

Cross-linguistic Influences on Speech Prosody by Cantonese Multilingual Speakers

TIAN JINGXUAN¹

¹*The Education University of Hong Kong (Hong Kong)*
xuanxuan1028123@msn.com

Multilingual context is common in modern society, and previous studies reported that multilingual language acquisition is a complex process and different from first language (L1) or second language (L2) acquisition (e.g., Chen & Han, 2019). In the Chinese context, there are many multilingual language learners whose L1 is usually their dialect. Putonghua (Mandarin, hereafter) is the dominant language in mainland China and L2 for these multilinguals. For example, Cantonese is language learners' L1 in Guangdong province (GD). Mandarin is their L2, and English is their third language (L3) which is the foreign language that Mainland students are required to learn at school. These three languages are also three common languages used in Hong Kong (HK) (Wang & Kirkpatrick, 2015); however, language learners' background in HK is different from that of learners in GD. English is their L2 owing to the historical issue. Mandarin is their L3 and is more frequently used after the handover and the implementation of the 'bilingual and trilingualism' policy (Wang & Kirkpatrick, 2013).

Cantonese, Mandarin, and English have different prosodic features. For fundamental frequency (F0), Han et al. (2022) revealed that the F0 of Mandarin speakers is larger than that of English speakers. In Mandarin, there are words with neutral tones, which are considered as unstressed syllables. However, the syllables with neutral tones are not toneless but have a target F0 and are independent of the surrounding tones. The syllables with a neutral tone have a static and mid F0 (Chen & Xu, 2006). The pitch range of a syllable with a neutral tone and its surroundings is large in Chinese. Chinese is a syllable-timed language, while English is stress-timed. Cantonese is a typical syllable-timed language, while Beijing Mandarin is less syllable-timed compared with Cantonese (Mok, 2009). Owing to the different prosodic features of the three languages, Cross-linguistic influences (CLIs) could influence the acquisition of speech prosody in the multilingual context.

However, few previous studies focused on CLIs patterns of L3 prosody. Zhu et al. (2019) investigated L3 prosody produced by Cantonese-English-German trilinguals. L3 rhythm receives effects from L1 transfer and L2 interlanguage transfer. However, no Cantonese data of the Cantonese-English-German participants were collected as a reference. Han et al. (2022) examined influences from L1 and L2 to L3 prosodic features (mainly on pitch span, pitch level, and duration ratio). For GD multilinguals, progressive transfer from L2 large pitch span to L3 was identified; however, regressive transfer from L3 large pitch span to L2 was also identified when Hong Kong Cantonese speakers' L3 is more proficient than L2. Han et al. (2022) also discovered that GD Cantonese speakers' L2 neutral tone duration has an impact on their L3 English function word duration. However, Han et al. (2022) only investigated the prosody features at an initial level and measured the duration ratio on the phrasal level. Duration metrics (e.g., nPVI) should be calculated. This study aims to calculate duration metrics and pitch span on the phrasal level and investigate the possible CLIs on speech prosody by Cantonese speakers.

Participants of this study were 30 university students from HK and GD (15 from each area) who have Cantonese as their L1. The 15 HK participants have English as L2 and Mandarin as L3. However, for the 15 GD participants, Mandarin is their L2, and English is their L3. Ten out of the 15 HK participants had relatively higher proficiency in L2 (HK L2 H) English. The other 5 HK participants had relatively higher proficiency in L3 Mandarin (HK L3 H). For GD participants, all 15 have higher proficiency in their L2, Mandarin. None of them have a higher L3 proficiency level than their L2. Chen and Tian (2021) also reported this limitation in their study because Mandarin is the official and dominant language. It would be hard to recruit participants whose English, as a foreign language, has a higher proficiency level than the dominant language. However, 5 GD participants had relatively higher proficiency in L3 English, who received 18 to 19 (out of 20) in

the college entrance English exam (GD L3 H), compared with the other 10 participants who received 10 to 15 (GD L2 H).

