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Intergenerational Phonetic Variation in Malaysian Mandarin: A Case Study of the Fuzhou Chinese Community

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Abstract: This study investigates the intergenerational phonetic pattern of Malaysian Mandarin spoken by the Fuzhou community in Sibu, focusing on the acoustic space of Experimental Phonetics. The analysis of 846 syllables produced by six speakers revealed that: (1) the vowel pattern exhibits the creaky voice, frequently accompanied by tone breaks, exhibiting significant differences from Beijing Mandarin; (2) the consonant pattern shows near-complete mergers in the three pairs "z/ts/-zh/ʈʂ/", "c/tsʰ/-ch/ʈʂʰ/", and "s/s/-x/ɕ/", featured the regionally characteristic voiced glottal fricative /ɦ/; (3) Male speakers are less likely to have a creaky voice than female speakers, and the vowel system is more concentrated. The findings indicate that the phonetic patterns of the fourth-generation is more closely aligned with standard Mandarin. In contrast, the third-generation has regional characteristics under the influence of Foochow dialect, and these regional features have remained stable through intergenerational transmission. The paper can provide an empirical basis for exploring the regional characteristics of Global Chinese, and can further reveal the role of mandarin education in phonetic variation in a multilingual environment.

Keywords: Experimental Phonetics, Malaysian Mandarin, Intergenerational Phonetic Pattern, Chinese Language Education, Global Chinese.

1. Introduction

Language serves as the medium for social practice and cultural dissemination. In the context of globalization and localization, the overseas dissemination of Chinese culture is an important way to observe the development of language and society. Malaysia is a multilingual country and its language ecosystem has been preserved relatively intact, which is a good place for studying different forms of Chinese language.

The Malaysian Chinese community is the second largest ethnic group in the country, with a population of approximately 7.62 million [1]. The Malaysian Chinese community is characterized by multilingualism and multiculturalism, resulting in a highly complex linguistic landscape. The main traditional Chinese dialects in this region include Hokkien, Cantonese, Fuzhou dialect and Teochew dialect. These dialect variants from different regions of southeastern China coexist with Malay, English, and Mandarin. The existence of a diverse linguistic environment has been demonstrated to engender conditions conducive to the occurrence of generational speech variation within this community.

This study was conducted in Sibu, Sarawak, Malaysia, a city widely known as "New Fuzhou" because of its large Fuzhou Chinese community, to investigate the acoustic characteristics of Malaysian Mandarin across generations. By comparing these with Standard Mandarin, it explores the development and changes in the vowels and consonants of Malaysian Mandarin. Such cross-generational research based on regional characteristics helps to reveal the process of change in Malaysian Mandarin within a context of language contact, as well as its phonetic features.

1.1. The Past Research on Chinese Language in Malaysia

Existing studies on Chinese language in Malaysia include overseas Chinese dialects and Chinese Mandarin variants [2]. Chinese dialects is a post-migration localized variants that subsequently crystallized into distinct forms, including Kuala Lumpur Cantonese, Labuan Hokkien, and East Malaysian Hokkien, as a result of concentrated settlement patterns. In terms of its loanword features, the /f/ sound in Malaysian Hokkien and Teochew, in conjunction with the seven borrowed rhyme categories in Kuala Lumpur Cantonese, manifest characteristics of foreign vocabulary, as observed by Chen (2003)[3]. Tone patterns is similar to those dialects used in China, exhibiting systematic tonal characteristics and continuous tone-sandhi rules [4].

Previous descriptions of Malaysian Chinese have generally been descriptive. Previous studies have provided extensive accounts of grammatical variation and lexical mixing in Malaysian Mandarin [5, 6, 7, 8, 9], but only several researchers have offered an analysis of Mandarin phonetic variation, and these have primarily offered explanations for phonetic quality, phonemic features, and tonal patterns from a language contact perspective [10, 11, 12]. Qian et al. (2023) have demonstrated that the Mandarin Chinese language has been adapted by its speakers in Malaysia to form a distinct variety referred to as 'Malaysian Mandarin' [13]. These linguistic variants constitute significant manifestations of regional characteristics within the global spectrum of Mandarin Chinese.

Zhang (2006) argues that accent is in itself a marker and, in certain contexts, can even serve as a signifier of group identity [14]. Such accented variants tend to avoid being directly associated with any specific geographical region or particular identity. Malaysia is distinguished by its relatively stable Chinese community and distinctive linguistic accents, which offer unique academic value and ideal conditions for the study of global Chinese variants [15, 16].

1.2. The City of "New Fuzhou" and its Accents

The city of Sibu, also called "New Fuzhou", is the third largest city in Sarawak, East Malaysia. Fuzhou dialect is the most widely spoken Chinese dialect in Sibu, while other Min Eastern dialects, such as Minqing and Gutian, are also widely spoken throughout Sibu.

