlái ránhòu bǎ jiǎotàchē fú qǐlái bǎ lánzi fàng huí jiǎotàchē shàngmiàn

ránhòu zhè shíhòu yīnwèi gānghǎo zhāi lízi de rén tā cóng shù shàng xiàlái

ránhòu jiù kàn dào

tā fāxiàn shǎole yī lán lízi

ránhòu zhèng juédé

jiù xiǎngdào wèishéme bùjiànle

ránhòu kàn dào zhè sān gè xiǎo nánhái yīrén názhe yīgè lízi zài chī

dànshì tā kěnéng yě juédé hěn qíguài

yīnwèi tā nòng diū de shì yī zhěng lán de lízi ér bùshì sān kē

suǒyǐ tā zhǐshì kànzhe tāmen jīngguò

yě méiyǒu shàngqù wèn shì bùshì tāmen tōule lízi

TW4

有一個採水果的農夫不停的採水果採水果採水果

在採水果的過程中有一個人牽著一隻很雖小的羊走過來

在水果的籃子旁邊繞了一圈就走了不知道要幹嘛

然後農夫又繼續採水果菜水果菜水果這時候有一個小男孩騎的腳踏車過來趕走???了他一籃水果

然後他騎著腳踏車溜走的時候遇到了一個美麗的小女孩 他為了看妹子

撞到了石頭然後跌倒了後來有一群小朋友就幫他把水果撿起來

然後把他扶起來後來 小朋友經過了採水果農夫旁邊 農夫剛好走了下來看到自己的水果被幹???走也不知道該怎麼辦

Yǒuyīgè cǎi shuǐguǒ de nóngfū bù tíng de cǎi shuǐguǒ cǎi shuǐguǒ cǎi shuǐguǒ

zài cǎi shuǐguǒ de guòchéng zhōng yǒu yīgèrén qiānzhe yī zhī hěn suī xiǎo de yáng zǒu guòlái

zài shuǐguǒ de lánzi pángbiān ràole yī quān jiù zǒu liǎo bù zhīdào yào gàn ma

ránhòu nóngfū yòu jìxù cǎi shuǐguǒ cài shuǐguǒ cài shuǐguǒ zhè shíhòu yǒu yīgè xiǎo nánhái qí de

jiǎotàchē guòlái gǎn zǒu??? Le tā yī lán shuǐguǒ

ránhòu tā qízhe jiǎotàchē liū zǒu de shíhòu yù dàole yī gè měilì de xiǎo nǚhái tā wèile kàn mèizi

zhuàng dàole shítou ránhòu diédǎole hòulái yǒu yīqún xiǎopéngyǒu jiù bāng tā bǎ shuǐguǒ jiǎn qǐlái

ránhòu bǎ tā fú qǐlái hòulái xiǎopéngyǒu jīngguòle cǎi shuǐguǒ nóngfū pángbiān nóngfū gānghǎo zǒule

xiàlái kàn dào zìjǐ de shuǐguǒ bèi gàn??? Zǒu yě bù zhīdào gāi zěnme bàn

TW5

在影片的開始是一個男人在採水果然後後來有另外一個男人牽著一頭羊經過但那個採水果男人好像沒有發現他

到影片中間的時候是一個小孩子騎腳踏車經過然後他趁著那個採水果的人沒發現的時候把一籃水果

偷走

然後他腳踏車騎著騎著就遇到一個女生 他和女生擦身而過的時候帽子就跟著飛走了

在那個時候他一不小心就整個跌倒了 水果也撒了一地 後來是有路邊的三個小孩子幫忙他把水果撿回那個籃子裡然後幫他把腳踏車扶起來

後來那三個小孩就走了但在半路上撿到原本那個偷水果的小男孩的帽子所以其中的小孩把帽子拿回去給那個小男孩那個小男孩給了他三個水果當做回報

後來那三個小孩各拿著一顆水果經過那個果農旁邊可是那時候那果農已經發現他的有一籃水果不見了然後他也同時看到這三個小孩手上各拿著一個水果經過影片就到這邊結束

Zài yǐngpiàn de kāishǐ shì yīgè nánrén zài cǎi shuǐguǒ ránhòu hòulái yǒu lìngwài yīgè nánrén qiānzhe yītóu yáng jīngguò dàn nàgè cǎi shuǐguǒ nánrén hǎoxiàng méiyǒu fāxiàn tā

