LEGACY OF THE YANG-PING/ RU-SHENG DISTINCTION:

PRODUCTION OF CHANGSHA MANDARIN TONE 2 BY DIFFERENT GENDERS

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Defining Changsha Mandarin (CSM)

CSM as an accent

- Wu (2005) first spoke of "**Plastic Putonghua**" as one of the three spoken codes in the Changsha dialect (the other two being two varieties of Changsha Xiang, ie. Spoken Changsha Xiang and Reading Changsha Xiang, originally for communicative and literary use respectively).
    - The word "plastic", which has the connotation "cheap", is used for mocking the unnaturalness of the nonnative pronunciation (Wu, 2005; Wang, 2018).
- **Phonology of CSM-1**: Putonghua-like tonal system with Changsha segmental phonology.
    - There are **different degrees of accent** (whose phonological realisation derives from a combination of Mandarin and Changsha Xiang, and the combination has no fixed pattern since it is deemed dependent on speakers' knowledge of Mandarin), and these features were then interpreted as errors, defects, and hurdles to overcome.

CSM as an interlanguage

- CSM can be a third language system in its own right;
  the learner grammar is in a state of flux (Selinker, 1972; Li, 1988; Chen, 1991) .

- Problems:
    - It overlooks the **shared characteristics** among speakers of CSM found in many studies (Selinker, 1972; Jing & Niu, 2010).
    - Speakers' **common practice of code switching** between standard Mandarin and CSM in different sociolinguistic contexts evidenced that a mastery of Putonghua and the daily use of CSM did not run into contradiction (Wang, 2018).
    - There are cases of **children growing up as native speakers** of CSM, and nonnative speakers can learn to speak CSM without any proficiency in the phonological system of Changsha Xiang in advance.

CSM as a fossilised form of interlanguage

- CSM is "fossilised" not in the sense that progress of acquisition ceases before native-likeness is achieved in spite of continuing input (Lightbown, 1985), but in the sense that it develops to have "**a stable linguistic system, shared language sense among speakers and explicit pragmatic functions**" (Jing & Niu, 2010, p.41).
- Jing and Niu (2010) reported a consistency rate as high as 70%-80% in their pronunciation tests.
- **Phonology of CSM-2**: the same segmental phonology as Mandarin's, but suprasegmentally a distinct pattern of tone values.

CSM as a sociolect

- Jing and Niu (2010): CSM has the potential for developing into a sociolect.
    - It is most popular among well-educated young people (see also Xu, et al., 2012);
    - It is used by these people to indicate social/cultural identity and cater to different communicative needs;
    - It served as the "lingua franca" in public social settings such as schools, governments, and shopping malls, with the probability of CSM use on some of these occasions ranging from 60% to 80%.

CSM as a contact language

- A language like CSM arises from the contact between two or more different languages (Xue, 2007; Matras, 2009).
- However, traditional theories on creole languages may not capture the characteristics of CSM (viz. creole languages are simplified in similar ways in terms of grammar). They also fail to capture why there could be two different varieties of CSM.
- Bickerton (1975) on Guyanese English:
    - **Acrolect:** educated Guyanese English, a variety which really has very few differences from other varieties of Standard English — **CSM-2 as an acrolect**.
    - **Basilect:** the variety at the other extreme of the continuum, the variety that would be least comprehensible to a speaker of the standard, perhaps even incomprehensible — **CSM-1 as a basilect**.
    - **Mesolects** are intermediate varieties.

Tone inventories of Mandarin and Changsha Xiang

- Mandarin (Chao, 1948, 1956, 1968): a high-level tone ("*yin-ping*"), a mid-rising tone ("*yang-ping*"), a low-dipping tone ("*shang-sheng*") and a high-falling tone ("*qu-sheng*"). Using a five-digit notation formulated by Chao (1930), the tone values for Mandarin tones can be marked as 55, 35, 214, and 51.

- CSX (see Table 2):

    - Note: the entering tone in Changsha Xiang, though classified as a "checked" tone, is not at all checked in that it is neither followed by an occlusive coda nor shortened to any significant extent.

    - Guo and Jiang (2020) reported a bidirectional pattern of erring — even native speakers of Changsha Xiang tend to confuse these Tone 2 and Tone 6 in discrimination tasks.

Table 2 Tone values of Changsha Xiang

	Yin-ping	*Yang-ping*	*Shang-sheng*	*Yin-qu*	*Yang-qu*	*Ru-sheng*
Yuan (1958)	33	13	41	55	21	24
Yang (1974)	33/323	13	53	35/45	11/21	24
Li (1982)	33	13/213	42	55/45	21	24
Bao (1999)	33	13	41	55/45	11/21	24
Peking University (2003)	33	13/113	41	45/445	21	24
Zhong (2003)	34	13	42	45	21	24
Li & Liu (2006)	23	13	42	45	21	24
Xiang & Shi (2007)	33	13	42	45	21	24

Tone inventories of CSM

Table 1 Tone values of Changsha Mandarin

	Yin-ping	*Yang-ping*	*Shang-sheng*	*Qu-sheng*
Wen (2000)	44	24	323/213	51
Wu (2005)	55/44	35/24	214/212	51/41
Mao (2009)	33	23	21	45
Fu (2016)	44	34/35	313/413	51/52
Jing & Niu (2010)	33	13	214	45
Liu (2017)	44	324	31	45