Contact between Standard Mandarin, Fuzhou dialect, and Malay in this multilingual society has resulted in a spectrum of non-standard varieties blending elements of these three languages in varying phonetics, vocabulary, and grammar [17, 18, 19]. Fuzhou-accented Mandarin is characterized by perceptual and articulatory differences between Min dialect consonants and Mandarin consonants, while largely closing the tone patterns of Standard Mandarin. For example, some Malaysian Chinese are not perceptually sensitive to the distinction of /tʂ/ and /ts/, /tʂʰ/ and /tsʰ/, /ɕ/ and /s/ in Mandarin. In contrast, Malay-accented Mandarin retains the relatively flat intonation pattern of Malay, while exhibiting a more compact vowel space, partial voicing of consonants, and substantially weakened lexical tone contrasts.

Sibu's distinctive identity as a 'New Fuzhou', its stable Chinese community and its position at the forefront of multilingual contact create the perfect conditions for observing linguistic evolution. These factors provide ideal conditions for studying regional characteristics of the Chinese language and generational shifts in pronunciation.

1.3. Research Questions

The primary objective of this study is to update the phonetic system of Malaysian Mandarin through phonetic-acoustic analysis. A few prior studies have reported the distinctive intonation of Malaysian Chinese [12, 13], but these were either based on impressionistic descriptions or identity-based analyses [20].

Research into the interaction between dialects and Mandarin should focus not only on the micro-description of language itself and the explanation of its mechanisms, but also on its social interaction aspects [21, 22]. Building on existing research, this study focuses on the Fuzhou community in Sibu, analyzing phonetic data from six ethnic Chinese individuals in to examine the interaction and mutual influence between the Fuzhou dialect and Mandarin. The second objective of this study is to explore the underlying mechanisms behind the formation of intergenerational phonetic patterns.

Specifically, the present study addresses the following specific questions:

(1)What phonetic differences in vowels, consonants, and other speech features distinguish Malaysian Mandarin from Standard Mandarin?

(2)How do the phonetic characteristics of vowels, consonants, and other speech features in Malaysian Mandarin vary across age or generational groups and between male and female speakers?

2. Methods

This study is based on Experimental Phonetic, citation tone data in Malaysian Chinese was elicited from the Chinese community in Sibu, who represent ideal sources of Malaysian Mandarin due to their stable Fuzhou dialect community and frequent use of Mandarin for communication.

2.1. Materials

The materials for Malaysian Mandarin recordings contain 31 monosyllabic characters and 25 sets of disyllabic words. The Participants uttered each character consecutively three times and each group of words consecutively twice, yielding a total of 3×31×6=558 experimental characters and 2×24×6=288 experimental word groups. Most Test words used in this study were monosyllabic words of CV structures. The initial consonants were fricatives, Affricate or zero, that is /f s ʂ ɕ x ts tsʰ tʂ tʂʰ tɕ tɕʰ ø/ (here ø indicates zero onset). These sets of Mandarin syllables were selected because (1) In routine Mandarin teaching and communication, the pronunciation of certain words exhibits marked differences in auditory perception; (2) they are high-frequency words in Chinese textbook and daily life; and (3) their syllable structures are relatively simple–these syllables are either vowel only or consist of a CV structure.

2.2. Participants

According to Chen (2006), the recruitment of Mandarin-speaking speakers in Malaysia endeavored to meet the following criteria [23]: (1)The defining characteristic of first-generation Chinese individuals is not their age; rather, it is that they were born in China and acquired their mother tongue before emigrating; (2)Generational differences constitute a direct factor influencing the pronunciation of speakers

Six adults contributed to the elicitation of Malaysian Mandarin Voice Experiment (three females and three males; four third-generation Chinese and two fourth-generation Chinese). Their demographic profiles are presented, see Table 1 . All participants were local Chinese residents of Sibu and were recruited through existing social networks. All six pronunciation participants were born in Sibu Fuzhou community, though differing generations resulted in variations in occupation and current residence.

Table 1. Demographic profile of Malaysia Mandarin participants

ID	Gender	Generation	Age	Ancestral Hometown	Current Residence	Job
1	Female	Third	28	Fujian Province, China	Sibu	Administrative Staff
2	Female	Fourth	19	Fujian Province, China	Kuala Lumpur	Student
3	Female	Third	29	Fujian Province, China	Sibu	Company
4	Male	Third	31	Fujian Province, China	Sibu	Company
5	Male	Third	45	Fujian Province, China	Kuala Lumpur	Company
6	Male	Fourth	20	Fujian Province, China	Sibu	Student

2.3. Acoustic Measurement

The annotation of each WAV file and the extraction of formant and duration measurements were performed on Praat version 6.4.25 (Boersma&Weenink, 2024), at a sampling rate of 44.1 kHz and a resolution of 16 bits. The audio recordings

were made using a laptop and an external lapel microphone. The recording sessions were conducted in the office of the Confucius Institute or at the participants' residences.

