

A Diachronic Perspective on Left-dominant and Right-dominant Tone Sandhi in Northern Wu Chinese: Evidence from Xiangshan

When Two Opposing Tone Sandhi Systems Meet:

Xiangshan Chinese shows both *left-dominant* (initial-tone spreading) and *right-dominant* (final-tone preservation) sandhi patterns within the same syntactic structure, challenging structure- and stress-based accounts, and pointing to a diachronic explanation.

Introduction

1. Tone sandhi system in Northern Wu

- **Left-dominant sandhi (LDS):**
 - rightward tone extension of the initial tone
 - common in *lexical compounds*

e.g., in Shanghai, 53 + T → 55 + 31^[1]
 - **Right-dominant sandhi (RDS):**
 - preservation of the final tone
 - common in *Verb-Object phrases*

e.g., in Shanghai, 53 + T → 55 + 31^[1]

2. Xiangshan (Northern Wu)



3. Tone inventory in Xiangshan [2]

	<i>ping</i>	<i>shang</i>	<i>qu</i>	<i>ru</i>
<i>yin</i>	HH		HL	Hq
<i>yang</i>	LHL		LH	LHq

Non-checked

checked

Results

Overall tone sandhi patterns in Adjective-Noun structure:

- In general, left-dominant sandhi (LDS)
 - *Historical tonal category* of the initial tone dominates
 - Each initial historical tone category has unique sandhi
 - Choice between two sandhi outputs is *speaker-specific*
 - Right-dominant sandhi (RDS) also exists
 - *yangping-initial* tokens exhibit sandhi patterns conditioned by non-initial tones

σ_2	HH <i>yinping</i>	HL <i>yinqu</i>	LHL <i>yangping</i>	LH <i>yangqu</i>
σ_1	HH <i>yin ping</i>		HMML MMMH	
			MHHL HHHH	
	LLHH	LLHL		LLLH
LHL <i>yang ping</i>			LLHH LLHL	
LHL <i>yang shang</i>				

Methodology

1. Participants & Materials

- 8 Xiangshan speakers (4 female; age: 47-53)
 - 287 disyllabic *Adjective-Noun compounds and phrases*
 - Examples below

σ_2	HH <i>yinping</i>	HL <i>yinqu</i>	LHL <i>yangping</i>	LH <i>yangqu</i>
σ_1	书包 <i>backpack</i>	青菜 <i>a variety of cabbage</i>	书房 <i>study (N.)</i>	青豆 <i>green soya bean</i>
HH <i>yin shang</i>	手机 <i>mobile phone</i>	海带 <i>kelp</i>	手链 <i>bracelet</i>	扁豆 <i>haricot bean</i>
LHL <i>yang ping</i>	黄瓜 <i>cucumber</i>	油菜 <i>rape (plant)</i>	杨梅 <i>a local variety of berries</i>	黄豆 <i>soybean</i>
LHL <i>yang shang</i>	老车 <i>old car</i>	老店 <i>old shop</i>	老房 <i>old house</i>	老路 <i>old road</i>

2 F0 extraction and normalisation

- F0 at 10 equidistant points in each syllable
 - Z-scores of log-transformed f0

3 Tense sandhi pattern categorisation:

- Independent auditory categorisation
 - k -means clustering using *kml* package^[3] in R

Discussion

Diachronic account 1: Left-dominance-originated tone sandhi. -

- Lexical tone sandhi began with *rightward tone spreading*
 - Created distinct sandhi sets for *ping-* and *shang-initial* tokens
 - Monosyllabic tones merged, while disyllabic sandhi fossilised

Problem: cannot explain **right-dominant features** in *yangping*-initial tokens → non-initial tones should have been fully neutralised under this account

Diachronic account 2: Change from Right-dominance to Left-dominance.

- *Right-dominant sandhi* came first, driven by *final lengthening*
 - RDS developed with monosyllabic system, preserving up-to-date citation tones
 - Left-dominant sandhi (LDS) emerged later as *disyllabification* spread as a *compound marker*

Xiangshan's yangping-initial sandhi may reflect residual RDS

Aligns with broader Wu data: tone sandhi often mixes LDS and RDS; Matches Qian's proposed **four-stage LDS development**: partial connection → differentiation → simplification → spreading^[4]

References: [1] Xu, Tang, & Qian. (1981) Tone sandhi in New Shanghai. *Fangyan*. [2] Shi. (2020) *Tones and Disyllabic Tone Sandhi in Xiangshan Chinese Dialect*. [3] Genolini, Falissard,, & Kiener. (2023). *kml: K-Means for Longitudinal Data*. [4] N. Qian. (1992). *Dengdai Wuwu yanjiu*. Shanghai.