Zhangzhou Yangping Tone and Its Variations: Going Beyond Convention

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Abstract

This study explores the encoding of Yangping tone in Zhangzhou Southern Min across three linguistic contexts. This tone is shown to have multiple realisations comprising a low level [22], a mid-level [33], mid-falling with a level [311], and low falling with a level [211], which are conditioned by positions and the phonetics of surrounding tones. The findings contradict prior auditory transcriptions and question certain conventional assumptions for defining a right-dominant tone sandhi system in Sinitic dialects. This study contributes valuable empirical data to investigate the typology of tone as an important linguistic phenomenon in China and worldwide.

Yangping tone, F0, contexts, Zhangzhou, Southern Min

Introduction

Zhangzhou Southern Min, a Sinitic dialect spoken in the South Fujian province of Southern China, has received extensive documentation on its monosyllabic tonal system. However, most prior works are impressionistic, consistently identifying a seven-way tonal contrast but with inconsistent descriptions. For example, tone 2, referred to as Yangping tone in the Middle Chinese tonal category, has been transcribed in five different ways, including [212] (Dong 1952), [13] (Lin 1992; FJG 1998; Yang 2008), [12] (Ma 1994), [23] (Gao 1999), and [22] (Huang 2018). Given the inconsistency and inadequacy of experimental analysis, this study systematically investigates the realisations of Yangping tone in three different contexts based on acoustic data from 21 native speakers. It is hoped to upgrade our understanding of the phonetic nature of Zhangzhou tones and shed light on the encoding of tone sandhi as an important phenomenon in Southern Chinese dialects.

Research material

The corpora involved about 160 monosyllabic tokens, as illustrated in Table 1, and about 192 disyllabic tokens (=12 samples * 8 combinations * 2 contexts), as illustrated in Table 2. They were elicited in praat from 21 native speakers (9 males and 12 females) in the urban area of Zhangzhou city in 2015. Tonal F0 and duration values were extracted using a script at ten equidistant sampling points and separately received normalisation using the formula (1) $Z_i=(X_i-m)/s$ and (2) $D_{norm}=(D/D_{mean})*100$ (Huang 2018).

Table 1. Examples of Zhangzhou citation tones.

Tone		Pitch	Duration	Example1	Example 2
1	Yinping	[35]	extra long	/kɔ/ 'mushroom'	/tɐŋ/ 'east'
2	Yangping	[22]	extra long	/kɔ/ 'glue'	/tɐŋ/ 'copper'
3	Shang	[51]	medium	/kɔ/ 'drum'	/tɐŋ/ 'to wait'
4	Yinqu	[41]	medium	/kɔ/ 'look after'	/tɐŋ/ 'frozen'
5	Yangqu	[33]	extra long	/ɦɔ/ 'rain'	/tɐŋ/ 'heavy'
6	Yinru	[41]	short	/kɔk/ 'country'	/tɐp/ 'answer'
7	Yangru	[221]	long	/tɔk/ 'poison'	/tsɐp/ 'ten'
8	Yangru	[22]	extra long	/kɔ̃/ 'snore'	/tsi/ 'tongue'

Table 2. Examples of Yangping tone in phrase-initial and phrase-final contexts.

2+X	Example	X+2	Example
2+1	/tɛ2.hwɐ1/ 'camellia'	1+2	/tsʰɛ̃1.tɛ2/ 'raw tea'
2+2	/tɛ2.ɗɐw2/ 'tea house'	2+2	/ʔɐŋ2.tɛ2/ 'black tea'
2+3	/tɛ2.ɓi3/ 'dried tea'	3+2	/tsɐ3.tɛ2/ 'morning tea'
2+4	/tɛ2.tjɐm4/ 'tea store'	4+2	/swɐ̃4.tɛ2/ 'unpacked tea'
2+5	/tɛ2.tsʰju5/ 'tea tree'	5+2	/ʔjɔŋ5.tɛ2/ 'have tea'
2+6	/tɛ2.sik6/ 'tea colour'	6+2	/sip6.tɛ2/ 'moisten tea'
2+7	/tɛ2.sit7/ 'tea dessert'	7+2	/sik7.tɛ2/ 'colorful tea'
2+8	/tɛ2.ɦjɵ8/ 'tea leaf'	8+2	/pɛ8.tɛ2/ 'Bai tea'

