A Preliminary Study on Third Tone Sandhi in Malaysian Mandarin

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ABSTRACT

Mandarin Chinese language has increased in importance among the Chinese community in Malaysia. At present, the Mandarin language is the only medium of instruction in Chinese schools, but it has also become a lingua franca of local Chinese Malaysians of various dialect groups. With the expansion of the Global Chinese concept, numerous studies have been carried out on the Mandarin language used in Malaysia (henceforth, Malaysian Mandarin). These studies have mainly focused on lexical and syntactic aspects rather than on the phonetic system of Malaysian Mandarin. This could be because many researchers consider the standard spoken form of Malaysian Mandarin similar to Standard Mandarin, although they are different. To better understand the development of the sound systems in regional Mandarin varieties, this paper investigates Malaysian Mandarin, specifically the standard spoken variety, by examining the acoustic realisation of third tone sandhi, a well-known Mandarin language tonal variation phenomenon. Forty-four Malaysian Chinese undergraduate students have been selected as speakers of the standard spoken variety. A nursery rhyme consisting of nineteen third tone (T3) syllables was used as the reading material to analyse the effect of different prosodic and syntactic structures on T3 realisation. The findings indicated that generally, the T3 sandhi phenomena in Malaysian Mandarin match Standard Chinese's sandhi rule. However, the acoustic realisation of T3 in terms of pitch contour and voice quality showed some differences. The implementation of T3 sandhi is also affected by the syntactic and rhythmic structure if a disyllabic or trisyllabic T3 sequence occurs across two feet. The findings suggest that the prosodic structure in the standard spoken form of Malaysian Mandarin may be developing differently from Standard Mandarin.

1. INTRODUCTION

In pace with the growing demand for learning Mandarin Chinese (henceforth Mandarin), the research on Mandarin use by overseas Chinese communities and second language learners has a corresponding increasing trend. The Chinese academia shows interest to investigate Mandarin varieties outside of China, such as in Singapore, Malaysia, Thailand, and Indonesia. If compared to lexical and syntactic aspects, the study on phonetics is still lacking. This paper explores the standard spoken form of Mandarin in Malaysia by examining the acoustic realisation of third tone sandhi, a well-known Mandarin tonal variation phenomenon. As mentioned, currently, there is more than one variety of Mandarin. This paper will use "Standard Chinese" to refer to the phonological system of Mandarin as summarised by the academia and "Mandarin" to refer to the spoken varieties of Mandarin to avoid confusion in the discussion.

1.1 The Current Status of Mandarin Usage in Malaysia

Malaysia, located in Southeast Asia, is a multi-ethnic and multilingual country ("Malaysia", 2021). According to the Department of Statistics Malaysia (2020), Malaysia's population in 2020 is estimated at 32.7 million, 90.9% citizens and 9.1% non-citizens. There are three major ethnic groups from the 29.7 million citizens, whereby 69.6% are Malay (*Bumiputera*), 22.6% are Chinese, and 6.9% are Indians.

As reported by Eberhard et al. (2021), with the exception of Standard Malay as the national language, English and Mandarin have been granted the status of statutory national working languages in Malaysia. This means that English and Mandarin are also used in working occasions at the national level but are not languages of national identity for Malaysian citizens (Eberhard et al., 2021). English is used widely in many sectors of Malaysia, such as business, media and private education (Pillai et al., 2015). Meanwhile, Mandarin is the medium of instruction in Chinese schools, lingua franca of the ethnic Chinese across various dialect groups, and is also used in business and media in Malaysia (Ghazali, 2012; Pillai et al., 2015).

The ethnically Chinese people in Malaysia primarily use Mandarin. The spread and expansion of the language at the international level are much lower than English. However, the economic rise of China has increased the need for learning Mandarin, which is the national language in China (this variety is generally known as *Putonghua*). Some researchers believe that Mandarin can become a global language after English (Diao, 2015; Goh, 2017). Based on the current situation, there are two groups of Mandarin users in Malaysia, the local Chinese ethnic speakers and Mandarin second-language speakers. The first group of speakers has a more extended usage history. They are the main contributors to Mandarin in Malaysia or Malaysian Mandarin, while the second group of speakers is developing and increasing.

