The prosodic structure and the underlying tonal pattern of AP in Chungnam Korean

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There are six major dialect groups spoken in South Korea: Seoul (including Gyeonggi), Gangwon, Chungcheong, Jeolla, Gyeongsang, and Jeju. Among these, Seoul Korean, the standard dialect of Korean, is the most studied dialect, including the prosodic structure and intonational phonology in the Autosegmental-Metrical (AM) framework [1, 2, 3, 4]. The intonational phonology of the Gyeongsang, Jeolla, and Jeju dialects has also been studied in the same theoretical framework (cf. Gyeongsang [5, 6]; Jeolla [1, 2, 7]; and Jeju [8, 9]). However, the intonation system of the Chungcheong and Gangwon dialects have rarely been described and have never been analyzed in the AM framework.

The goal of the current study is to propose a prosodic structure of Chungnam (South of Chungcheong) Korean defined by intonation in the AM framework, focusing on the tonal pattern of a small phrase, corresponding to the Accentual Phrase (AP) in other dialects of Korean. Ten native speakers of the Chungnam dialect from Seosan city participated in the experiment (4F, 6M; Mean Age: 55.3). The materials consisted of two sets of dialogs varying in word-initial segment types, 30 sentences with the second word varying in length from 3 to 7 moras, and natural conversation. To investigate the underlying tonal pattern of AP, F0 values were measured in the middle of each vowel, and the falling slopes from the F0 peak on the second mora to the following F0 minimum in the second word were calculated. In addition, the pitch tracks of all utterances were analyzed to determine the tonal categories and the prosodic structure defined by a tone, following the ToBI conventions [10] as well as the Korean-ToBI convention [11].

The results show that the prosodic structure of Chungnam dialect is very similar to that of the revised model of Seoul dialect [3, 4, 12] and that of South Jeolla (henceforth, Chonnam) dialect [7] by having three prosodic units higher than a word: an Intonational Phrase (IP) > an Intermediate Phrase (ip) > an Accentual Phrase (AP) (see Fig.1). An ip is marked by a phrase final boundary tone (L- as in Fig.2(a) or H- as in Fig.2(b)) on its last mora, which is slightly lengthened. In both figures in Fig.2, the peak of the AP after the ip boundary is higher than that before the ip boundary, indicating that an ip is the domain of pitch reset. An IP is marked by a final boundary tone realized on an IP-final mora, which is substantially lengthened. We found five types of IP-final boundary tones: (from the most frequent to the least: L% > LHL% > LH% > HL% > H%). As in Seoul Korean, the boundary tone of a higher prosodic unit overrides that of a lower prosodic unit. Fig. 3a shows an example pitch track of a three-word sentence produced in three APs forming one ip/IP.

The results also show that, as in Seoul and Chonnam dialects, the AP-initial tone of Chungnam dialect is sensitive to the laryngeal feature of the AP-initial segment (i.e., H when the AP-initial segment is either aspirated or tense, but L otherwise), but the overall tonal pattern of AP in Chungnam is the same as that of Chonnam, i.e., T-H-L (T=H or L), with a mora being a tone bearing unit (see Fig.4). However, the falling slope from the H to the following L is shallower as the number of moras increases in an AP (see Fig.5), suggesting that the L tone is not associated with the third mora of the AP, as observed for Chonnam speakers in [2]. Instead, the location of min F0 is found either on the AP-final (Fig.6a) or penult mora (and stayed low until the end of the AP, see Fig.6b). Therefore, we posit that the underlying tonal pattern of AP is THLL, where the initial two tones are associated with the AP-initial two moras and the final two L tones are associated with the AP-final two moras. But the penult L is often phonetically undershot when the AP is short or produced fast, generating variability across speakers. However, as shown in Fig. 3b, the penult L is clearly realized when the AP is longer than 3 moras and when the AP-final mora carries a boundary tone of a higher prosodic unit that begins with an H (e.g., H- or H%, HL%).

In sum, the prosodic structure of Chungnam Korean is similar to that of Seoul or Chonnam Korean: IP > ip > AP > Word. However, the underlying tonal pattern of AP differs across these

three dialects. It is THLH in Seoul, THL in Chonnam, but THLL in Chungnam Korean.

Fig. 1: Prosodic hierarchy and tonal affiliations of the Chungnam dialect. (T=H or L)

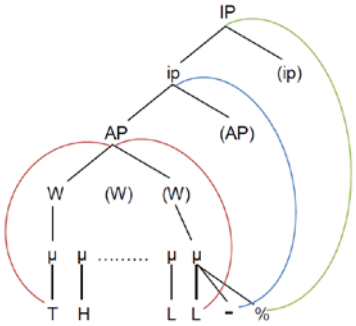


Fig. 3: Overridden by a higher prosodic unit

(a) (b)

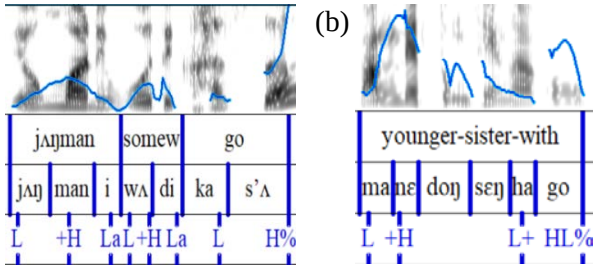


Fig. 5: A falling slope (from F0 peak to min)

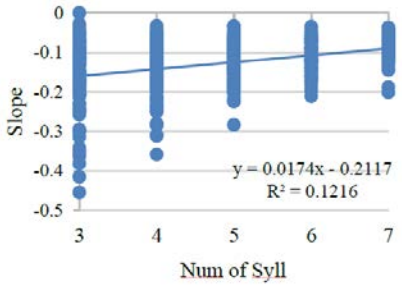


Fig. 2: Ex. of ip boundary tone: (a) L-, (b) H-

(a) (b)

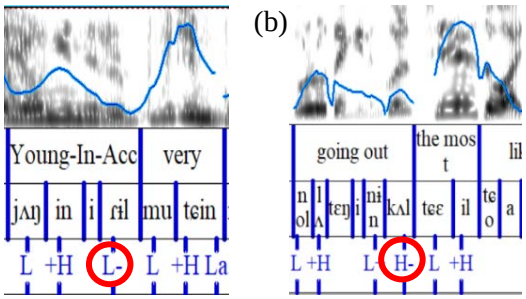


Fig. 4: Association of two AP-initial tones: (a) 1st syllable with 2 moras; (b) with 1 mora.

(a) (b)

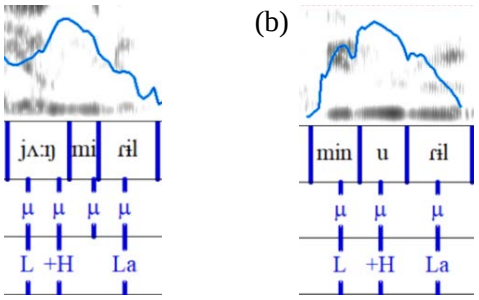
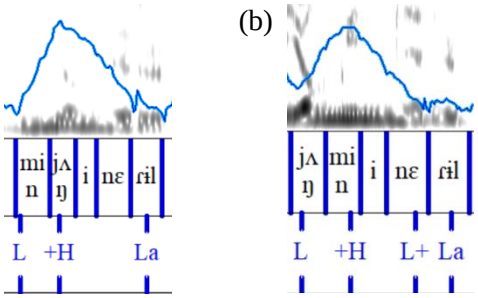


Fig. 6: AP patterns: (a)[LHL] vs. (b)[LHLL]

(a) (b)



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