The Tonal Space of Hong Kong Cantonese and Its Implications in Tone Merger

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Hong Kong Cantonese (HKC) stands out from other tone languages in the world by having a rich system of tonal contrast. There are six contrastive tones in standard HKC, namely high level (T1), high rising (T2), mid level (T3), extra-low level (T4), low rising (T5) and low level (T6). However, this highly complex system is in the process of merging. Through administering discrimination and production tasks to 120 subjects of three age groups, Fung and Wong (2010a, b) confirmed that T2/T5 was a full-merger and T3/T6 pair a quasi-merger in a sub-community of HKC speakers. Furthermore, T4/T6 pair was identified as a near-merger since speakers can produce the contrast but fail to perceive it in contemporary HKC. Further acoustic analysis on the new rising tone produced by the mergers of the three age groups was performed by Fung and Wong (2011). It was revealed that the rising tone merger was a non-abrupt but highly dynamic sound change, assuming an apparent time hypothesis. Apart from the two rising tones, the development of the three non-high level tones deserves our attention. HKC has four level tones, which is relatively rare among tone languages. What will the HKC tone system look like if the four-level contrast is no longer maintained? Will T4 merge with T3 or with T6? The present study attempts to find out whether there are any changes in the production of level tones among speakers who still maintain all the six tonal contrast. It is hoped that the result may shed some light on the motivation of the level tone merger in HKC.

The data of the study were based on the speech samples produced by six male subjects of three age groups collected in Fung and Wong (2010a, b). The mean age of the senior group, middle-aged group and the young group was 24, 41, and 53 years respectively. The speech samples were generated by embedding three CV syllables into two sentence carriers of different positions. In total, 216 target syllables (3 syllables x 2 positions x 6 tonal contrast x 2 subjects x 3 age groups) were analyzed. The fundamental frequency (F0) values of each target syllable were extracted at ten equal distant points using a Praat script. The F0 values measured were normalized using the T-formula. The changes of level tones were observed by the following parameters: (1) Tonal space – the area of the triangle formed by T1, T2 and T4; (2) F0 mean of each tone; (3) Euclidean distances of T1-T3, T3-T6 and T6-T4. The values for each parameter measured was averaged for each subject and then for each group.

Preliminary result indicated that the tonal triangle of the middle-aged group was significantly reduced. The height of T4 of the two younger groups was significantly raised. The Euclidean distance between T4 and T6 was well maintained among three groups. However, the Euclidean distance between T3 and T6 of the two younger groups were significantly reduced as compared with the senior group. It can be concluded that the tonal space of HKC is in the process of reduction. The tones have become less dispersed. The distance between T3 and T6 may be further reduced. The implications of these changes in the tone merger phenomenon in HKC will be discussed in the paper.

References:

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