1.2 A Global Perspective on Varieties of Mandarin Chinese

Following the international spread of Mandarin, more and more scholars are aware that the difference in Mandarin varieties exists and cannot be ignored. The concept of Global Chinese has been proposed to confront the issue of Mandarin varieties, and it has rapidly expanded in a short period. One of the academics, Diao (2015), explained the differences between Mandarin varieties from a historical perspective. Mandarin varieties in some regions such as Taiwan, Singapore, and Malaysia did not directly evolve from *Putonghua* (the Contemporary Standard Mandarin, henceforth, Standard Mandarin). These Mandarin varieties, including Standard Mandarin, are developed from the original version, the Traditional Mandarin (传统国语). Still, their evolution is based on different social and regional linguistic backgrounds (Diao, 2015). In

a multi-ethnic and multilingual country, Malaysia Mandarin has a development tendency and is represented in phonetic, lexical and syntax aspects (Khoo, 2017; Guo, 2017).

1.3 Problem Statement

Chinese academia conducted more linguistic studies on these Mandarin varieties, and they discussed language planning and standardisation issue across these varieties with the expansion of the concept of Global Chinese (Wang, 2020). However, previous descriptive studies of Mandarin varieties (including Malaysian Mandarin) mainly focused on the lexical and syntactic aspects, less on the pronunciation (Guo, 2017; Guo & Wang, 2018; Wang, 2017). Wang (2017) summarised that the study on the pronunciation of Mandarin varieties lacks because of the strong stability of the phonological system. Theoretically, the standard spoken form of the Mandarin variety is similar to Standard Mandarin, and the difference mainly occurs in the colloquial spoken form (Wang, 2017). This is not surprising as many researchers have a similar perspective on the standard spoken form, regardless of the language. Standard Mandarin in Malaysia is similar to standard Mandarin in China (Guo, 2017). Standard English in Malaysia is equated to standard English in British (Baskaran, 1987 and Morais, 2000, as cited in Pillai & Ong, 2018). There is still a shortage of systematic descriptions on realisation and features of the standard spoken form of a Mandarin variety. This may be why the implementation of the Standard Mandarin system in Malaysia's Chinese education is always an issue and frequently raised among the Chinese Malaysian community (Khoo, 2017). Hence, a standard spoken form should get more academic attention instead of only focusing on the colloquial spoken form.

Among the studies on phonetic variation in Malaysian Mandarin, the lexical tone gets some attention (Guo, 2017; Wang, 2017). A study by Khoo (2017) found that Malaysian Mandarin has some unique tonal variation that distinguishes it from Singaporean Mandarin, labelled the "federal accent". However, the feature of "federal accent" and how it is realised in the standard spoken and colloquial spoken forms remains unknown. In a tone language such as Mandarin, tonal variation in speech is non-linear, and it constantly interacts with prosodic and syntactic structure. It is not easy to have a comprehensive understanding if we exclude the prosodic syntax information in the tonal variation study. A specific lexical tone in various phonetic environments needs to be investigated instead of a general observation or case analysis to be more systematic. Among the four lexical tones of Standard Chinese, the sandhi phenomena of the third tone and its relation to a prosodic and syntactic structure are well investigated and understood. Hence, third tone sandhi is a suitable start point for a better understanding of the standard spoken form of Malaysian Mandarin. There are two research aims in this paper: 1) to investigate the acoustic features of T3 in utterances; 2) to explore the effect of syntactic and rhythmic structure on the implementation of T3 sandhi.