2.3.1. Analyzing Vowel

This article will use the Praat to obtain the F0 of the eight vowels in Mandarin. Based on the research methods of Agnès (1994) and Shi (2002), research in this field has long focused on standard Mandarin and local dialects, covering factors such as systematic internal variations and overall distribution [24, 25].

2.3.2. Analyzing Fricatives and Affricates

Fricatives are consonants produced by the friction of air flowing through a narrow gap. The following five voiceless fricatives are distinguished in Mandarin Chinese: The following letters are to be considered: /f/, /s/, /ʂ/, /ɕ/, and /x/. Building on earlier research by Svantesson (1986) and Ran (2008), this study uses Mini SpeechLab to calculate the spectral centre of gravity and dispersion of fricatives, thereby mapping the acoustic space of fricative pronunciation across different generational groups of speakers [26, 27].

Affricates represent an important category of obstruents and play a significant role in phonetic differences within the framework of East Asian linguistics. However, within the Chinese community in Malaysia, there exists a regional characteristic where different affricates sound extremely similar in terms of their auditory perception, such as /ts/ and /tʂ/, /tsʰ/ and /tʂʰ/. The paper employs the research methods of Mays (2008) and Li&Gu (2015), calculating the Duration Index (DI) and the Friction Index (FI), to map the acoustic features of affricates among speakers [28, 29, 30].

3. Results

To systematically examine generational and gender variations in the vowel and fricative patterns of Malaysian Mandarin, phonetic samples from diverse speakers were collected and plotted into pattern diagrams. These charts and distinctive sounds will subsequently be compared with corresponding patterns in Fuzhou dialect and standard Mandarin, thereby analyzing their commonalities and differences.

3.1. Vowel

The vowel system of Mandarin includes six primary vowels and two apical vowels (/ɿ/ and /ʅ/). These eight monophthongs are shown on the chart in Figure 1. This paper further plots acoustic vowel diagrams using formant frequencies measured by Praat, with the first formant F1 plotted on the y-axis and the second formant F2 on the x-axis. Following the conventional representation of vowel quadrilaterals, the axes were oriented to approximate the articulatory vowel space.

3.1.1. Gender Differences

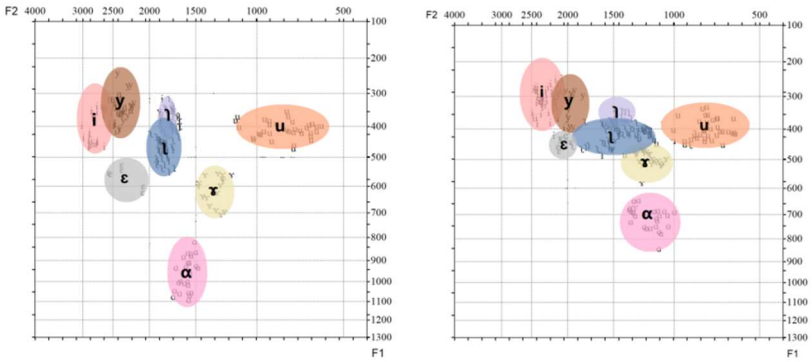


Figure 1. Comparison of female (left) and male (right) vowel patterns.

This figure displays vowel patterns for eight vowels produced by female and male speakers. The average formant peaks for each vowel in this paper are labelled with the corresponding IPA symbol in larger font. The following eight monophthongs were analyzed: /i/, /y/, /u/, /ɑ/, /ɛ/, /ɤ/, /ɿ/, /ʅ/. Overall, the primary vowel patterns in Malaysian Mandarin phonetics are broadly analogous to those in Mandarin Chinese, with the relative positions of the high vowels /i/, /u/, and /ɑ/ remaining largely stable. It is worth noting that, compared with Standard Mandarin, there is a significant overlap in the acoustic profiles of the front alveolar vowel /ɿ/ and the back alveolar vowel /ʅ/. This pattern is closely associated with the articulation of affricates, as discussed in Section 3.2.

There are systematic differences between female and male speakers. Generally speaking, female speakers exhibit more dispersed vowel positions, whereas male speakers display more concentrated and compact vowel positions. Tongue height correlates closely with F1, while tongue length correlates closely with F2. The vowel /i/ occupies a high and front position within the vowel space. Compared to Standard Mandarin, we observe that the high front vowel /y/ in female speakers occasionally exceeds the height of /i/. In addition, the vowel /ɤ/ in Standard Mandarin exhibits considerable variability in its acoustic distribution, whereas such variability is much less pronounced in Malaysian Mandarin.

