



High-toned [iɪ] in Korean: Phonetics, intonational phonology, and sound change



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ABSTRACT

This study investigates recent changes in Korean intonation where an Accentual Phrase-initial [iɪ] syllable is produced with a High tone by some speakers, introducing an exception to the model of intonational phonology of Seoul Korean (Jun, 1993, 1996, 2006). Data from eighty speakers of Seoul Korean born between 1952 and 1990 show that this phenomenon, found most often when [iɪ] means 'Number 1', is employed by Seoul speakers born since 1970, and is not triggered by glottalization at vowel onset. It is proposed that enhancing a perceptual distinction between two similar-sounding morphemes is one of the major motivations for this phenomenon, and various factors affecting this High-toned-[iɪ] phenomenon are examined. In the discussion, the tonal change on [iɪ] is compared with the changes in the VOT values in Korean stops which have been claimed to have been initiated by the same age groups in the same dialect. Finally, individual variation and the implications of this phenomenon for the model of intonational phonology of Seoul Korean are discussed.

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1. Introduction

The intonational structure of Standard (Seoul) Korean is proposed to have three prosodic units larger than a word. From the highest to the lowest are an Intonational Phrase (IP), an Intermediate Phrase (ip), and an Accentual Phrase (AP), similar to languages such as Japanese (Beckman & Pierrehumbert, 1986; Pierrehumbert & Beckman, 1988), French (Jun & Fougeron, 1995, 2000, 2002), Bengali (Khan, 2008, 2014), Georgian (Vicenik & Jun, 2014), and Mongolian (Karlsson, 2014). However, what is unique to Korean is that the tonal pattern of an AP is influenced by the laryngeal feature of the AP-initial segment (Jun, 1993, 1996, 1998). Specifically, when the segment has either [+spread glottis] or [+constricted glottis] (i.e., is an aspirated or tense consonant, /s/, or /h/; Halle & Stevens, 1971; Lombardi, 1991), the AP begins with a High tone.¹ Otherwise (i.e., the segment is either a lenis consonant, a sonorant consonant, or a vowel), the AP begins with a Low tone.² Segmental effects on f_0 , i.e., microprosody, have been well attested over various languages (e.g., Gandour, 1974; Hombert, 1978; Hombert, Ohala, and William, 1979; Kingston & Diehl, 1994; Kohler, 1982; Silverman, 1986) in such a way that the f_0 at vowel onset is higher after a voiceless consonant but is lower after a voiced or breathy consonant. Such microprosodic effects are known to occur during the transition between segments, lasting for about 20–40 ms after the vowel onset. However, in Korean, the segmental effects persist over the whole syllable and the degree of f_0 change is much greater (on average about 80 Hz in female speech) than those found in other languages (Jun, 1996).

These facts support the claim that the microprosody exhibited by Korean is phonologized at the level of intonational phonology, and is incorporated into the model of Korean intonation proposed by Jun (1993, 1996, 2006, 2007, 2011). The model is summarized in (1), where the “Ha” symbol represents the AP-final boundary tone (‘a’ is a diacritic denoting an AP). In particular, the tonal pattern of an AP is either HHLH or LHLH, with the initial tone determined by the laryngeal feature of the AP-initial segment mentioned above.

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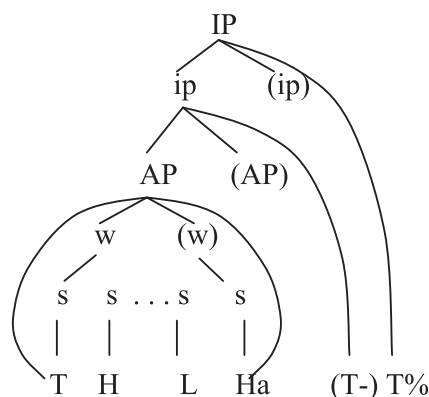
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¹ Korean has a three way laryngeal contrast in stops and affricates: aspirated (i.e., /p^h, t^h, k^h, tʃ^h), tense (i.e., /p^{*}, t^{*}, k^{*}, tʃ^{*}, s^{*}/), and lenis (/p, t, k, tʃ/). Among the fricatives (/s, s^{*}, h/), the dental fricatives have a two-way laryngeal contrast, i.e., /s/ vs. /s^{*}/. Here, /s/ patterns with a lenis consonant in segmental phonological processes, but, together with /h/, it patterns with an aspirated consonant in the intonational phonology. This is likely due to the fact that /s/ in Korean is phonetically aspirated (Cho, Jun, & Ladefoged, 2002).

² Exceptions to this tone-segment mapping are few, with only 5.7% of AP-initial tones violating it in an analysis of radio interview data (Kim, 2004).