2. LITERATURE REVIEW

2.1 Lexical Tone System and Tone Sandhi of Standard Chinese

Standard Chinese is a tone language in which syllable pitch movement is used to distinguish word meaning. There are four contrastive lexical tones, first tone (T1) is described as "high-level ˥", second tone 2 (T2) is described as "high rising ˧˥", third tone (T3) is described as "low dipping ˨˩˦" and forth tone (T4) is described as "high falling ˥˩" (Duanmu, 2007; Peng et al., 2005). Below is the example of a syllable with four lexical tones written in Hanyu Pinyin (Duanmu, 2007, p. 225), "*mā*" (mother), "*má*" (hemp), "*mǎ*" (horse) and "*mà*" (scold).

Therefore, in Standard Chinese utterances, a pitch contour is not a linear sequence of intonation like in English. It is a superimposition of two-layer pitch movement, the surface contour of intonation, and a lexical tone's base contour. Thus, it is necessary to differentiate tone in isolation and tone in connected speech, even in a polysyllabic word: citation tone and sandhi tone (Chen, 2000; Duanmu, 2007).

In connected speech, almost all lexical tones have tonal variation. This phonetic phenomenon is named 'tone sandhi'. It is familiar and usually conditioned by tonal context and other prosodic factors such as stress, prosodic boundary, speech rate. Among the four lexical tones of Standard Chinese, T3 has the most variation, and T3 sandhi is the most notable. According to T3 sandhi rules, a realisation of preceding T3 depends on the tone category of the following syllable. If another T3 follows it, the preceding T3 will change to T2 (high rising tone), such as "*mǎ wěi*" (horsetail) → "maᴎ weiↆ/ↆ ". If it is followed by non-T3 (T1, T2 and T4), the preceding T3 will keep its underlying tone with the low feature, such as "*mǎ chē*" (carriage) →"maↆ cheᴎ", "*mǎ tí*" (horse's hoof) →"maↆ tiᴎ", "*mǎ shù*" (horsemanship)→"maↆ shuↆ".

However, T3 sandhi is quite complicated and relates to syntactic and rhythmic structure (Peng et al., 2005; Wang et al., 2018). If T3 appears in a phrase continuously and the phrase is right-branching structure, there are two or more possible tonal patterns. For example, the tonal patterns of *"[xiǎo [zhǐ [lǎohǔ]]]"* (small paper tiger) could be "ᴎ - ↆ -ᴎ - ↆ", "ↆ - ᴎ - ᴎ - ↆ" or "ᴎ - ᴎ - ᴎ - ↆ" (Duanmu, 2007, p. 256). The example above shows that the possible changes always happen at a word boundary because syntactic relation across words is looser than within a word. It means the T3 sandhi is not only a phonetic phenomenon but also affected by other linguistic aspects, representing certain syntactic or rhythmic structures.

2.2 Previous Studies on Lexical Tone and Prosody of Malaysian Mandarin

As explained earlier, previous studies on phonetic aspects in Malaysian Mandarin is still lacking and not systematic. However, the descriptive studies on tone and prosodic features of Malaysian Mandarin started to increase after 2010. In addition, the way of analysis is not limited to pure auditory determination but also include some acoustic analysis. Researchers such as Guo (2017), Huang (2016), and Khoo (2017) mentioned that there is a new lexical tone category in Malaysian Mandarin apart from the four tone categories of Standard Chinese. It is realised as a falling tone with a shorter duration and ends with a glottal stop, and scholars usually call it the *"fifth tone"*. Based on their summary, it is commonly present in the everyday spoken variety and is influenced by the Chinese dialects in Malaysia.

As Khoo (2017, 2018) indicated, Malaysian Mandarin has some unique tonal variations, distinguishing it from other regional Mandarin varieties. The most noticeable difference is T4 being commonly produced as a high-level tone instead of a high falling tone when it occurs in polysyllabic words and the final position of utterance (Khoo, 2017). For example, "*kàn diànyǐng*" (watch movie) → *"kanᴎ dianᴎyingↆ"* and "*xiànzài*" (now) →*"xianᴎzaiᴎ"* (Khoo, 2018, p. 2251). Similarly, Yeoh (2019) analysed the pitch contour of T4, which appeared in different tonal combinations and positions of an utterance, and found that T4 pitch movement varies with the conditions above. The findings of these studies have described a phonetic phenomenon that T4 in Malaysian Mandarin is not stable in connected speech. However, how T4 varies and its relation with prosodic structure remain relatively unknown.