Table 3 Words with contrastive tones in Changsha Xiang and (un)aspirated consonants in Mandarin

	Changsha Xiang	Mandarin
爬 (to climb)	/pɒ13/	/pʰa35/
拔 (to pull out)	/pɒ24/	/pa35/
茶 (tea)	/tsɒ13/	/tʂʰa35/
闸 (floodgate)	/tsɒ24/	/tʂa35/

Research questions

1. **Are T2-2 and T2-6 words produced with different contours in Changsha mandarin (CSM-2)?**
2. **Is the difference, if there is any, in accordance with the tonal contrast in Changsha Xiang?**

Participants

- Six participants were recruited in the production experiment (3 males and 3 females, age range: 18-23, mean age: 21.5).
  - They were undergraduates or graduate students, all born and raised in the city of Changsha (in the five urban districts).
  - Their parents were native speakers of Changsha Xiang, and they themselves were native to both Changsha Xiang and CSM, and self-reported everyday use of CSM as their major tongue.

Material

- T2-2 words were elected if they take Tone 2 in both Mandarin and Changsha Xiang, while T2-6 words should take Tone 2 in Mandarin but Tone 6 in Changsha Xiang with reference to Changsha Fanyan Cidian (1998).
- A total of 158 words were selected in the end.
  - For words beginning with fricatives and nasals, there were homophonic groups like {蛇 /ʂɤ35/ (snake), 舌 /ʂɤ35/ (tongue), ...} and {眉 /mei35/ (eyebrow), 没 /mei35/ (not have)}.
  - For words with stop initials, a group was paired with another for the T2-2 vs. T2-6 comparison if in Mandarin the only difference lies in aspiration, for example, 竹 /ʈʂu35/ (bamboo) and 厨 /ʈʂhu35/ (cook). There was one exceptional pair disobeying the aspiration criteria, ie. the T2-2 group {藤 /thəŋ35/ (vine), ...} and the T2-6 group {疼 /thəŋ35/ (to hurt), ...}.

Data analysis

- Acoustic analysis with Xu (2013)'s **ProsodyPro**.

- **Time-normalised f0** data of each speaker were first analysed separately, and normality tests detected in a list of outliers. **Extreme outliers**, ie. values that were either 3 S.D. less or greater than the mean for that subject, were later removed from each speaker's data.

- Data of the six speakers, altogether 838 words (439 T2-2 samples and 399 T2-6 samples), were then **z-score normalised** so that the impact of physiological or anatomical factors due to gender or individual differences can be eliminated, and that the originally incomparable data can be used to make generalisations across speakers (z-score = [f0 (one exemplar) – mean f0 (all exemplars of the speaker)] / f0 SD (all exemplars of the speaker)]).

Investigating individual data

- For each speaker's normtime f0 data, a one-way MANOVA was conducted to investigate the effect of tone type (T2-2 vs. T2- 6) on the f0 contours of words measured at different points of time. Results of Multivariate Tests showed that in the production of **Speaker A, B, C, and E**, statistical significance was found in the T2-2 words' and T2-6 words' normtime f0 contours. The difference at each time point was not statistically manifest in Speaker D's data, as is the case in Speaker F's.

Table 5. Tests of Between Subjects Effects p values

	time1	time2	time3	time4	time5	time6	time7	time8	time9	time10
Speaker A	0.027	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.022
Speaker B	0.024	0.009	0.005	0.002	0.000	0.000	0.000	0.000	0.000	0.001
Speaker C	0.005	0.860	0.326	0.195	0.059	0.018	0.007	0.005	0.004	0.000
Speaker D	0.125	0.606	0.635	0.276	0.293	0.958	0.514	0.396	0.212	0.068
Speaker E	0.212	0.407	0.036	0.561	0.730	0.152	0.011	0.033	0.283	0.042
Speaker F	0.196	0.364	0.056	0.169	0.161	0.282	0.610	0.665	0.868	0.674