dào yǐngpiàn zhōngjiān de shíhòu shì yīgè xiǎoháizi qí jiǎotàchē jīngguò ránhòu tā chènzhe nàgè cǎi shuǐguǒ de rén méi fāxiàn de shíhòu bǎ yī lán shuǐguǒ

tōu zǒu

ránhòu tā jiǎotàchē qízhe qízhe jiù yù dào yīgè nǚshēng tā hé nǚshēng cā shēn érguò de shíhòu màozi jiù gēnzhe fēi zǒule

zài nàgè shíhòu tā yī bù xiǎoxīn jiù zhěnggè diédǎole shuǐguǒ yě sāle yī dì hòulái shì yǒu lù biān de sān gè xiǎoháizi bāngmáng tā bǎ shuǐguǒ jiǎn huí nàgè lánzi lǐ ránhòu bāng tā bǎ jiǎotàchē fú qǐlái

hòulái nà sān gè xiǎohái jiù zǒule dàn zài bàn lùshàng jiǎn dào yuánběn nàgè tōu shuǐguǒ de xiǎo nánhái de màozi

suǒyǐ qízhōng de xiǎohái bǎ màozi ná huíqù gěi nàgè xiǎo nánhái nàgè xiǎo nánhái gěile tā sān gè shuǐguǒ dàngzuò huíbào

hòulái nà sān gè xiǎo hái gè názhe yī kē shuǐguǒ

jīngguò nà gè guǒnóng pángbiān kěshì nà shíhòu nà guǒnóng yǐjīng fāxiàn tā de yǒuyī lán shuǐguǒ bù jiàn liǎo ránhòu tā yě tóngshí kàn dào zhè sān gè xiǎo hái shǒu shàng gè názhe yīgè shuǐguǒ jīngguò yǐngpiàn jiù dào zhè biān jiéshù

SgM1

所以我看到一个男人在树上摘生梨然后 后面有。。。经过一个男人拿一头羊走过树

然后有一个小朋友骑自行车经过树看到下面有三筐生梨吧应该是

然后看到那个男人在树上摘生梨然后他偷走了一筐生梨可是在骑车的路上他摔跤了然后生梨翻到了地上

有小朋友经过就帮他一起拿起生梨然后他还送给他一个草帽吧应该是然后送给他们些生梨作为礼物然后那些小朋友拿着生梨走过树的时候那个男人以为是他们偷走了生梨因为他发现原来有三筐生梨现在只有两筐 The end

Suǒyǐ wǒ kàn dào yīgè nánrén zài shù shàng zhāi shēng lí ránhòu hòumiàn yǒu... Jīngguò yīgè nánrén ná yī tóuyáng zǒuguò shù

ránhòu yǒu yīgè xiǎopéngyǒu qí zìxíngchē jīngguò shù kàn dào xiàmiàn yǒusān kuāng shēng lí ba yīnggāi shì

ránhòu kàn dào nàgè nánrén zài shù shàng zhāi shēng lí ránhòu tā tōu zǒule yī kuāng shēng lí kěshì zài qí chē de lùshàng tā shuāi jiāo liǎo ránhòu shēng lí fān dàole dìshàng

yǒu xiǎopéngyǒu jīngguò jiù bāng tā yīqǐ ná qǐ shēng lí ránhòu tā hái sòng gěi tā yīgè cǎomào ba yīnggāi shì ránhòu sòng gěi tāmen xiē shēng lí zuòwéi lǐwù ránhòu nàxiē xiǎopéngyǒu názhe shēng lí zǒuguò shù de shíhòu nàgè nánrén yǐwéi shì tāmen tōu zǒule shēng lí yīnwèi tā fāxiàn yuánlái yǒusān kuāng shēng lí xiàn zài zhǐyǒu liǎng kuāng The end