Zhangzhou citation tones

Zhangzhou possesses eight tones rather than seven (Huang 2018). The eighth tone emerges from those syllables that were conventionally transcribed with a glottal stop. Table 1 above illustrates the eight tones with their corresponding names in the Middle Chinese tonal category. Figure 1 below plots their normalised F0 pattern. Zhangzhou tones involve rising, high-falling, mid-high falling, mid-levelling, and low-levelling F0 contours. Yangru tone (tone 2) in the blue colour dominantly presents a levelling tendency at the lower range. However, a slight downward trend can be seen as a consequence of the F0 declination effect at the utterance-final position. Additionally, this tone shares a similar F0 contour with tone 8, but they differ considerably in sandhi, with values at [33] and [32] separately. The description of citation tones provides a framework to investigate how Yangping tone is realised across different tonal combinations and how various forms in multisyllabic constructions are related to the citation forms and shape a profile of tone sandhi in this dialect.

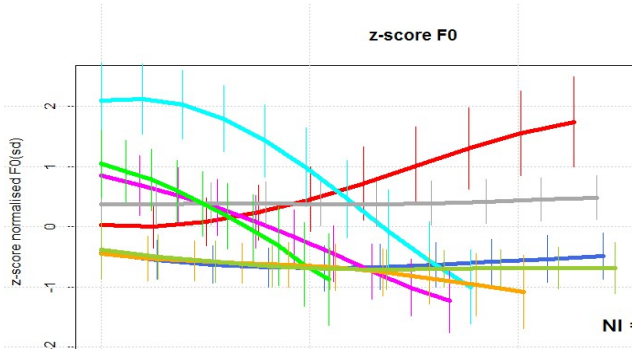

Figure 1. F0 pattern of Zhangzhou citation tones from 21 speakers.

Yongping tone in the phrase-initial context

Yangping (Tone 2) is consistently realised as a mid-level [33] across eight disyllabic constructions, regardless of whether the following tone is rising, level, or falling. As plotted in Figure 2, this manifestation indicates that its F0 realisation is not affected by its subsequent tones at the phonological level; however, the realisation turns out to be sensitive to its following tones at the phonetic level, although the effect is marginal. For example, the normalised F0 contours appear numerically higher before tones 2, 7, and 8, which possess a common feature of [+low onset].

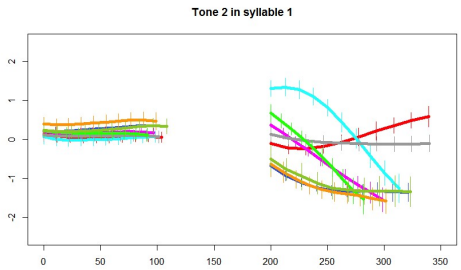

Figure 2. F0 shape of Yangping tone in 2+X patterns from 21 speakers.

Yangping tone in the phrase-final context

Yangping tone (Tone 2) essentially presents a falling tendency with a low-level plateau during the second half across different tonal combinations, suggesting that the realisation is not affected by the phonological category of its preceding tones. However, as shown in Figure 3, apparent variation can be seen in the F0 contour onset, for example, it appears to be numerically high after tone 3, which features a [+high offset]. Thus, this tone can be described as having two phonetic variants of [211] and [311] in the phrase-final context.

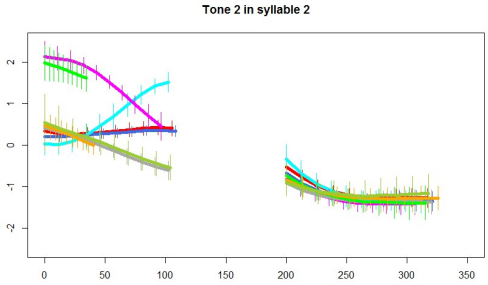

Figure 3. F0 shapes of Yangping tone in X+2 pattern from 21 speakers.

Conclusion

As described, the acoustically normalised F0 contour of Zhangzhou Yangping tone falsifies all conventionally auditory transcriptions. The F0 contour of this tone undergoes a categorical alternation and changes to a mid-level [33] in the phrase-initial from a low level [22] in the citation, suggesting a right-dominant sandhi system. Still, the realisation is found not to be phonologically affected by subsequent tones. The tone has two variants of [211] and [311] phrase-finally, both of which are not straightforward identical to its corresponding citation form of [22], challenging and questioning the conventional principle that considers the rightmost tones of a right-dominant sandhi system maintain their citation values without change (Chen 2000; Zhang 2007). Such a discrepancy may be ascribed to a coupling effect of the regressive sensitivity to the F0 offset of preceding tones and the pitch/F0 declining impact of utterance-final context that renders a lower-level plateau than its counterpart in the citation.

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