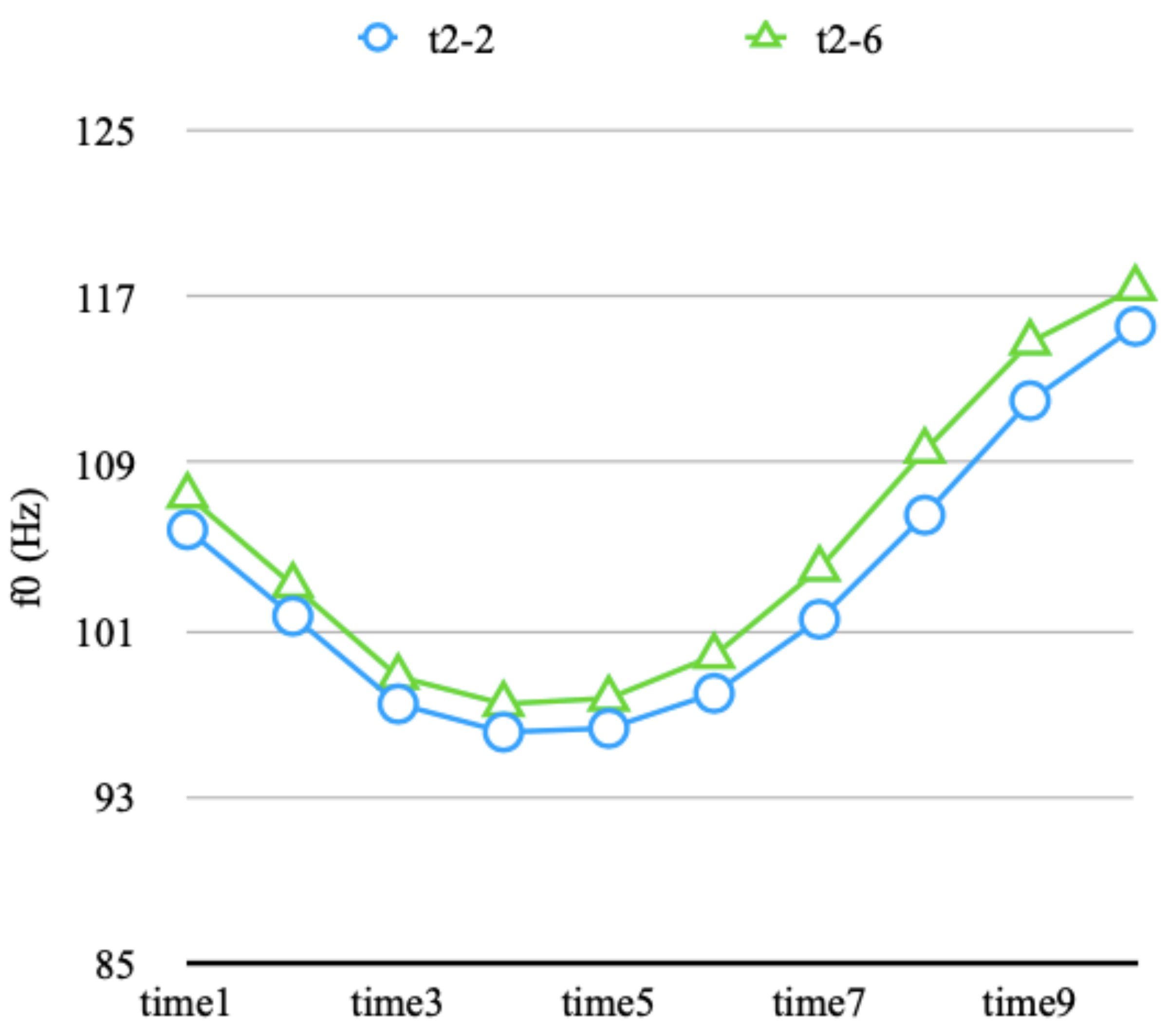

Figure 2. Mean normtime f0 contours of Speaker A

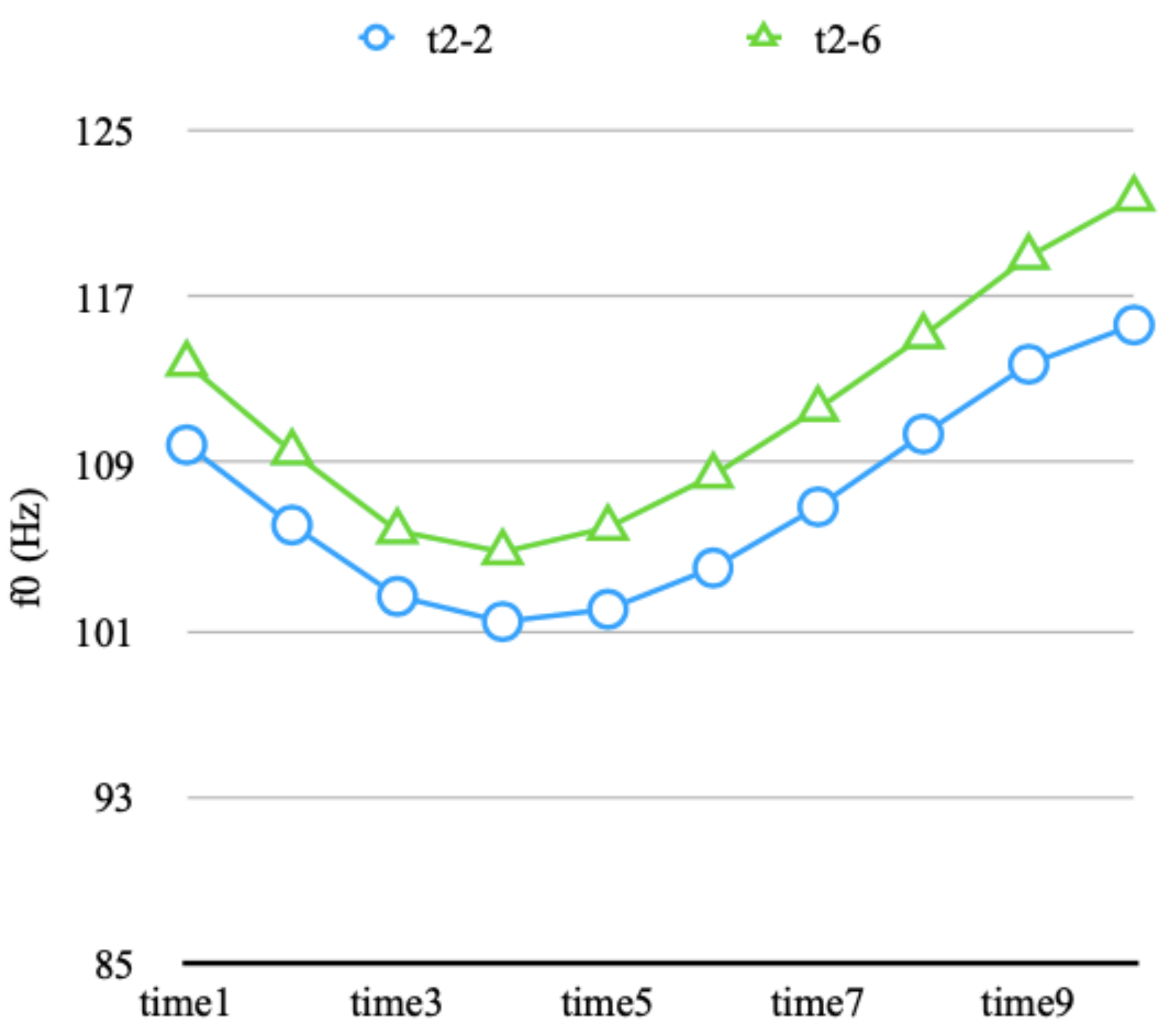

Figure 3. Mean normtime f0 contours of Speaker B

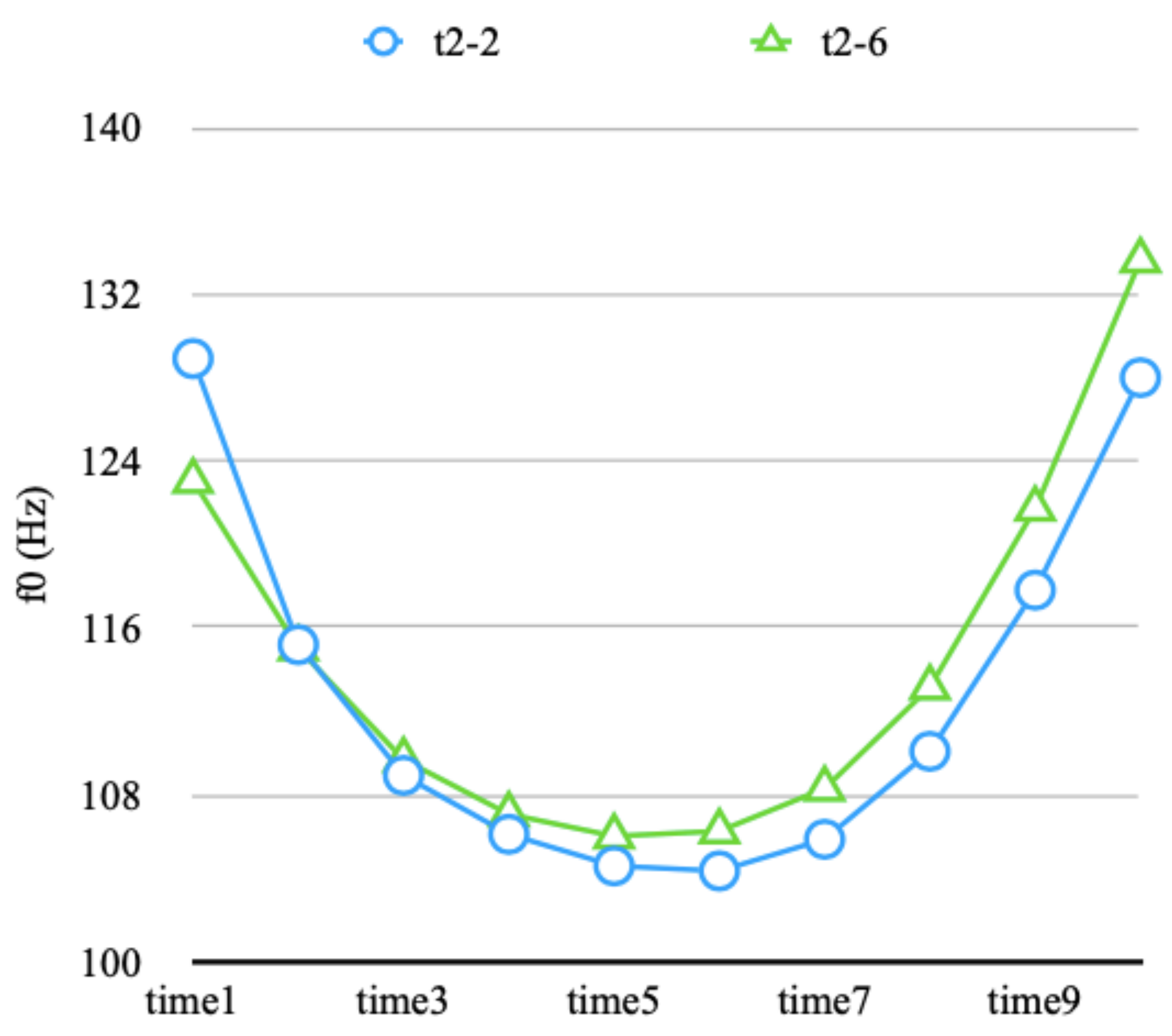

Figure 4. Mean normtime f0 contours of Speaker C

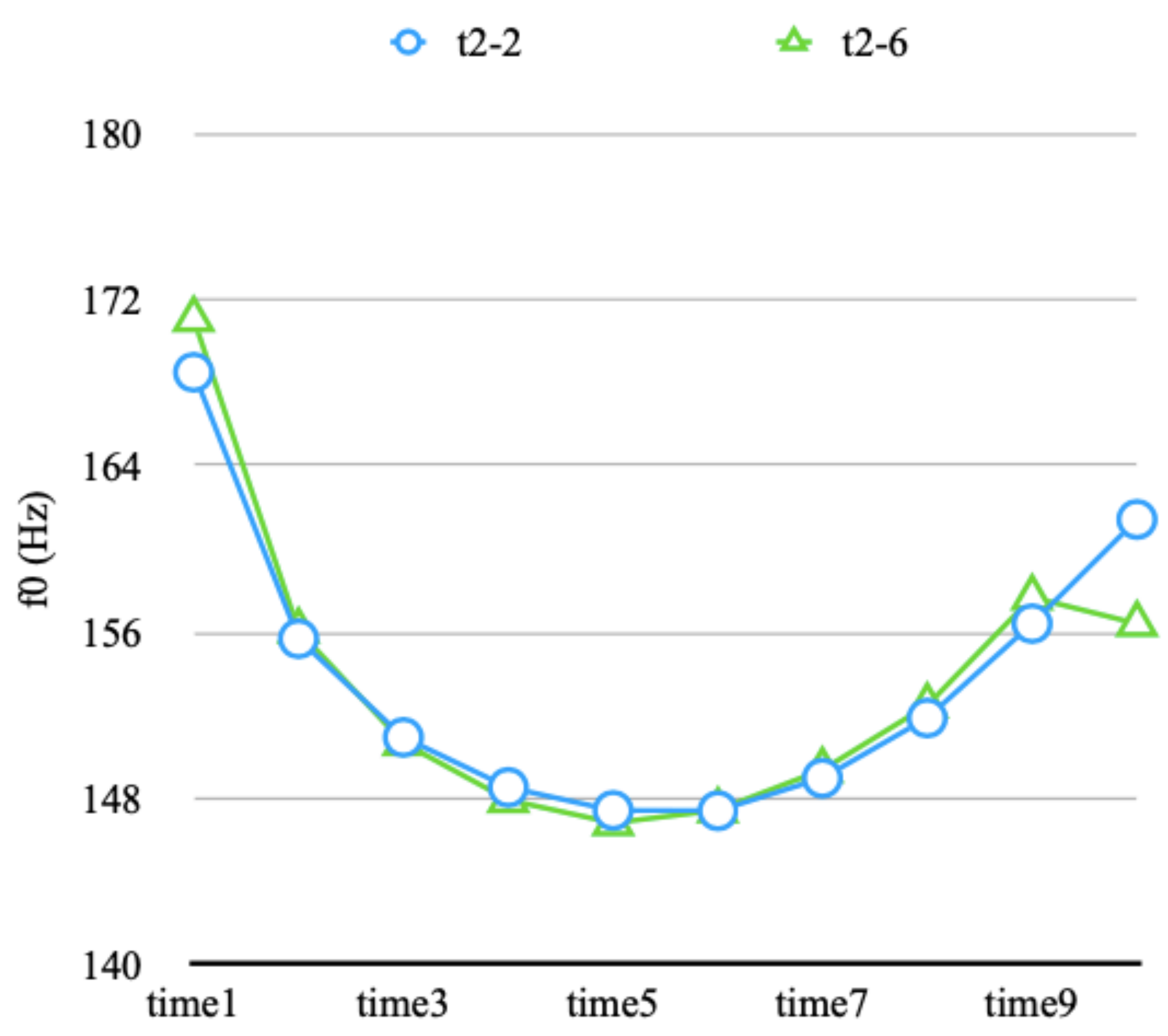

Figure 5. Mean normtime f0 contours of Speaker D

