Research on Checked Tone in Lingchuan Dialect

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Abstract

This paper selects normal checked characters and makes a comprehensive analysis of checked tone merging in Lingchuan dialect from rhyme, initial consonants and tone. In terms of rhyme, geng rhyme's merging speed is fastest and shen rhyme is slowest. As for ancient consonants, nasal has the fastest speed, and voiced initial has the slowest speed. Judging from the attribution of the tones, the voiced and nasal initial checked characters are majorly classified into the departing tone, while the voiceless initial checked characters are attributed to four tone categories. The merging in Lingchuan dialect mostly follows the rules of mandarin, but from the perspective of the quantity, there are a few differences between Lingchuan dialect and Mandarin.

Subject Areas

Linguistics

Keywords

Checked Characters, Tone Merging, Rhyme, Initial

1. Introduction

Checked tone is one of four tones in middle Chinese dialect and also refers to the checked syllable that ends with consonants. With the continuous evolution of the language, checked tone has merged in most dialects, only preserves in a few dialects, such as Jin, Wu. This article uses Lingchuan dialect as the research object, aiming to provide corpus for the research of Jin dialect.

2. Phonology in Lingchuan Dialect

Lingchuan (LC) county is located in the southeast of Shanxi province. Lingchuan is connected to Gaoping in the west, Zezhou in the southwest, and Changzhi in the north. It is adjacent to Huixian City and Xiuwu County in the

east and south respectively.

There are 22 initials containing the zero initial in Lingchuan (LC) dialect, as in Table 1. The approximant /ɹ/ has three variants like /ɹ/, /ø/, /ʅ/ in this dialect. In most regions of Lingchuan, it reads /ɹ/; in the northern part, it reads /ø/, in the middle of Lingchuan county, it reads /ʅ/.

There are forty three finals in Lingchuan dialect. Among them, eight finals are checked finals [1]. There are eight monophthong, as in Table 2.

There are 6 tones, like dark level, light level, contour tone, departing tone, dark checked tone and light checked tone.

3. The Evolvment of Entering Rhyme in LC Dialect

Entering tone in LC dialect surrounded by mandarin dialect is in the merging process, which still keeps original tone value and keeps short duration. The rhyme coda is glottal stop -ʔ. But several entering tone characters have evolved, and the original rhyme becomes smooth rhyme. For the sake of investigating the current situation of entering tone in LC dialect, this study picks 400 entering tone characters, and makes a broad analyzing of entering tone and tone merging in LC dialect with the perspective of rhyme, initial and tone.

There are thirty-four classical entering rhymes in the middle ancient Chinese dialect. With the simplification of the phonetic system, classical entering rhymes reduce into eight rhymes in LC dialect, which can be further classified into three sets. The first set includes four types -ɑʔ, -iɑʔ, -uɑʔ and -yɑʔ, the second set contains -ieʔ and -yeʔ, the third set embraces -əʔ and -uəʔ. The actual combining situation of classical rhymes of checked tone in LC dialect is as following.

The low back vowel group -ɑʔ contains complete si hu (namely four types of finals), mainly comes from unrounded xian rhyme one division, two division, unrounded shan rhyme one division, two division, rounded shan rhyme one

Table 1. Consonants.

	labial	alveolar	retroflex	palatal	velar
Stop	p pʰ	t tʰ			k kʰ
Fricative	f		ʂ	ɕ ç	x ɣ
Affricate			tʂ tʂʰ	tɕ tɕʰ c cʰ	
nasal	m	n			
lateral		l			

Table 2. Vowels.

-ɿ -ʅ	-e	-ei	-a	-ai	-au	-æ	-aŋ	-ə	-əŋ	-ʌʔ	-əʔ
-i	-je -jeʔ		-ja		-jau	-jæ	-jaŋ	-jə	-iŋ	-jʌʔ	
-u	-we	-wei	-wa	-wai		-wæ	-waŋ	-wə -əu	-uŋ	-wʌʔ	-wəʔ
-y	-ye -yeʔ								-yŋ	-yʌʔ	

division, two division, unrounded dang rhyme one division, unrounded jiang rhyme two division, unrounded zeng rhyme one division, geng rhyme two division. Among these rhymes, shan xian dang rhyme unit with one division combine shan xian dang rhyme unit with two division merge into the low group -ɑʔ.

The unrounded xian rhyme one division with fricative initial tɕ/ɕ becomes -ieʔ, for example "jia (shell)" and "xia (box)". The rounded shan rhyme three division with fricative initial become -yeʔ, for example "yue (moon)", "yue (cross)" and "jue (dig)". The checked characters of unrounded dang rhyme with three division with fricative initial become -yeʔ, such as "yao (medicine)", "yao (key)" and "jiao (foot)". We can observe that the low back vowel set -ɑʔ with fricative initial add medial "i" and "y" and change into middle vowel set. The primary vowel change from low to high under coarticulation effects, the initial k is velar with high articulation position, the tongue moves across a larger span when following a low vowel. In order to reduce the effort of pronunciation, a high glide is added, and sound change occurs.