Two studies examined Mandarin T3 citation tone and sandhi tone in Malaysia. The findings by Huang (2016) and Khoo (2018) showed that the T3 citation tone is a low falling tone, not a dipping tone. For T3 in disyllabic words, Huang (2016) found that T3 changes to a low rising

tone when followed by another T3, while Khoo (2018) discovered no sandhi change in his study. These inconsistent findings may result from the difference in speakers and material for data collection. The former study collected data through a sentence read by younger speakers (below 40 years old) who were born and raised in Penang, on the northwest coast of Peninsular Malaysia. The latter study collected data through a disyllabic word reading and conversational interviews with older speakers (above 50 years old). They were born and raised in Kluang, a town in Johor, located south of Peninsular Malaysia. Undeniable, these two studies have partly described T3 of Malaysian Mandarin. But there is still a need to explore the T3 sandhi phenomena in Malaysian Mandarin, either the standard spoken variety or the colloquial spoken variety.

Apart from this, there are a few studies on the prosodic features of Malaysian Mandarin. Hlinka (2018) found that the duration distribution of disyllabic words in Malaysian Mandarin is similar to Standard Mandarin, while Kong (2019) and Yang and Chen (2016) have the opposite results. In a study by Lee (2017), the acoustic features of different prosodic boundaries in Malaysian Mandarin differ from Standard Mandarin. In the study by Chiew (2019), it was found that the perception of sentence focus by Chinese Malaysian is relevant to tonal categories. Overall, these studies hinted that prosodic features in connected speech are related to the lexical tone system. It is challenging to deliver a comprehensive analysis without considering the lexical tone.

In summary, there is a research chasm between lexical tone and prosody of Malaysian Mandarin. Generally, a study on prosodic features could not ignore the effect of lexical tone, while a study on lexical tone should not be merged with sandhi change in connected speech. Thus, the tone sandhi domain could be a joint unit of the base pitch contour and surface pitch contour. Similar to Malaysian English (Pillai, 2012, as cited in Pillai & Ong, 2018), the everyday spoken variety of Malaysian Mandarin is not homogeneous. It is not easy to give a concrete summary of its phonological features unless we sufficiently understand the standard spoken variety. For this reason, it is worthwhile to examine the T3 variation in the standard spoken form of Malaysian Mandarin as the Chinese academic has more understanding of the T3 sandhi phenomena.

3. METHOD

3.1 Participants

This study focused on the standard spoken form of Malaysian Mandarin as there was a lack of understanding of this spoken variety. There was a specific condition in recruiting participants to fulfil the research need. Referring to the model of Malaysian English varieties and Malaysian speakers of English (Ong, 2016, as cited in Pillai & Ong, 2018, p. 154), a standard variety speaker was mainly highly educated in a specific language. Since the local Chinese ethnic speakers were the main contributor to Malaysian Mandarin, this study recruited Chinese Malaysians who had completed 12 years of Chinese education and could use Mandarin in formal and informal situations. Forty-four Chinese Malaysian undergraduate students were recruited in this study, thirty-eight females and six males, aged 20-23 years old. All of them were major in Chinese language and linguistics at a public university in Malaysia and were able to use Mandarin fluently. Written informed consent was obtained from all participants in this research project. All of them were compensated financially for their participation in it.

The participants used different languages at home. As presented in Table 1, four of them mainly spoke Chinese dialects (such as Hokkien, Cantonese, Hakka, which are derived from the southern dialect in China) at home, twenty-nine of them mainly spoke Mandarin at home, eight