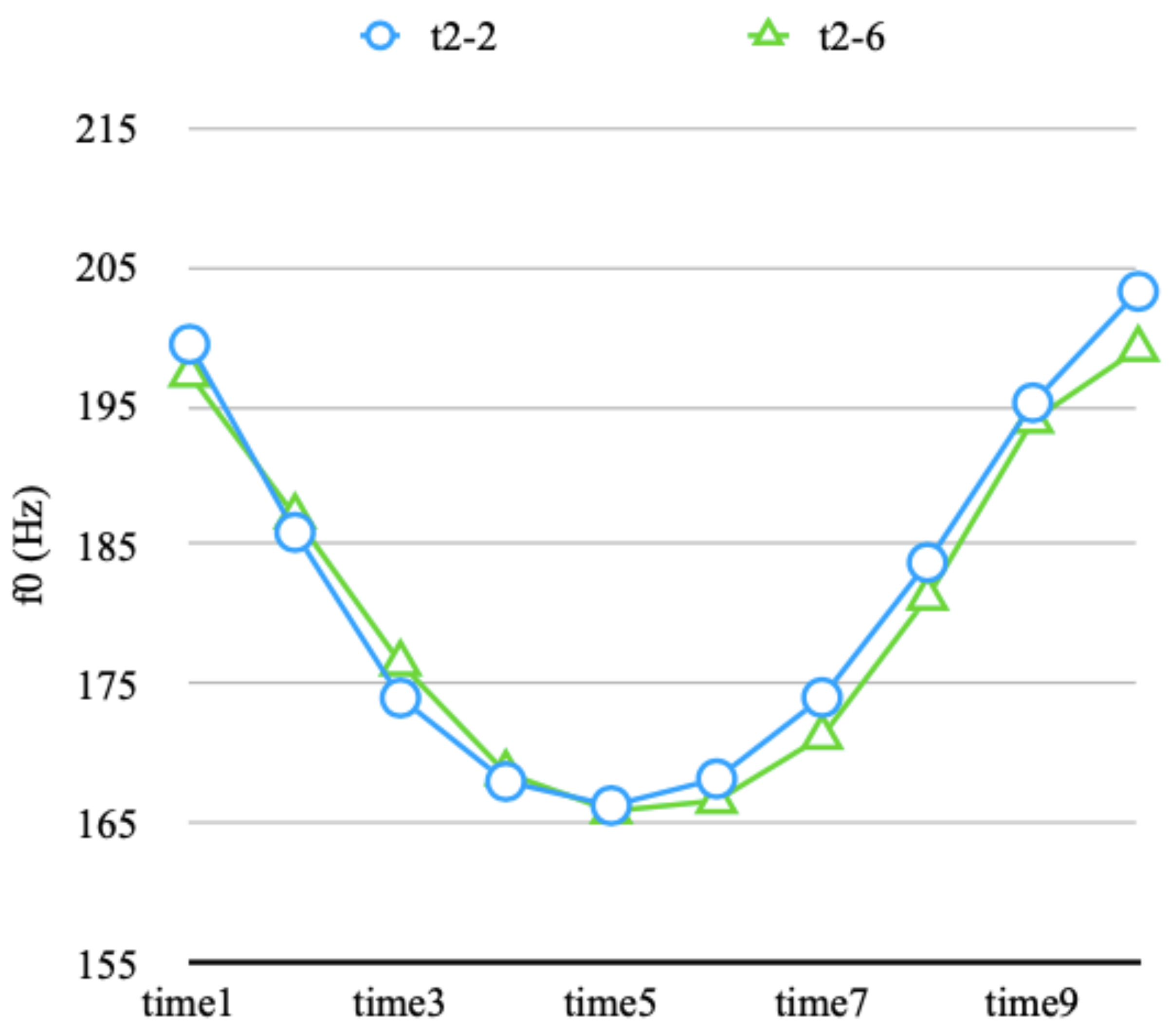

Figure 6. Mean normtime f0 contours of Speaker E

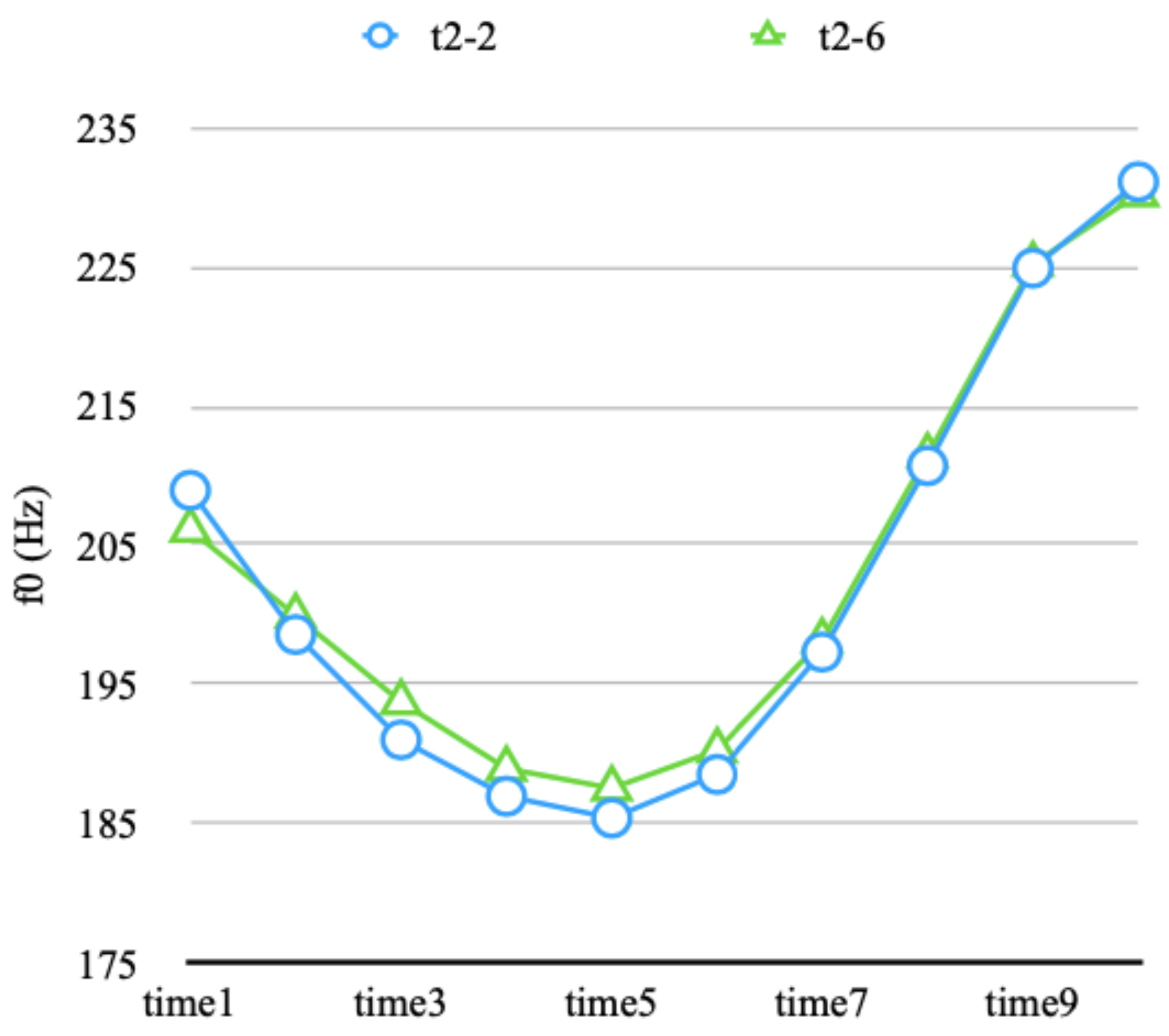

Figure 7. Mean normtime f0 contours of Speaker F

Gender difference

- Data then underwent a two-way MANOVA, with tone type, gender, and their interaction as variables to examine.

- The main effect of gender and the interactive effect of gender and tone type was also found significant. Statistically significant difference was found in all except the first time point of the male contours.

    - The difference between the two tone types is manifest in male speakers' data — **T2-6 words were produced with a higher f0 relative to T2-2 words, and the gap was enlarged in the middle of the contour and remained large throughout**.

- Sociolinguistics: women's stronger adherence to prestige forms like Mandarin forms and their leading role in sound change.

- **Labov (2010)** proposed that 'in stable situations, women perceive and react to prestige or stigma more strongly than men do, and when change begins, women are quicker and more forceful in employing the new social symbolism, whatever it might be' (pp.291).