The middle vowel group -eʔ only has "finals with medial i" and "finals with medial y", few of "finals with medial i" and most of "finals with medial y" from the vowel raising, which mainly from shan rhyme with three, four division, xian rhyme with three, four division, unrounded shen rhyme with three division, unrounded dang rhyme with three division, unrounded zhen rhyme with three division, rounded zhen rhyme with three division and its initial is fricative, unrounded jiang rhyme with three division and its initial is fricative, unrounded zeng rhyme with three division, geng rhyme with three, four division.

The central vowel group -əʔ mainly come from rounded zhen rhyme one division, rounded zhen rhyme three division, rounded tong rhyme with one division, rounded tong rhyme with three division.

The zeng rhyme with two division with affricate initial tʂ becomes middle vowel with the influence of coarticulation. The affricate initial tʂ is retroflex consonant, which has high tongue position, and the tongue moves across a larger span when followed by a low vowel. In order to easily articulate, middle vowel replaces low vowel.

3.1. Entering Rhyme Merging

After investigating the finals situation of entering tone merging (Table 3), we can find that most entering rhyme didn't change, only a small number of entering rhymes have had sound change.

The first sound change is high vowel's apicalization. The head vowel of unrounded shen zhen zeng and geng rhyme with three division is high vowel [i], which will become apical vowel [ɿ] or [ʅ]. These four rhymes merges and mixes into zhi xie rhyme, whose initial also push the modification of vowel with the coarticulation.

The second sound change is becoming closed syllable by adding nasal coda. Entering rhyme will become close nasal rhyme, however this phenomenon isn't clear in LC dialect, merely has few entering characters, such as pickled [in].

Table 3. Entering rhyme merging.

Rhyme unit	Division	Checked rhyme	merging rhyme
	Unrounded one	ɑʔ	a/in
Xian rhyme	Unrounded two	ɑʔ/iɑʔ	a
	Unrounded three	ieʔ	ə/ie
Shen rhyme	Unrounded three	ieʔ	i
	Unrounded one	ɑʔ	a/ə/ai
	Unrounded two	ɑʔ/iɑʔ	a
Shan rhyme	Unrounded three	ieʔ	ə/ai
	rounded two	uɑʔ	a
	rounded three	yeʔ	a
	Unrounded three	ieʔ	i
Zhen rhyme	rounded one	uəʔ	u
	rounded three	yeʔ/əʔ/uəʔ	ai/u/əu/y
Dang rhyme	Unrounded one	ɑʔ/uɑʔ	ə/o/uo
	Unrounded three	ieʔ/yeʔ/uəʔ	au/uo/u
Jiang rhyme	Unrounded two	ɑʔ/uɑʔ/ieʔ/yeʔ	o/au/u
Zeng rhyme	Unrounded one	ɑʔ	ə/ei/o
	Unrounded three	ieʔ/əʔ	i/ʅ
	Unrounded two	ɑʔ/əʔ	a/ai/u
	Unrounded three	ieʔ	i/u
Geng rhyme	Unrounded four	ieʔ	i
	rounded two	uɑʔ	a
	rounded three	ieʔ	i
Tong rhyme	rounded one	əʔ/uəʔ	au/uo/u
	rounded three	yeʔ/əʔ/uəʔ	əu/u/y

The third sound change is vowel codaization. A new vowel will take the position of consonant coda that causes the original glottal stop coda drop. There are two types of vowel coda, namely [i] group and [u] group. The [i] group contains [ai] and [ei], which mainly comes from shan geng zeng geng rhyme, their common features are high and front. The [u] group involves [əu] and [au], which majorly from dang jiang and tong rhyme, the feature of them are non-high and front. The derivation vowel between the rhyme coda and the main vowel promotes the weakening of the rhyme coda and disappears [2].

Different rhymes have different merging speed. We count the number of each checked rhyme merging so as to get merging speed, as the following Table 4. From this table, we can find that the speed of zeng rhyme is the fastest, shen rhyme is the slowest. Rate of evolution is that geng rhyme > tong rhyme, dang rhyme > zhen rhyme > zeng rhyme > shan rhyme > xian rhymr > jiang rhyme > shen rhyme.

Table 4. Checked rhyme merging.

RHYME SET	TOTAL
xian rhyme	9
shen rhyme	2
shan rhyme	10
zhen rhyme	14
dang rhyme	16
jiang rhyme	3
zeng rhyme	11
geng rhyme	20
tong rhyme	16

3.2. From Initials to Observe Entering Tone Merging

The voicing of initials plays vital role in the process of entering tone merging. This section studies the checked tone merging from ancient initials. The following Table 5 is the quantity table of the ancient voicing initial consonants merging after statistics.

