

An interaction effect between tonogenesis and focus in Seoul Korean

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Synopsis: We examined how prosodic marking of focus interacts with (post-lexical) tonal contrast (H vs. L tones) found in Seoul Korean (SK). We found an interesting interaction effect between this tonal contrast and focus: Syllables with a high tone (H) were realized with an even higher pitch under contrastive focus than broad focus, whereas syllables with a low tone (L) did not show such a difference. This effect was also shown in perception – contrastive focus with a H tone received a better identification rate. We propose that the pitch target of syllables with a H tone becomes more increased in marking focus due to the recently introduced tonogenesis in SK.

Research question: It has been attested that in SK, onset consonants associated with tenseness/aspiration are produced with a H tone (Jun 2005, Kang 2014, Silva 2006), and that a digit 1 [il] is also known as being realized with a H tone (Jun and Cha 2011). Given that pitch is increased in marking focus in SK (Jun and Lee 1998, Lee and Xu 2010), a question arises how this tonal contrast and the prosodic cue of focus interact with each other in SK. We approach this question by conducting production and perception experiments using phone-number strings.

Method: This study employed 10-digit phone-number strings, grouped as (NNN)-(NNN)-(NNNN). We created a set of 100 such sequences, in which each digit (0-9) occurred equally often in each position, and each pair of digits occurred equally often across each pair of sequences. The target strings were produced in isolation for broad focus and in a Q&A dialogue for contrastive focus, where person A asked if the phone-number was correct, followed by person B answering the question by correcting the wrong digit. Five native speakers of SK (2 males and 3 females) participated in the production experiment. We classified the digits into two groups, High and Low, depending on the tonal contrast that they show. The High group includes digits 3 [sam], 4 [sa], 7 [te^hil], and 8 [p^hal], whose onset consonants are associated with tenseness/aspiration, as well as 1 [il], which is reported to be produced with a lexically specified H tone. The other digits (0, 2, 5, 6, 9) were classified as Low. The two groups were directly compared between the two focus conditions by the aggregate measures of mean pitch in z-score. In the perception experiment, 26 listeners heard only the phrase with the correction and were asked to identify which digit was corrected.

Analyses and results: Figure 1 shows a difference in mean pitch between broad and contrastive focus in the High group. However, such a difference is not found in the Low group. In an attempt to examine whether prosodic marking of focus differs in the two groups, a two-way repeated measures ANOVA was conducted with mean pitch as a dependent variable and with the tonal contrast and focus as fixed within-subject factors. The results showed that the effect of the tonal contrast was significant ($F [1, 4] = 54.47, p < 0.01$), whereas the effect of focus on mean pitch was not significant ($F [1, 4] = 6.99, p > 0.05$). However, a significant interaction effect was observed between the tonal contrast and focus ($F [1, 4] = 10.54, p < 0.05$), meaning that pitch was more increased when the digits in the High group were contrastively corrected (Figure 2). In contrast, pitch was not significantly increased when the digits in the Low group were contrastively focused. The perception results also support the production results – the

identification rate was about 50% for the High group, but it was just about 23% for the Low group. The result suggests that the tonal contrast and focus interact asymmetrically in SK, improving the identification of focus for the digits in the High group, but not for the digits in the Low group, confirmed by a chi-square test ($\chi^2 = 206.87$, $df = 1$, $p < 0.0001$).

Conclusion and implication: We provided a novel finding that tonogenesis and focus interact in Seoul Korean so that a syllable with a (post-lexical) H tone is produced with a higher pitch under contrastive focus. Our result demonstrates that the tonal contrast traded off from the phonation contrast is on the way of phonologization.

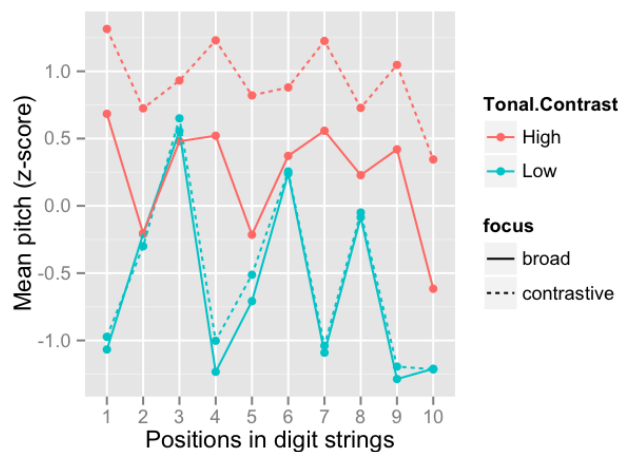


Figure 1. Points indicate mean values of each position.

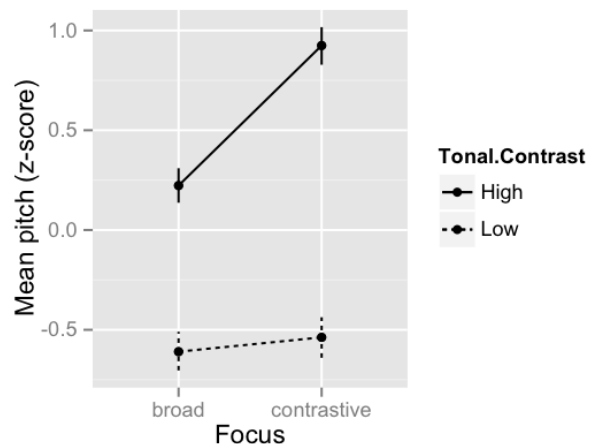


Figure 2. Points indicate mean values and bars standard errors.

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