SgM2

好现在来描述采集采梨的视频

首先我们看到有一名身穿蓝色工作服和白色围裙的农夫正爬到梨树上去采梨

这名农夫的白色围裙很特别因为在他那个前面有一个很大的口袋可以装很多梨但是同时又确保他能够用双手保持平衡

这个农夫他会把采采采够一定树量的梨支之后就会爬下树然后把梨都抖到他在树下摆着的三个大筐子里

这时有一名男子拽着一头羊走过 我不知道这头羊和接下来的故事发展有什么关系我只是觉得这头羊的叫声像一只蜜蜂

然后有一名骑着脚踏车的男孩从镜头穿过并且在三筐梨前停下

看他的举动是本来只想偷一只梨过来吃但是最后又转念将一整筐梨都给扛走了

我起初看到这一幕的时候我们觉得没有想过这个男孩是在偷但是又觉得他的表现太过镇定所以我最后还以为这个男孩是农夫的儿子是过来帮他爸爸去

采梨的一个一一个懂事的儿子而且他们穿着穿着还很相似都是戴着草帽然后脖子上围着红色围巾所以很像父子装 我所以我才以为他是儿子但是他那在后面的时候才发现不是

好所以这个男孩骑着脚踏车然后前面放着一大筐梨走了可是因为那一筐梨很重然后路也不是很平所以他开的不是很稳这时迎面而来有一名女生骑着脚踏车就过来了

那个男生就转身转头看着女生然后没有看到前面路上有一块大石头就跌倒了梨也撒了一地

我们把这个偷梨的男生叫小明 因为因为因为之后会有很多男生出现所以我不想弄混所以小明跌倒了然后他偷的梨撒了一地

但是旁边有三三个小男孩在玩耍他们看到了小明跌倒的状况就过来帮他时他自行车起来然后帮他去把梨都给捡起来放在筐梨然后再把筐抬到自行车上

之后这个小明好像他也没有道谢他就直接走了他就推着自行车走了 其中一名玩耍的男生就是玩那个乒乓球拍的男生也就是那个穿着一身男衣服的男生发现小明没有拿

落在地落在路上的帽子所以就拿着帽子吹了一口口哨追了过去把帽子还给小明小明就别来表示感谢给三个人一人一只梨

三个人拿着梨很开心的就走了最后镜头转回那个农夫他爬下树一看也有一筐梨不见了这时那三个手 那三个男孩手里各持一只梨而且很开心的走过来

而那个农夫只是瞪着瞪大眼睛在看着他们 我觉得这个农夫应该是在以为是这三个小男孩偷走了他的梨所以我不知道之后会怎么样好了我的描述结束了拜拜

Hǎo xiànzài lái miáoshù cǎijí cǎi lí de shìpín

shǒuxiān wǒmen kàn dào yǒuyī míng shēn chuān lán sè gōngzuòfú hé báisè wéiqún de nóngfū zhèng pá dào lí shù shàngqù cǎi lí

zhè míng nóngfū de báisè wéiqún hěn tèbié yīnwèi zài tā nàgè qiánmiàn yǒuyīgè hěn dà de kǒudài kěyǐ zhuāng hěnduō lí dànshì tóngshí yòu quèbǎo tā nénggòu yòng shuāngshǒu bǎochí pínghéng

zhège nóngfū tā huì bǎ cǎi cǎi cǎi gòu yīdìng shù liàng de lí zhī zhīhòu jiù huì pá xià shù ránhòu bǎ lí dōu dǒu dào tā zài shù xiàbǎizhe de sān gè dà kuāngzi lǐ

zhè shí yǒuyī míng nánzǐ zhuāizhe yī tóuyáng zǒuguò wǒ bù zhīdào zhè tóuyáng hé jiē xiàlái de gùshì fāzhǎn yǒu shé me guānxì wǒ zhǐshì juédé zhè tóuyáng de jiào shēng xiàng yī zhǐ mìfēng

ránhòu yǒuyī míng qízhe jiǎotàchē de nánhái cóng jìngtóu chuānguò bìngqiě zài sān kuāng lí qián tíng xià kàn tā de jǔdòng shì běnlái zhǐ xiǎng tōu yī zhǐ lí guòlái chī dànshì zuìhòu yòu zhuǎnniàn jiāng yī zhěng kuāng lí dōu gěi káng zǒule

wǒ qǐchū kàn dào zhè yīmù de shíhòu wǒ juédé méiyǒu xiǎngguò zhège nánhái shì zài tōu dànshì yòu juédé tā de biǎoxiàn tàiguò zhèndìng suǒyǐ wǒ zuìhòu hái yǐwéi zhège nánhái shì nóngfū de érzi shì guòlái bāng tā bàba qù

