

## The laryngeal pattern in the native phonology and the adaptation of English word-initial voiced consonants in Korean

Word-initially, voiced obstruents in English are adapted as two different categories in Korean. The same English phoneme in one word is adapted as fortis, but in another, it is adapted as lenis. For example, /dʒ/ is adapted as fortis [t͡s\*] in cases like *jump* [t͡s\*ʌm.pu], but as lenis [ts] for *journal* [tsʌ.nʌl]. This pattern is exceptional, as voiced stops word-medially and voiceless anywhere are categorically adapted as lenis and aspirated, respectively. Although a diachronic study shows that the fortis adaptation was dominant in the early modern period and it has gradually been substituted by the lenis adaptation (Kang 2008), why some remained fortis while most changed into lenis is not obvious. This study suggests that the native phonology, specifically the laryngeal pattern in native phonology, influences the choice of how the voiced segments are adapted.

All Korean consonants are underlyingly voiceless and make three-way laryngeal contrast: fortis, lenis and aspirated. Following the literature in Korean linguistics, lenis consonants are transcribed as *C*, fortis as *C\** and aspirated as *C<sup>h</sup>*. The three types are phonologically represented with laryngeal features [constricted glottis] and [spread glottis]. The fortis is the only type in the series that is specified as [+constricted glottis], and only aspirated segments are specified as [+spread glottis] (Sohn 1987). Besides, *C* is laryngeally unmarked while *C\** and *C<sup>h</sup>* are marked.

Previous studies have suggested that several aspects of the native pattern are mirrored in the choice between the two types (Kim 2017; Oh 2009, 2017), in addition to the mapping of source-language acoustics (Kang 2008; Lim 2016; Park 2007). The fortis adaptation is more likely before non-high vowels (Oh 2009), and when the word is shorter (Kim 2017). Because the vowel height and the word length show the same correlation to the likelihood of the word-initial fortis among the native as well, it is argued that the fortis adaptation in such configurations mirrors the native phonology. This study aims to introduce another pattern in native lexicon alongside these two features, namely laryngeal co-occurrence restrictions, mirrored to the loanword adaptation.

Restrictions on laryngeal features are observed cross-linguistically (Gallagher 2010). Sequential occurrences of laryngeally marked segments are favoured in some languages (Zulu and Kalabari Ijo) but disfavoured in others (Shuswap and Souletin Basque). Korean native lexicon is no exception (Ito 2007; Kang and Oh 2016). Kang and Oh (2016), specifically, suggest that Korean also favours co-occurrence of two laryngeally marked segments. If their argument holds, the existence of other laryngeally marked consonant word-medially would facilitate the fortis adaptation, considering that the focus of this study, the mapping of voiced obstruents, is a choice between the laryngeally unmarked *C* and the laryngeally marked *C\**. *C\** and *C<sup>h</sup>* are the marked segments that may induce the fortis adaptation. However, *C\** cannot word-medially; therefore, it would only leave word-medial *C<sup>h</sup>* as the facilitator of the fortis adaptation.

Therefore, the hypothesis is that the word-initial voiced segment is more likely to be adapted as fortis when there is a *C<sup>h</sup>* word-medially. To test this, this study first collected the English loanwords in an annotated Korean lexicon (Nam 2018) and surveyed the adaptation pattern of the initial segment. Based on this, this study compared two logistic regression models: the existing model with the predictors of vowel height and word length, as in the literature and the new model that factors in the additional predictor of the laryngeal restriction. If the model does not significantly improve with the new predictor, the hypothesis is rejected.

The new model with the predictors of vowel height, word length, and the existence word-medial *C<sup>h</sup>* fit better than the existing model. The additional predictor significantly improved the model ( $p < 0.0304$ ), according to the likelihood ratio test.

In this new model, the two factors from the previous studies all showed significant effects. Having a high vowel after the initial segment significantly decreased ( $\beta = -2.6475$ ,  $SE = 1.0693$ ,  $p < 0.0133$ ) the likelihood of the fortis adaptation by 93%, and lengthening one syllable significantly decreased ( $\beta = -1.7346$ ,  $SE = 0.4881$ ,  $p < 0.0004$ ) the likelihood of the fortis adaptation by 82%. On top of that, the newly suggested predictor, the laryngeal configuration of fortis-aspirated, was also significant ( $\beta = 1.2553$ ,  $SE = 0.5912$ ,  $p < 0.0338$ ), increasing the likelihood of the fortis adaptation by 251%. The effect size of each predictor in the model is provided in Figure 1.

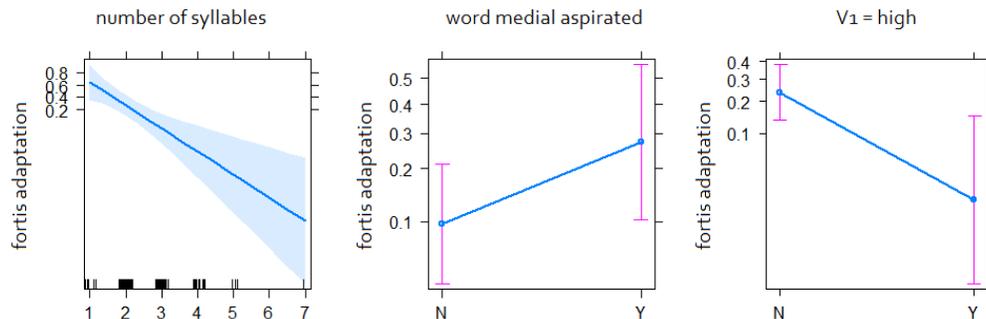


Figure 1 Effect size of each predictor in Model-LA

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