The total of voiceless consonant is 237, voiced consonant is 103, and nasal is 102. The merging number of voiceless entering tone characters is 44, merging rate is 18.6%. The merging number of voiced entering tone characters is 18, merging rate is 17.47%, the merging number of nasal entering tone characters is 43, merging rate is 42.15%. We can find that the merging speed of nasal consonant is fastest, voiceless consonant is second fastest, and voiced consonant is slowest. Different initial also has different merging speed. In terms of voiceless initials, initial [ø] is most quickly, next is initial [tɕʰ], [f], [tʰ], the slowest is [fʰ], [t], [ʈ]. As for nasal initials, the number of [j] is most, successively is [j] and [nʐ], the least is [l]. To voiced initial, [z] is fastest, [d] is slowest.

3.3. From Tone to Observe Entering Tone Merging

The entering tone in LC dialect contains dark type and light type, the tone value of dark entering tone is, the tone value of light entering tone is. Table 6 shows the entering tone type list.

The attribution of tone is related to the voicing of consonant, this section researches the status of checked tone in LC dialect from the perspective of voicing of consonant. According to the statistical analysis, entering tone is classified into two types: voiceless initial consonants are mainly dark entering tone; full-voiced consonants are mainly light entering tone. Relatively speaking, the nasal initial consonants are unstable, it mainly be distributed in light entering tone, and one third are distributed in dark entering tone.

Entering tone merging has two ways, the first way is glottal stop coda disappears, and then the duration lengthening, the tone becomes similar value to other smooth tone value; the second way is combining into same tone pattern of mandarin.

Table 5. The total of checked tone initials.

voicing	consonant	total	count	rate
Voiceless 237	p	20	4	20%
	p^h	7	1	14.2%
	f	6	2	33.3%
	f^h	1	0	0
	t	9	0	0
	t^h	11	3	27.2%
	ts	12	1	8.3%
	ts^h	11	2	18.1%
	s	21	5	23.8%
	ʈ	8	0	0
	$ʈ^h$	5	1	20%
	tɕ	14	3	21.4%
	$tɕ^h$	11	4	36.3%
	ɕ	19	3	15.8%
	k	36	3	8.3%
	k^h	14	2	14.3%
	x	16	2	12.5%
	ø	16	10	62.5%
	Total	237	44	18.6%
Voiced 103	b	7	2	28.6%
	v	6	1	16.7%
	d	15	1	6.7%
	dʑ	15	2	13.3%
	z	5	2	40%
	ɖ	15	3	20%
	dʐ	10	2	20%
	ʐ	8	1	12.5%
	g	7	2	28.6%
	ɣ	15	2	13.3%
	total	103	18	17.47%
Nasal 102	m	21	8	38.1%
	m̥	5	2	40%
	n	8	3	37.5%
	l	28	8	28.6%
	nʐ	7	4	57.1%
	ŋ	10	3	30%
	j	5	3	60%
	ȷ̃	18	12	66.7%
	total	102	43	42.15%

Table 6. Entering tone type list.

Tone type / voicing	Dark	light
voiceless	112	21
nasal	18	30
voiced	12	39

Table 7. The total of tone merging.

	voiceless	voiced	nasal
Dark level	8	0	3
Light level	6	2	0
Rising tone	10	1	1
Departing tone	23	12	38

LC dialect basically obeys the second merging way. According to the distribution of tone pattern, voiced and nasal initials checked characters majorly mix into departing tone pattern, voiceless initial checked character merge into four tone patterns, among half of voiceless combine into departing tone pattern, one fourth mix into rising tone pattern, one fifth into dark level pattern, the rest meld into light level pattern, as in Table 7. This situation mostly obey the mandarin's merging rule, voiced mix into light checked tone, nasal mix into departing tone and voiceless mix into four patterns. However, in terms of quantity, there is big difference between mandarin and Lingchuan dialect. Half of checked tone combine into departing tone, one third mix into light level, next is dark level, the least is rising tone. In Lingchuan dialect the most is departing tone, rising tone is second, dark level is third, and the least is light level.

4. Summary

The current situation of checked tone in the LC dialect is that there are still three sets of checked rhymes, but it is in the stage of transition to two sets of checked rhyme. The current status of the entering tone is to keep the dark and light into the dichotomy. The characteristics of entering tone merging: in terms of rhyme, geng rhyme is fastest and the shen rhyme is slowest. After entering tone merging, the glottal stop drops, and the syllable lengthening occurs and is merged into the smooth rhyme. As for consonants, the nasal consonants had the fastest speed, the voiceless consonants had the second fastest speed, and the voiced consonants had the slowest speed. Judging from the attribution of the tones, the vowels of the voiced and nasal initial entering characters in the LC dialect are basically classified into the departing tone, and the voiceless checked characters are mainly attributed to four tone categories. The adjustment situation basically follows the rules of mandarin, but from the perspective of the quantity, there is a big difference between Lingchuan dialect and Mandarin. The reason may be re-

lated to the closed geographical environment, and develops according to the evolution of its own internal phonology system. The comprehensive and detailed analysis of checked tone merging in LC dialect can provide plentiful corpus for the study of Jin dialect.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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