cǎi lí de yīgè yīyī gè dǒngshì de érzi érqiě tāmen chuānzhuó chuānzhuó hái hěn xiāngsì dōu shì dàizhe cǎomào ránhòu bózi shàng wéizhe hóngsè wéijīn suǒyǐ hěn xiàng fùzǐ zhuāng wǒ suǒyǐ wǒ cái yǐwéi tā shì érzi dànshì tā nà zài hòumiàn de shíhòu cái fāxiàn bùshì

hǎo suǒyǐ zhège nánhái qízhe jiǎotàchē ránhòu qiánmiàn fàngzhe yī dà kuāng lí zǒule kěshì yīnwèi nà yī kuāng lí hěn zhòng ránhòu lù yě bùshì hěn píng suǒyǐ tā kāi de bùshì hěn wěn zhè shí yíngmiàn ér lái yǒu yī míng nǚshēng qízhe jiǎotàchē jiù guòláile

nàgè nánshēng jiù zhuǎnshēn zhuǎn tóu kànzhe nǚshēng ránhòu méiyǒu kàn dào qiánmiàn lùshàng yǒu

yīkuài dà shítou jiù diédǎole lí yě sāle yī dì

wǒmen bǎ zhège tōu lí de nánshēng jiào xiǎomíng yīn wéi yīn wéi yīn wéi zhīhòu huì yǒu hěnduō nánshēng chūxiàn suǒyǐ wǒ bùxiǎng nòng hùn suǒyǐ xiǎomíng diédǎole ránhòu tā tōu de lí sāle yī dì dànshì pángbiān yǒu sānsān gè xiǎo nánhái zài wánshuǎ tāmen kàn dàole xiǎomíng dié dǎo de zhuàngkuàng jiù guòlái bāng tā shí tā zìxíngchē qǐlái ránhòu bāng tā qù bǎ lí dōu gěi jiǎn qǐlái fàng zài kuāng lí ránhòu zài bǎ kuāng tái dào zìxíngchē shàng

zhīhòu zhège xiǎomíng hǎoxiàng tā yě méiyǒu dàoxiè tā jiù zhíjiē zǒule tā jiù tuīzhe zìxíngchē zǒule qízhōng yī míng wánshuǎ de nánshēng jiùshì wán nàgè pīngpāng qiúpāi de nánshēng yě jiùshì nàgè chuānzhuó yīshēn nán yīfú de nánshēng fāxiàn xiǎomíng méi yǒu ná

luò zài dì luò zài lùshàng de màozi suǒyǐ jiù názhe màozi chuīle yīkǒu kǒushào zhuīle guòqù bǎ mào zǐ huán gěi xiǎomíng xiǎomíng jiù bié lái biǎoshì gǎnxiè gěi sān gèrén yīrén yī zhǐ lí

sān gèrén názhe lí hěn kāixīn de jiù zǒule zuìhòu jìngtóu zhuàn huí nàgè nóngfū tā pá xià shù yī kàn yěyǒu yī kuāng lí bùjiànle zhè shí nà sān gè shǒu nà sān gè nánhái shǒu lǐ gè chí yī zhǐ lí érqiě hěn kāixīn de zǒu guòlái

ér nàgè nóngfū zhǐshì dèngzhe dèng dà yǎnjīng zài kànzhe tāmen wǒ juédé zhège nóngfū yīnggāi shì zài yǐwéi shì zhè sān gè xiǎo nánhái tōu zǒule tā de lí suǒyǐ wǒ bù zhīdào zhīhòu huì zěnme yàng hǎole wǒ de miáoshù jiéshùle bàibài

SgM3

在视频中看到一个农夫在摘梨子

然后一个小男孩骑着脚踏车经过然后偷拿的一篮一篮的梨子就骑走了

在路上他撞到了一块石头便跌倒了

然后就一帮小朋友就帮他把梨子都装起来放进篮子里还给他

就这样

Zài shìpín zhòng kàn dào yīgè nóngfū zài zhāi lízi

ránhòu yīgè xiǎo nánhái qízhe jiǎotàchē jīngguò ránhòu tōu ná de yī lán yī lán de lízi jiù qí zǒule

zài lùshàng tā zhuàng dàole yīkuài shítou biàn diédǎole

ránhòu jiù yī bāng xiǎopéngyǒu jiù bāng tā bǎ lízi dōu zhuāng qǐlái fàng jìn lánzi lǐ hái gěi tā

jiù zhèyàng