

Rethinking strengthening and vowel apicalization in the Xiang dialects through a raising perspective

The Xiang dialects, particularly the Loushao subgroup, exhibit sound changes where some previous coronal affricates become coronal stops or velar stops. These changes are referred to as hardening and velarization respectively, and are both consonant strengthening processes. For example in Lianyuan, 中 *zhōng* ‘middle’ Common Central Xiang (CCX) *tʂion > tʂɿ, while 戰 *zhàn* ‘war’ CCX *tʂien > ki (CCX from Coblin (2011), tones omitted). Additionally, syllables with CCX main vowel *-i commonly show vowel apicalization, such as 支 *zhī* ‘measure word for hard thin objects’ CCX *tʂi > tʂɿ in Lianyuan. Previous studies take hardening/velarization and vowel apicalization as two different processes, and consider high front or apical main vowel to block hardening/velarization (Coblin 2011). While there are many studies on vowel apicalization (Zhu 2004, Faytak 2014), hardening and velarization are very rare around the world and the trigger and mechanism remain unclear (Bybee & Easterday 2019).

This study proposes raising as a unifying perspective that links together hardening, velarization, and vowel apicalization in the Xiang dialects: In all these changes the sounds are moving towards more constriction. Several things connected to vowel apicalization may help explain the phenomenon phonetically and/or phonologically. Vowel apicalization such as *tei > tʂɿ/tʂɿ is a process of high vowel raising attested cross-linguistically in many Chinese dialects and Bantu languages in Africa. It is often connected with vowel raising chains. The process often couples with the onset changing from a palatal obstruent to a non-palatal one, such as dental, alveolar, or retroflex (Faytak 2014, Wu 2022).

Whether vowel raising is strengthening or weakening is still in debate due to lack of a coherent scale, be it sonorant or constriction (Barnes 2008, LaFond 2024). There are, however, recent proposals that vowel raising may be linked to languages that have a larger inventory of consonants (Dahlgren 2025). This raises the question of whether one shared scale of strengthening and weakening for both consonants and vowels is possible, such as [±consonant] basing off constriction. The Loushao dialects fit this picture: there is vowel raising and hardening and velarization, which are consonant strengthening processes, and both are moving towards more constriction. Additionally, vowel apicalization shows the loss of a high front vowel element and the onset moving away from the palatal area that are also featured in hardening and velarization. This coherence in the loss of palatal features manifested in both consonants and vowels argues in favor of the view that vowel apicalization, hardening, and velarization are linked together.

This explanation offers a way to reconcile consonant strengthening and vowel apicalization without appealing solely to dissimilation or markedness-based accounts. By viewing hardening, velarization, and vowel apicalization in the Loushao dialects as parts of a broader raising-driven shift toward greater constriction, this study explores the possibility of a shared strengthening scale across consonants and vowels, and highlights directions for further theoretical evaluation.