3.1.2. Generational Differences

The vowel patterns across different generations of female speakers can be summarized as follows, see Figure 2: (1) The third generation exhibits greater free vowel characteristics for the high vowel /u/, with the second formant (F2) value approaching 1200 Hz. (2) The fourth generation displays a relatively low first formant (F1) value for the high vowel /y/, approximately 210 Hz.

Male speakers can be summarized as follows: (1) The acoustic vowel plots for fourth-generation Chinese speakers are more compact, exhibiting higher cohesion with clearer boundaries between vowels. (2) /u/ displays strong isolation, with some values approaching the tip-front vowel /ɿ/. (3) The low vowel /ɑ/ has a smaller F2 value of approximately 1000 Hz, indicating a more posterior tongue position during /a/ articulation.

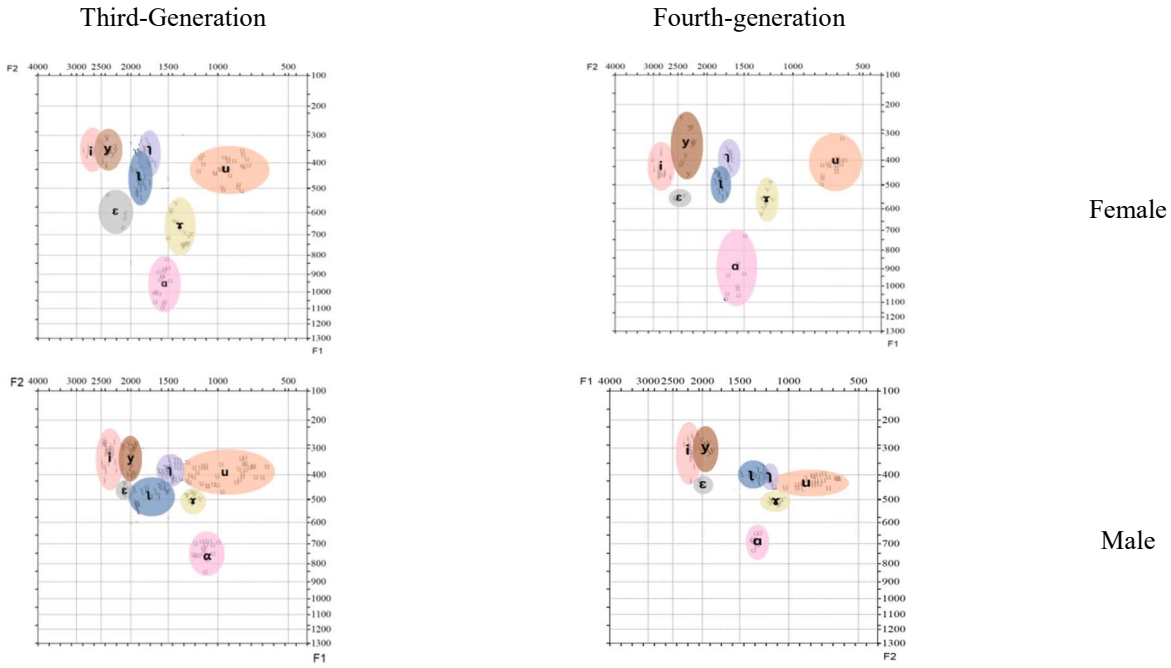


Figure 2. Vowel acoustic space of third- and fourth-generation speakers of Malaysian Mandarin

We have noticed that the phenomenon of creaky voice can be produced by female speakers, particularly among third-generation speakers. Their vowel distribution resembles that of Fuzhou dialect, especially with the first formant (F1) value of the low vowel /ɑ/ being notably high, exceeding 1100 Hz. As posited by Shi (2010, p.114), Fuzhou dialect is characterized by a broad vowel distribution, spanning both high and mid positions, as well as low positions, but it is observed to be uneven across these categories [31]. Among certain Chinese speakers, vowels predominantly manifest as creaky voice. This phenomenon occurs in low vowel environments and is highly correlated with the third and fourth tones [24, 32]. The optimal way quantifying the creaky voice is to measure the spectral tilt i.e. the amplitude differences between H2 (the second harmonic) and H1 (the first harmonic or fundamental frequency) or between fundamental frequency and the harmonic the more intense in the first formant. For tense vowels, spectral tilt is typically steeper and more positive than for ordinary vowels. To examine these differences, measurements were taken at the onset, midpoint, and offset of each vowel.