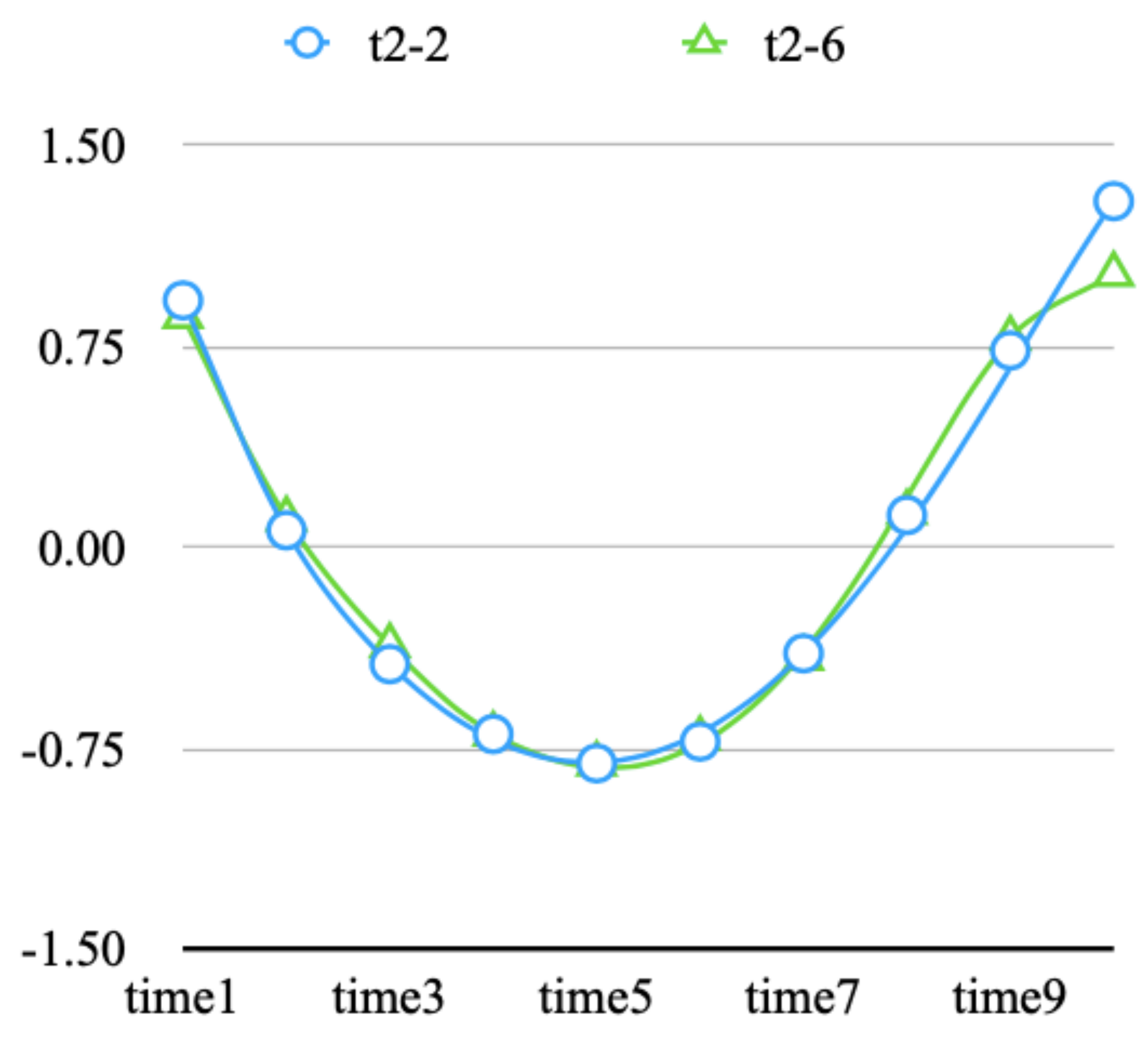

Figure 9. Mean z-score normalised normtime f0 contours of female speakers

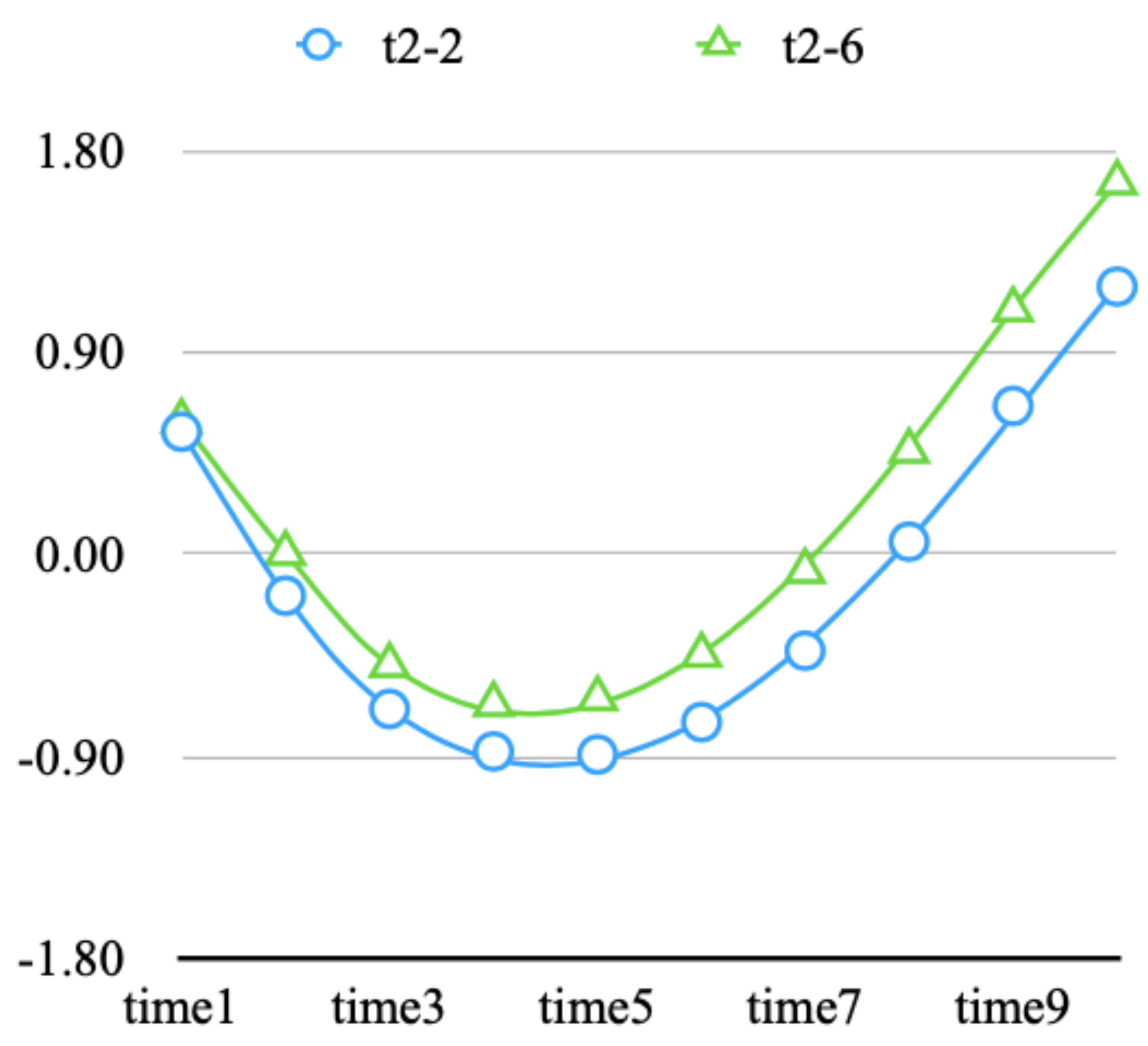

Figure 10. Mean z-score normalised normtime f0 contours of male speakers

Implications

- The male speakers' production difference between T2-2 and T2-6 contours can be appropriately explained by the **transfer of pitch height difference between Tone 2 (13) and Tone 6 (24) from Changsha Xiang.**
    - It seemed plausible that those paired words that do not make aspiration a distinctive feature, 蛇 /ʂɣ35/ (snake) and 舌 /ʂɣ35/ (tongue) for example, can make minimal pairs to evidence the fact that there may be a fifth tonal category in CSM speakers. It would be interesting for future research to find out **if CSM speakers naive to Changsha Xiang tones can also produce and perceive such differences.**
- Absence of such a distinction in the tonal patterns produced by female speakers revealed a possibly ongoing sociolinguistic progress of tone migration. It also goes line with Bickerton's (1975) continuum of creole languages, with **female speech corresponding to the acrolect** and **male speech to mesolect**.

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