All 30 participants performed Cantonese, Mandarin, and English passage reading-aloud tasks. Cantonese and Mandarin versions of ‘The North Wind and the Sun’ were selected. The English passage was retrieved from Chen and Chung (2008), in which different sentence types were included (e.g., Wh-questions & Yes-No questions). 2 native speakers (NSs) of English and Mandarin were also recruited and performed the English and Mandarin passage reading, which was used as the reference. Duration and pitch were measured using Praat (Boersma & Weenink, 2021). The syllable duration was normalized by calculating the nPVI for syllables (nPVI_S). The pitch span for phrasal level utterances is calculated.

HK participants (both groups) produced relatively smaller L1 nPVI_S compared with that of GD participants. The small L1 nPVI_S was transferred to HK participants’ L3 Mandarin, which also had smaller nPVI_S compared with that of GD participants and Mandarin NSs. Progressive CLIs from L1 to L3 were identified. For the HK L2 H group, the CLIs from L2 to L3 and L1 could not be identified. However, 2 out of the 10 HK L2 H participants, who had larger L2 English nPVI_S compared with the other 8 HK L2 H participants, produced relatively larger L1 Cantonese nPVI_S. Regressive CLIs (from L2 to L1) were also identified. However, the L2 regressive CLIs were limited and only occurred when the participants’ L2 English nPVI_S was close to that of NSs. HK participants’ pitch span mainly received CLIs from L1 Cantonese. Their L1 pitch span (both groups) was relatively large, which was transferred to HK participants’ L2 English and L3 Mandarin. HK participants’ pitch span of English and Mandarin was 2 or 3 times larger than those of NSs.

GD participants’ L1 and L2 nPVI_S values were not statistically different. For GD participants, the nPVI_S values of L3, English, were also close to those of their L1 and L2. Strong L1 and L2 CLIs to L3 could be identified. For pitch span, GD participants’ L2, Mandarin, received CLIs from their L1. GD participants (both groups) produced a larger pitch span (almost two times larger) than that of NSs. A progressive CLI pattern, from L1 Cantonese to L2 Mandarin, could be identified. This study provided valuable contributions to speech prosody acquisition in the multilingual context.

References

- [1] Chen, H. C., & Han, Q. W. (2019). L3 phonology: Contributions of L1 and L2 to L3 pronunciation learning by Hong Kong speakers. *International Journal of Multilingualism*, 16(4), 492–512.
- [2] Wang, L., & Kirkpatrick, A. (2015). Trilingual education in Hong Kong primary schools: An overview. *Multilingual Education*, 5(3), 1–26.
- [3] Wang, L., & Kirkpatrick, A. (2013). Trilingual education in Hong Kong primary schools: A case study. *International Journal of Bilingual Education and Bilingualism*, 16(1), 100–116.
- [4] Han, Q. W., Tian, J. X., & Chen, H. C. (2022). L3 Prosody: Cross-linguistic influence of prosodic features in Mandarin and English by Cantonese multilinguals. *L3 Acquisition After the Initial State*. Amsterdam, The Netherlands : John Benjamins Publishing Company.
- [5] Chen, Y., & Xu, Y. (2006). Production of weak elements in speech—evidence from f₀ patterns of neutral tone in Standard Chinese. *Phonetica*, 63, 47-75.
- [6] Mok, P. (2009). On the syllable-timing of Cantonese and Beijing Mandarin. *Chinese Journal of Phonetics*, 2, 148-154.
- [7] Zhu, Y., Chen, A., Sudhoff, S., Mok, P., Calhoun, S., Escudero, P., & Warren, P. (2019). Third language prosody: Evidence from Cantonese-English-German trilinguals. In S. Calhoun, P. Escudero, M. Tabain, & P. Warren (eds.), *Proceedings of the 19th International Congress of Phonetic Sciences, Melbourne, Australia, 2019*. (pp. 3735-3739). Canberra, Australia: Australasian Speech Science and Technology Association Inc.
- [8] Chen, H. C., & Tian, J. X. (2021). The roles of Cantonese speakers’ L1 and L2 phonological features in L3 pronunciation acquisition. *International Journal of Multilingualism*, 1–17.
- [9] Chen, H. C., & Chung, R. F. (2008). Interlanguage analysis of phonetic timing patterns by Taiwanese learners. *Concentric: Studies in Linguistics*, 34, 79-108.
- [10] Boersma, P., & Weenink, D. (2021). *Praat: doing phonetics by computer* [Computer program]. Version 6.2.