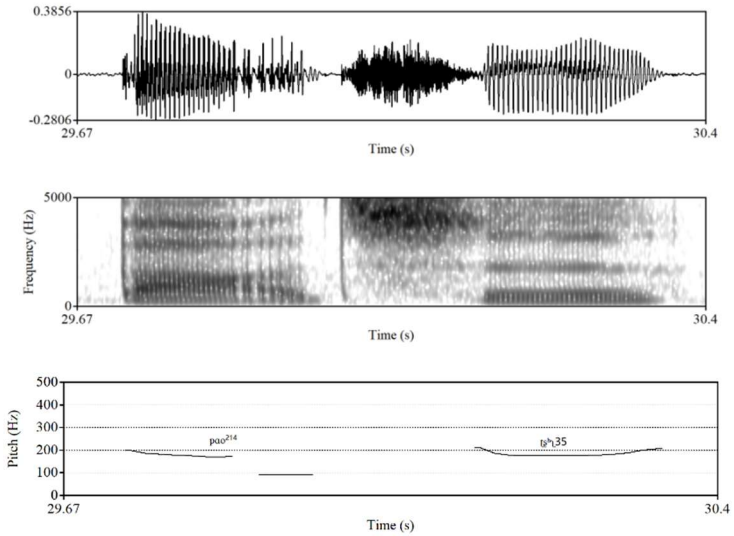


Figure 3. oscillogram, spectrogram and F0 curve of the word [pɑo^{214} tʂʰɻ^{35}] " keep" (the first syllable is pronounced with creaky voice and tone split by speaker 3)

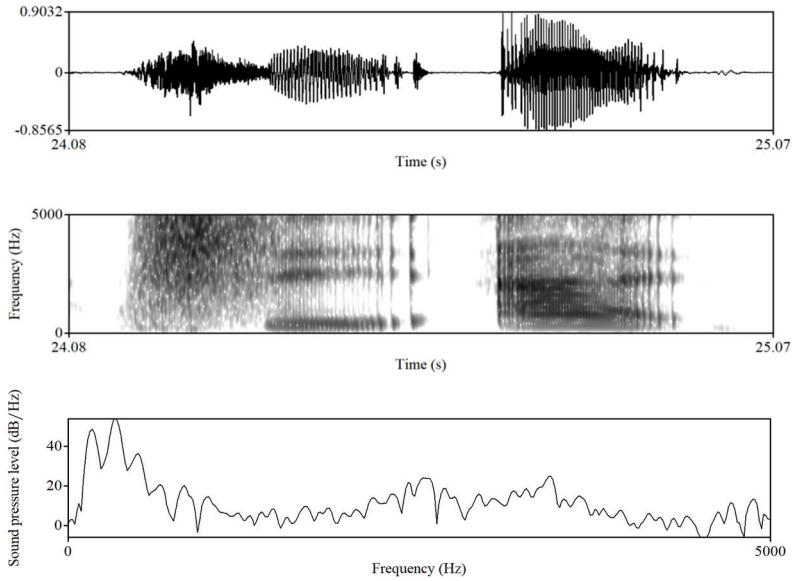


Figure 4. waveform, spectrogram and FFT spectrum of the word [ɕi^{214} ai^{51}] pronounced with creaky voice by speaker 1

Figure 3 and Figure 4 present waveform and spectrogram examples of words articulated with creaky voice by third-generation Chinese speakers. The difference between the relative amplitudes of the fundamental frequency (first harmonic) and the second harmonic is measured. The acoustic, articulatory and perceptual characteristics of this difference are indicative of whether the larynx is relaxed or constricted during articulation [33]. As illustrated by the example [ɕi^{214}][ai^{51}][pɑo^{214}] in the figure, the three sets of pinyin display low fundamental frequency energy and high second harmonic energy, resulting in a negative difference. This creaky voice quality is indicative of a relatively constricted larynx during articulation [34].

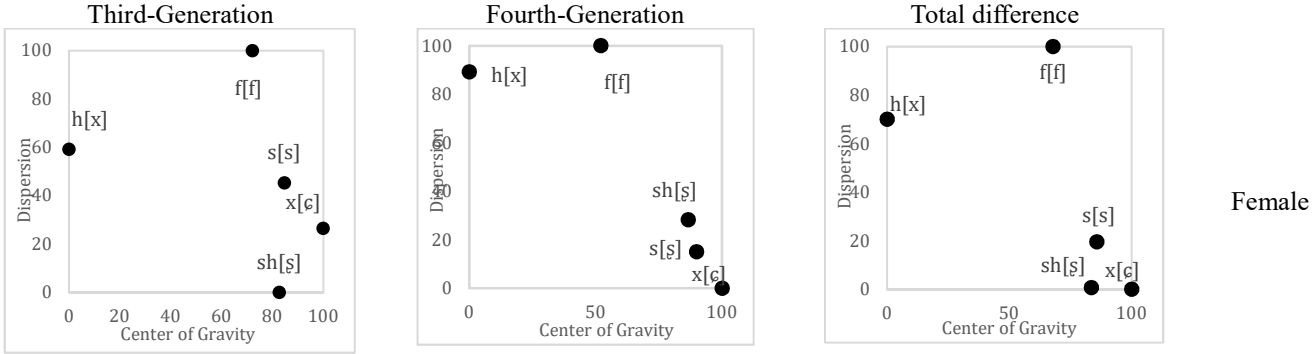
It is noteworthy that relevant studies indicate the Malaysian short-falling "fifth tone" is frequently accompanied by creaky voice [35], but the figure also reveals that beyond the "fifth tone", the third tone in Malaysian Mandarin is also influenced by creaky voice, exhibiting frequent tonal discontinuity, particularly pronounced in Speaker 1. This can further illustrates that the creaky voice of laryngeal constriction constitutes one of the defining features of Malaysian Mandarin.

