

# Vowel Restructuring Under Retroflex Trill Suffixation in JingMen Mandarin

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This study investigates how a retroflexed trill suffix influences vowel realization in Jingmen Mandarin, a Southwestern Mandarin variety spoken in central Hubei. The suffix, phonetically realized as a syllabic trill [ɾ] in word-final *zi*, introduces a previously unattested type of rhotic suffixation in Mandarin. Whereas rhoticization in Standard Mandarin is typically restricted to *erhua*, Jingmen Mandarin exhibits a productive, morphologically conditioned rhotic process that reshapes vowel quality and syllable structure.

The analysis focuses on vowels across four syllable types—V (vowel only), GV (glide + vowel), VN (vowel + nasal), and GVN (glide + vowel + nasal)—as well as common diphthongs. A matched corpus of monosyllabic base forms and their *zi*-suffixed counterparts was recorded from two native speakers. Acoustic measurements (F1, F2, F3, and F2\_F3) were extracted at the vowel midpoint. Linear mixed-effects models were employed to assess suffixation effects across syllable types and morphological contexts.

Results show that *zi*-suffixation induces systematic vowel restructuring. In V-structured syllables, monophthongs such as /a/, /i/, and /o/ exhibit clear centralization and rhoticization toward /ə/, while /u/ and /y/ remain relatively stable. In GV, VN, and GVN contexts, nearly all monophthongs show varying degrees of centralization and rhoticization. Diphthongs /ei/, /ou/, /ao/, and /ai/ in CV syllables display strong monophthongal tendencies—particularly [ou]—whereas those in CGV syllables consistently monophthongize, converging toward a rhoticized vowel quality akin to /ə/.

These findings demonstrate that a retroflexed trill suffix can trigger extensive articulatory and phonological restructuring. The *zi*-suffix in Jingmen Mandarin offers a rare instance of morphologically driven rhoticization beyond the scope of *erhua*, contributing novel evidence to the typology of rhotic processes and enhancing our understanding of how retroflex segments reshape surrounding vocalic material.