That is, the basic tonal pattern of an AP includes the possibility of a “double rise” when there are more than 3 syllables in an AP: one realized during the last two syllables (i.e., a L tone on the penult and a H tone on the final), and one during the first two syllables (i.e., a L or H on the first syllable and a H on the second syllable³). Any syllables between the second syllable and the penultimate syllable in an AP lack tonal specifications and instead get their surface f_0 by interpolation between the H on the second syllable and the L on the penult. When an AP has fewer than 4 syllables, one or both of the AP-medial tones are optionally undershot, resulting in either LLH, LHH, LH, H(H)LH, or HH tone patterns.⁴ An ip, which can have more than one AP, is marked by pitch reset and optionally by a boundary tone (T-) on its right edge. When there is a boundary tone on an ip-final syllable, the syllable is moderately lengthened. Finally, an IP, which can have more than one ip, is obligatorily marked by a boundary tone (T%) on its right edge and the final syllable is substantially lengthened. When a syllable is associated with more than one type of boundary tone (i.e., AP- and ip-boundary tones, or AP-, ip-, and IP-boundary tones), the tone of a higher prosodic unit overrides that of a lower prosodic unit. Therefore, an AP-final syllable is realized as a L tone, i.e., carrying a L% IP boundary tone, when the AP is the last AP of an IP marking the end of a declarative sentence.

(1) Intonational model of Seoul Korean (Jun, 1993, 2006, 2011)⁵: IP=Intonational Phrase, ip=Intermediate Phrase, AP=Accental Phrase, w=Word, s=Syllable, T=L or H tone, Ha=AP-final H tone, T-=ip-final boundary tone, T%=IP-final boundary tone.



Since the AP begins with a Low tone when its initial segment is a vowel, it is predicted that APs beginning with a vowel /i/ would begin with a Low tone. However, as first reported by Jun and Cha (2011), some Seoul speakers show a tendency to produce a High tone on a particular syllable – namely [il], when it is AP-initial – even when it is not related to focus or emphasis. This *High-toned-[il]* phenomenon, which represents an exception to the intonational pattern of Seoul Korean, was first noticed by the first author in 1995, while recording a few female Seoul speakers in their early 20s reading a list of Korean sentences including the digit (e.g., 1, 2, 3) before each sentence. The speakers produced high pitch on [il] ‘digit 1’ when it occurred AP initially (e.g., ‘1’ in a multi-digit number ‘21’ was produced with high pitch when it was read as [isip]#[il]; [isip] ‘20’, [il] ‘1’, #=AP boundary). Since then, this phenomenon seems to have spread to other lexical items beginning with the [il] syllable, and indeed this diffusion has occurred in a wider speech community, as shown in Jun and Cha (2011).

In Jun and Cha (2011), we examined data from 40 speakers of the Seoul dialect living in Los Angeles, California (8 speakers (4 males and 4 females) each in their 20s, 30s, early 40s, late 40s, and 50s) and 11 speakers of the Seoul dialect living in Seoul, Korea (4 speakers in 20s, 2 speakers in early 40s, 3 speakers in late 40s, and 2 speakers in 50s). We also examined speech from 26 speakers of the Chonnam dialect of Korean (spoken in Southwestern South Korea, especially from the city of Gwangju (265 km south of Seoul); 10 speakers were in their 20s, 6 speakers in 30s, 2 speakers in early 40s, 4 speakers in late 40s, and 4 speakers in their 50s). It was found that even though the degree of usage of this High-toned-[il] differed slightly between the two groups of Seoul speakers (especially among speakers above age 40), both groups showed frequent use of High-toned-[il] by speakers below the age of 40 (as of the year 2011, thus speakers born around 1971 and later). Specifically, Seoul speakers living in Los Angeles showed High-toned-[il] more often if they were younger than 40, but Seoul speakers living in Seoul showed this phenomenon if younger than 45. On the other hand, no speakers of the Chonnam dialect showed the phenomenon.⁶ It was therefore clear that the High-toned-[il] phenomenon has become a feature of Seoul dialect, but only among those younger than middle-aged population. However, the speech of Seoul speakers living in Los Angeles in that study, especially those in their 40s and older, may not be representative of the current status of the Seoul dialect; most of the speakers had immigrated to the United States about 20 years earlier. Additionally, the data from Seoul speakers living in Seoul included only 7 Seoul speakers older than 40, and no speakers in their 30s. Therefore, data from a larger group of Seoul speakers living in Korea is needed to clarify the nature of the High-toned-[il] phenomenon.

³ This H tone can be realized on the third syllable when the AP is long.

⁴ The AP-final H tone is sometimes realized as a Low tone, La, creating four AP tonal pattern variants: LL, HL, LHL, HHL. The reason for this is not fully understood, but a likely factor is tonal interaction (see Jun, 1996, and the Korean-ToBI homepage: <http://linguistics.ucla.edu/people/jun/ktobi/k-tobi.html>).

⁵ This is a revision of Jun’s (1993) model, and adds to that original model an Intermediate Phrase (ip). However, because the prosodic unit of interest here is the AP, this matter will not be relevant to the present paper.

⁶ With the exception of two speakers with short-term experience living in Seoul during their early 20s: One speaker spent 2 months in Seoul and showed 15% of High-toned-[il] usage and the other speaker spent 1.5 years in Seoul and showed 30% of High-toned-[il] usage.

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