This research does not include retroflex vowels, because unlike standard Mandarin, the teaching observations indicate that Malaysian Chinese students often struggle to produce the Mandarin retroflex vowel /ər/ fully and fluently in actual speech. For instance, the word [ɕiɑnr^{51}], which means stuffing, is typically pronounced as /ɕiɑn51'er/ by most local speakers. This may represent a common feature of Malaysian Mandarin pronunciation, though the specific manifestations and causes of this rhoticization require further research and investigation.

3.2. Consonant

There are five contrastive fricatives in Chinese: /f/, /s/, /x/, /ʂ/, and /ɕ/. None of the fricatives can occur in syllable-final position. A minimal set illustrating the contrast includes [xɤ^{35}] 'drink', [sɤ^{51}] 'colour', and [ʂɤ^{35}] 'snake'. The fricative /f/ cannot occur before /ɤ/. In the high front vowel /i/ environment, there is a three-way contrast between /s/, /ʂ/ and /ɕ/, with allophonic variation in the following vowel: /si/ is realized as [sɿ] (e.g. [sɿ^{55}] 'to think'); /ɕi/ is realized as [ɕi] (e.g. [ɕi^{214}] 'joy') and /ʂi/ as [ʂʅ] (e.g. [ʂʅ^{55}] 'poem').

The core methodology for phonetic pattern analysis involves normalization and relativisation. Building upon the framework of phonetic patterns, we further analyzed the speaker's five voiceless affricates based on a fricative space analysis. The Center of Gravity and dispersion values were normalized and relativised according to the equations given by Ran and Shi (2012) [36]:



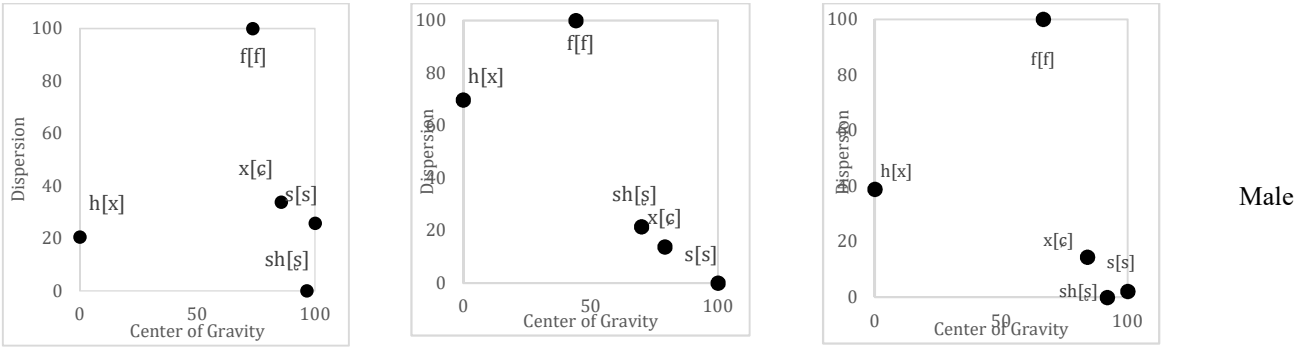


Figure 5. Comparison of fricative pronunciation patterns across generations and genders among six speakers

Figure 5 shows the acoustic patterns of five opposing fricatives for male and female speakers. It is evident that the fricative patterns exhibited by speakers demonstrate a high degree of similarity. Within the fricative system, /f/ exhibits the greatest acoustic dispersion, while /h/ possesses the lowest spectral centre of gravity. Concurrently, there are significant acoustic-spatial differences between /s/, /ʂ/ and /ɕ/. Furthermore, the recording shows that one speaker has a distinct formant structure when pronouncing /h/ in Mandarin. This indicates that the speaker produced the voiceless glottal fricative /h/ as the voiced glottal fricative /ɦ/, see Figure 6. As for intergenerational differences, the fricative patterns of fourth-generation Chinese speakers are closer to those of the Beijing dialect system reported by Ran and Shi (2012) [36], although in certain contexts the opposition between /s/ and /x/ still exhibits signs of weakening. For example, [ɕiŋ^{55} tɕ^{h}i^{55}] 'week' is pronounced as [siŋ^{55} tɕ^{h}i^{55}], and the /ɕ/ in [liɛn^{51} ɕi^{35}] 'practice' also shows similar fricative shift. These features differ markedly from the fricative patterns of the Beijing dialect, reflecting the phonetic variation characteristic of Malaysian Mandarin in a multilingual environment.

