

Is Southern Min Tone Circle a Real Thing?

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Southern Min, a major Sinitic dialect of the Sino-Tibetan language family, has been best known for its intricate tone sandhi phenomenon. One tone's citation form is conventionally assumed to be the sandhi form of another tone, rendering a circular tone change among those unstopped tones that are associated with sonorant-ending syllables. This phenomenon has attracted extensive theoretical discussions to explore and explain why Southern Min tones change in a circular way. The discussions are from various perspectives including Generative Phonology [1-2], Autosegmental Phonology [3-4], Optimality Theory [5-9], Psycholinguistic Theory [10-12], and Lexicalised Phrasal Phonology [13]. However, it turns out to be challenging to use both generative and optimality theories to capture and interpret the naturalness of the process, environment, and mechanism that motivates tones to change in a circular fashion in Southern Min.

This study asserts that the nature of Southern Min tones is morphological, and the relation between sandhi and citation tones is morpho-phonemic. This assertion is proposed based on a systematic examination of multidimensional tonal realisations (F₀, duration, vowel quality, voice quality, and obstruent coda) in three linguistic contexts (citation, phrase-initial, and phrase-final) from 21 native speakers in Zhangzhou Southern Min [14]. The phonetically-statistically-grounded results (Fig.1) show that, (1) The relations of phrase-initial (sandhi) tones are entirely unrelated to those of their corresponding citation forms both phonologically and phonetically; it is thus appropriate to consider the sandhi tones and citation tones are in a morphophonemic relation, belonging to two independent systems. (2) The realisations of most phrase-final tones are categorically related to those of their corresponding citation forms with a certain degree of phonetically predictable variations; it is thus appropriate to consider the phrase-final tones and citation tones are in an allophonic relation, belonging to the same system. (3) Tonal contrast neutralisation occurs across citation, phrase-initial (sandhi), and phrase-final contexts, the direction of tonal alternation is essentially indeterminate. Determining which forms are underlying and which forms are derived is difficult. It is thus appropriate to consider that tones at the citation and sandhi contexts are not in a derivational relation, but rather belonging to two independent systems.

Incorporating the three important factors, this study asserts that tonal realisations in Zhangzhou are morphologically motivated. Each lexical tone functions as a single morpheme with alternating allomorphs (tonemes) that are both abstractly stored in the mental grammar of native speakers but phonetically distant on the surface (Fig. 2). This is analogous to the nature of plural morpheme in English that is sometimes pronounced as [s] (as in cats [kæts]), sometimes as [z] (as in dogs [dɒgz]), and sometimes as [-əz] (as in faces [feisəz]) [15], which have the same meaning but occur in different environments and in complementary distribution. It also reflects a close interface between different linguistic levels (phonetics, phonology, and morpho-syntax) to realise tone as an important language phenomenon in Asian languages. This study substantially stretches and advanced our knowledge of the nature of tone sandhi in Southern Min, shedding an important light on how a sophisticated examination of phonetic detail contributes to uncover and establish the cognitive pattern in natural languages.

Keywords: Tone sandhi, acoustics; morphological nature; linguistic interface, Southern Min

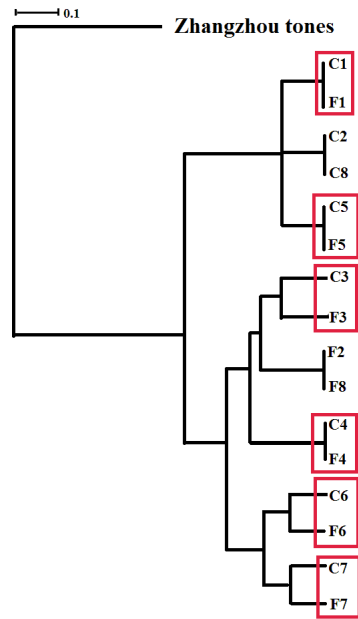


Fig. 1 Mapping of tonal realisations across different contexts (C=citation; F=Phrase-final; I=Phrase-initial).

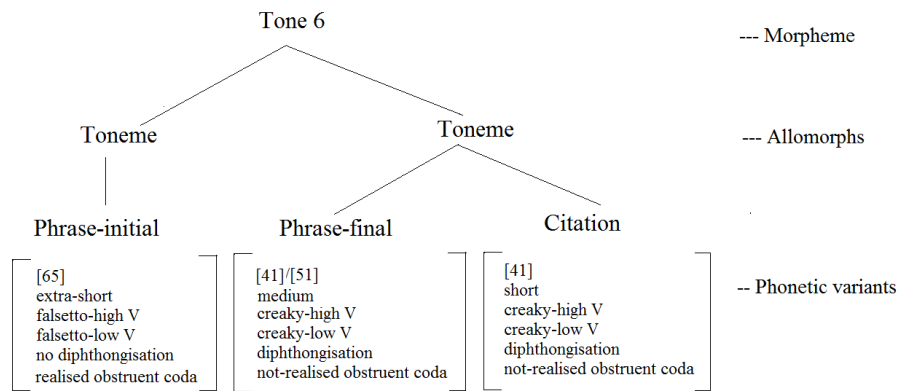


Fig. 2 Illustration of morphologically-conditioned tonal realisations in Zhangzhou Southern Min.

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