

## Production of Korean Accentual Phrases by Cantonese-speaking Learners

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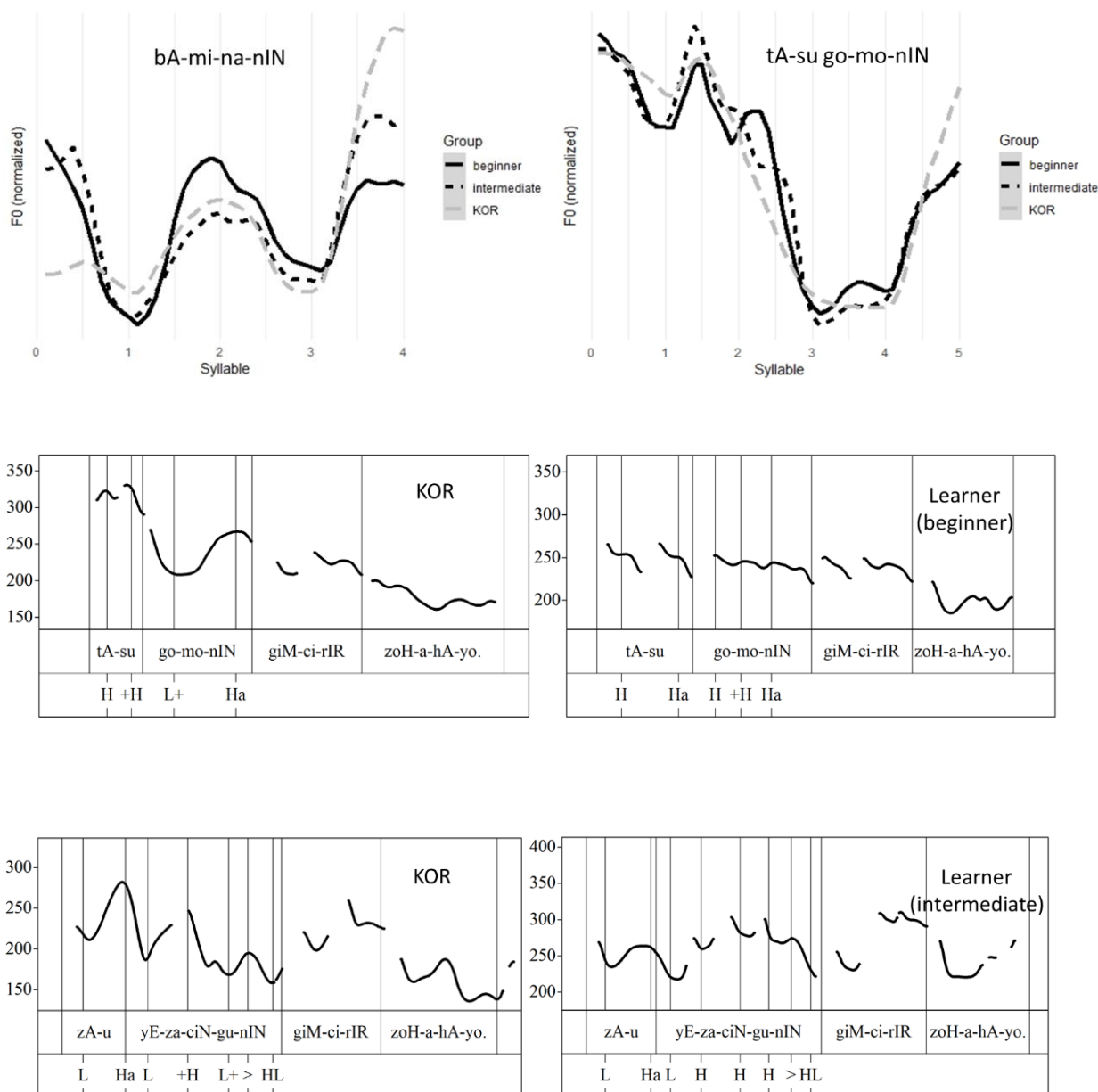
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Cantonese is a tone language, in which the realization of intonation is restricted mainly to the sentence-final syllable [1]. Accordingly, native Cantonese speakers may have difficulty acquiring second language intonation with richer pitch variation in other parts of the utterance. For example, it has been suggested that Hong Kong English (HKE) intonation is formed in such a way that every syllable in an English utterance is assigned a Cantonese level tone to represent the stress patterns of each English word [2]. However, while English can be described as a stress accent language with the pitch accent anchored to a stressed syllable, Korean has a relatively fixed phrasal pitch accent, namely, TH-LH (T=H/L depending on the feature [stiff vocal cords]) in the accentual phrase (AP), a prosodic unit smaller than an intonation phrase (IP) but larger than a phonological word [3]. This study examined a set of non-native intonation patterns by Cantonese learners in the production of Korean accentual phrases. Several dimensions (prosodic phrasing, speaking rate, segment-tone interaction and surface tonal realization) were examined in 4 native Korean speakers and 17 Cantonese learners (beginning vs. intermediate) using a sentence reading experiment. We try to explore the developmental patterns of these dimensions in non-native intonation and whether they result from a universal acquisition process or prosodic transfer from L1.

40 simple sentences were adapted from the materials in [4]. These sentences all ended with ‘giM-ci-rIR zo-a-hA-yo’ meaning ‘like kimchi’ but differed in subject phrases. In order to test the word size effect and segment-tone interaction in the learners, these subject phrases varied among 3-7 syllables including a topic marker ‘nIN’, and half of the initial syllables started with a [+stiff vocal cords] segment while the other half started with a [-stiff vocal cords] one. A sample sentence is ‘mi-na i-mo-nIN giM-ci-rIR zo-a-hA-yo’ (Mina’s untie likes kimchi). Phrasings and tonal patterns of the subject phrases were marked using Korean ToBI. The phrasing of APs and IPs was cued by boundary tone contours (usually LHa for APs and L%/HL% for IPs in declaratives) and types of pauses (with or without a strong subjective sense of pause) [3].

The results showed that the Cantonese learners produced AP boundary H tones consistently, but had various problems in realizing the non-boundary tones: as shown in Figure 1, comparing with native Korean speakers who produced a four-tone HHLH pattern for the 5-syllable AP, the non-native speech was featured by a relatively flatter contour, e.g., HH-Ha (middle-right), and by adding one more tone for the 5-syllable AP (bottom-right). This more-tone pattern has a high error rate of over 70% across both learner groups, and it mirrors HKE in which every syllable in English is assigned a Cantonese level tone. For the other dimensions, the two learner groups sometimes patterned together in terms of segment-tone interaction, speaking rate and the influence of speaking rate on AP length. However, the intermediate learners also showed significant improvement in that they produced longer APs and IPs and a higher AP-final H tone towards the native pattern.

This study confirmed several universal properties of non-native prosody at early stages, such as more intonational and accentual phrases (i.e., more truncated phrasing) and slower speech rates. L1-specific transfer was also observed on the surface tonal patterns, similar to Hong Kong English. Furthermore, our findings suggest that some phonological properties of intonation, e.g. boundary tone types, are acquired earlier than some phonetic ones such as surface tonal realization.



**Fig.1** Pitch tracks of three different subject phrases (4-syllable vs. 5-syllable vs. 7-syllable): (top) the average f0 contours by syllables in different groups; (middle and bottom) single tokens from native Korean speakers (left) and learners (right).

## References

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