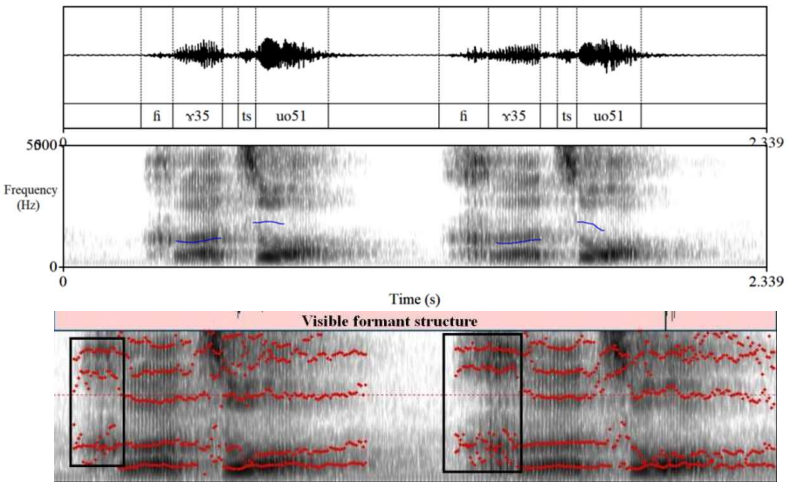


Figure 6. Waveform, spectrogram, formant tracks, and pitch contour of the voiced glottal fricative [ɦ] produced by Speaker 4.

The affricate patterns of the six speakers also exhibit regional characteristics. Malaysian Mandarin spoken by Fuzhou community also features two sets of approximant affricates: /ts/ and /tʂ/, /ts^{h}/ and /tʂ^{h}/. This pair of approximant affricates exhibits particularly pronounced mixed pronunciation as seen in [tsɿ^{55}] 'capital or resource', [tʂɻ^{55}] 'know', [ts^{h}u^{55}] 'coarse', and [tʂ^{h}u^{55}] 'out'. Compared to Beijing Mandarin researched by Ran (2017) [30], most affricates in Malaysian Mandarin exhibit higher DI indices, indicating a weakened "stop" component and enhanced "fricative" component, see Figure 7. /tɕ/, /tɕ^{h}/, and /ts/ in Beijing Mandarin exhibit highly concentrated energy at high frequencies, consistent with the phonological distinction between 'apical' and 'palatal' sounds. In contrast, Malaysian Mandarin's FI indices are more balanced, with DI indices also being close, making it highly susceptible to affricate assimilation or confusion.

To evaluate the accuracy of affricate production, three experienced Chinese language teachers independently identified the two sets of confusable affricates produced by the six speakers. The identification results are summarized in Table 2, which presents the identification accuracy of the two sets of confusable affricates in isolated characters. It can be observed that the error rate of affricate production also appears to be related to tone. Overall, the error rate is higher in the high-level tone T1 context, for example, the error rates for [ts^{h}ɿ^{55}] and [tsɿ^{55}] are significantly higher than those for [ts^{h}ɿ^{51}] and [tsɿ^{51}]. Furthermore, there are cases where the affricate is pronounced correctly but the tone is incorrect; for example, [tʂ^{h}u^{55}] is mispronounced as [tʂ^{h}u^{51}]. Of course, whether there is a specific relationship between tone and the accuracy of affricate pronunciation in Malaysian Mandarin remains to be verified by further research.

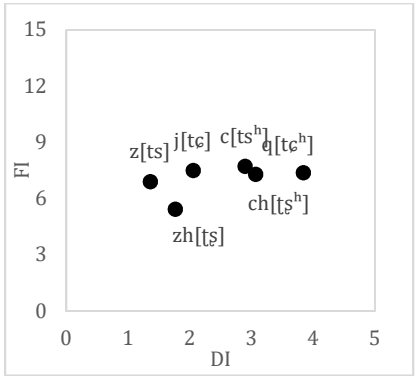


Figure 7. Affricate patterns of six speakers of Malaysian Mandarin

Table 2. Identification accuracy of two sets of confusable affricates in isolated characters produced by six speakers

	z/ts/		zh/tʂ/		c/tsʰ/		ch/tʂʰ/
	T1	T4	T1	T3	T1	T4	T1
Accuracy Rate	33.3	11.1%	33.3%	55.5%	44.4%	27.7%	50%

4. Discussion

This study analyses intergenerational phonetic patterns in Malaysian Mandarin, focusing on the acoustic characteristics of vowels, fricatives, and affricates among six speakers. The research findings reveal the regional evolution of Mandarin pronunciation and reflect the influence of Malaysia's social environment on the evolution of the Mandarin phonological system. The following sections discuss main research findings and their influencing factors.

4.1. Target Vowels

The analysis of the vowel pronunciations of the six speakers revealed two significant features: the apical vowels and the creaky voice. Firstly, the study found that the speakers had certain difficulties in pronouncing apical vowels, indicating that there might be instability within the vowel system of Malaysian Mandarin. Secondly, the phenomena of creaky voice and tone split demonstrated distinct regional characteristics. Some languages in Southeast Asia also exhibit the aforementioned phonetic features, indicating that Mandarin has been influenced by local languages and thus demonstrates distinct regional characteristics [37]. After comparing the speaker's speech pattern with Beijing dialect and Fuzhou dialect, it was found that these vowel patterns and pronunciation features reflect the potential influence of ancestral Chinese dialects. For the younger generation, the negative transfer influenced by the dialects of their elders is likely to affect their pronunciation of Mandarin. These phonetic patterns shaped by language contact and transfer vividly illustrate the specific impact of the environment on the pronunciation of Mandarin.

4.2. Target Consonants

The differences between fricatives, affricates and voiced glottal sounds reveal distinct regional characteristics of Mandarin in different regions and generations. Compared to the fourth-generation, the third-generation speakers are more likely to confuse the pronunciation of retroflex sounds with that of the dental sibilants. Previous studies have shown that this phoneme merger phenomenon is also very common among native speakers of Cantonese [38].

Furthermore, the association between tone and affricate accuracy is a good example of how phonetic productions can be complex. Some speakers had correct consonant pronunciations but incorrect tones. Therefore, the exact relationship between tone categories and the accuracy of affricate production in Malaysian Chinese remains to be confirmed based upon the findings of subsequent experiment.

4.3. Influencing Factors

The observed phonetic features were shaped by the Chinese language education and multilingual environment in Malaysia. In recent years, the concept of Global Chinese, proposed in the field of Chinese language education [39, 40], provides a theoretical framework for understanding the regional characteristics of Mandarin in Malaysia. Scholars generally define Global Chinese as 'a common language among global Chinese speakers, which is based on Mandarin but shows flexibility and inclusiveness in pronunciation, vocabulary and grammar' [41]. The phonetic variants revealed in this study concretely reflect regional differences within global Chinese.

The Chinese education system in Malaysia is a crucial factor in promoting standard Mandarin. Over the past few decades, the increasingly standardized trend of Mandarin and the emphasis on its pronunciation have significantly improved the pronunciation accuracy of the fourth generation of students. These standards for pronunciation are also reflected in students' extracurricular activities and competitions. For example, in recent years, Chinese poetry recitation competitions in Malaysia have attracted significant attention. Accuracy in pronunciation has become an important part of the competition scores. Observations made during the author's teaching at a Confucius Institute in Malaysia indicate that many Chinese schools invite Chinese teachers to train local teachers and also provide students with guidance on Mandarin pronunciation. Some local teachers pointed out that pronunciation is the main factor leading to deductions in the competition and is also a significant factor influencing students' competition results. This emphasis on phonetic standardization has a direct impact on the pronunciation of the new generation of learners.

The phonetic features are also related to language contact and local linguistic environment. The creaky voice and tone split observed in this study are influenced by local languages,

such as Malay and the Fuzhou dialect. These phonetic features gradually became the distinctive features of Malaysian Mandarin. This can be clearly demonstrated in the case of the female speaker 1: The creaky voice in her Mandarin pronunciation is most likely due to her frequent use of Malay in her work. This case not only reveals the connection between individual language practices and community language environment, but also suggests that when analyzing regional variants of Mandarin, the influence of pronunciation habits in multilingual contexts should be taken into account.

5. Conclusion

Taking Fuzhou Chinese community in Sibu as a case study, this research examines the regional characteristics and intergenerational variations in the phonetic characteristics of Malaysian Mandarin through acoustic data collected from different generations of Malaysian Chinese. When examining the characteristics of global Chinese, attention must also be paid to various phenomena of implicit convergence, such as the relationship between Mandarin and foreign languages, the relationship between Mandarin and dialects, and the stylistic variations within Mandarin itself. This paper confirms that the phonological system of Malaysian Mandarin is in a state of dynamic equilibrium: it is constrained by the phonology of ancestral dialects, adjusted in response to changes in education and language policies, and continuously influenced by local languages. Despite these contributions, there are several limitations: the sample size was relatively small and the study only researched speakers from the Fuzhou Chinese community in Malaysia. Future research could further examine whether the intergenerational change is just a Fuzhou-Chinese community, compare characteristics across different regions and deepen our understanding of the regional characteristics of global Chinese and the mechanisms underlying its evolution.

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