

# HIGH-TONED [il] IN SEOUL KOREAN INTONATION

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## ABSTRACT

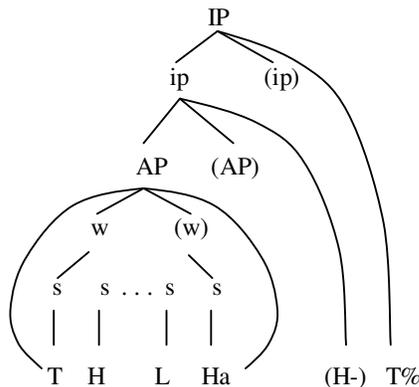
This study investigates recent changes in Korean intonation where an AP-initial syllable [il] is produced as a High tone by some speakers, introducing an exception to the intonational model of Korean. Data from 51 Seoul speakers and 26 Chonnam speakers show that this phenomenon, found most often when [il] means ‘one’, is employed mostly by Seoul speakers in their early 40s and younger. We propose two possible causes for this change and discuss various factors affecting this phenomenon.

**Keywords:** Accentual Phrase, Seoul Korean intonation, High-on-[il] phenomenon

## 1. INTRODUCTION

A unique property of Standard Seoul Korean is that its intonational pattern is influenced by the laryngeal feature of the initial segment of the Accentual Phrase [1]. As in Japanese [6], Bengali [5], and Farsi [7], the Intonation Phrase (IP) of Korean contains one or more Intermediate Phrases (ip), which can contain smaller phrases called Accentual Phrases (AP). An AP is a tonally-defined prosodic unit, slightly larger than a Word (containing 3.2 syllables on average). See (1) for the prosodic structure and tonal association of Seoul Korean intonation.

(1) Intonational model of Seoul Korean [3, 4]



The basic tonal pattern of an AP in Seoul Korean is either LHLH or HHLH, thus THLH in (1). That is, the AP-initial tone can be L or H, and the choice is determined by the laryngeal feature of the AP-initial segment: When the AP-initial segment begins with aspirated consonants including /s, h/ or tense consonants, the phrase-initial tone is High, but otherwise (i.e., beginning with lenis consonants, sonorant consonants, or vowels), it is Low. Therefore, APs beginning with vowel /i/ are expected to begin with a Low tone.

However, informal observation suggests that some Seoul speakers tend to produce a High tone on a syllable [il] when it is AP-initial, even when it is not related to focus or emphasis. This High-on-[il] phenomenon was first noticed by the first author in 1995 in recordings of read speech, in which a few female Seoul speakers in their early 20s produced high pitch on [il] ‘one’ when the syllable is AP-initial (e.g., a multi-digit number ‘21’ was read as [isip]#[il] ([isip] ‘20’, [il] ‘1’, # = AP boundary). Since then, this phenomenon seems to have spread to a larger set of words and a wider speech community. To our knowledge, the current study is the first to identify and explore this phenomenon. In this paper, we report our investigation on the nature of this phenomenon, based on f0 data and tonal labeling, as well as reveal its current status – whether it has spread to other dialects and other words beginning with the syllable [il], and the effects of age, AP size, and gender. We will also propose a few possible triggers of this change and discuss its implication to the intonation model of Seoul Korean.

## 2. EXPERIMENT

### 2.1. Speakers

Table 1 provides information on the dialect, sex, and age range of speakers who participated in the experiment. Fifty-one Seoul speakers (40 living in Los Angeles and 11 living in Seoul) and twenty-six speakers of the Chonnam dialect (all living in Kwangju, Chonnam Province, Korea) participated.

The intonation system of Chonnam Korean is similar to that of Seoul Korean except that its AP-final tone is Low [1]. Seoul speakers in LA in their 30s and younger are short-term visitors (all students except for one) while those in their 40s and older are immigrants.

**Table 1:** Number of Seoul (living in LA & Seoul) and Chonnam speakers in each age group and sex.

	Sex	20s	30s	Early 40s	Late 40s	50s
Seoul in L.A.	M	4	4	4	4	4
	F	4	4	4	4	4
Seoul in Seoul	M	2	0	1	1	2
	F	2	0	1	2	0
Chonnam speakers	M	3	3	1	2	1
	F	7	3	1	2	3

## 2.2. Materials

The target word was placed as the second word of a three-word sentence (e.g., Jayminika *ilteungeul* kilokhaytta ‘Jaymin won the first place’). 108 target words were varied by the meaning and prosodic location of [il] (47 AP-initial and 36 AP-medial). There were four meaning groups of [il] (see (2) for the groups and examples) and each group had 10 AP-initial and 9 AP-medial target words, except for the ‘one’ meaning group which had 7 extra AP-initial words that are 5 syllables long (4 syllable stem plus one syllable case marker/postposition). The other AP-initial words were either three or four syllables long.

(2) Four types of meaning of [il] with examples

- ‘One’ (一): ex. /ilpʌn/ ‘number one’, /ilpaŋtʰoŋheŋ/ ‘one way’; /oilpʰal/ ‘518’
- ‘Day’ (日): ex. /ilki/ ‘diary’, /iljoil/ ‘Sunday’; /tʃuŋiltʃantʃeŋ/ ‘the China-Japan war’, /tʃuil/ ‘a weekend’
- ‘Work’ (pure Korean): ex. /ilson/ ‘a worker’, /iltʃali/ ‘a job’; /tʃapil/ ‘a chore’
- Others: ex. /ilhin/ ‘70’, /ilpulʌ/ ‘purposely’; /kwail/ ‘fruit’, /poillʌ/ ‘a boiler’

Target words also included 15 number words (ex. 2 *teung* ‘2<sup>nd</sup> rank’, 9 *peon* ‘number 9’, 55 *myong* ‘55 people’), and 10 AP-initial words beginning with a High-tone triggering consonant followed by /i/ (ex. /k\*ini/ ‘meal’, /tʰilpʰan/ ‘a blackboard’) to be compared with the tone on [il]. All 108 target sentences were randomized with 56 fillers,

creating 164 sentences. A script was made by adding a multi-digit number ending with ‘1’ (e.g., 11, 21, 31, 41 ... 161) in every ten sentences, i.e., total 16 multi-digit numbers.

## 2.3. Procedures

Speakers in Los Angeles read the script two times, but speakers in Seoul and Kwangju read them one or two times. Speakers were familiarized with the script before recording. They were told to read each sentence naturally at normal speed. Each sentence was displayed in the middle of a Power Point presentation slide, and speakers pressed any key on the keyboard when they were ready to read the next sentence. Readings were directly recorded to a laptop computer at 22 kHz SR using *Praat*.

Accentual phrasing of the target sentence was transcribed following the K-ToBI conventions [2]. The tonal category (i.e., H or L) of the target syllable was labeled based on the labeler’s perception and by referring to pitch tracks and spectrogram. F0 values in the middle of the target syllable were also collected using a *Praat* script.

## 3. RESULTS

### 3.1. Realization of ‘High’

We found that the syllable [il] was produced in High pitch only AP-initially. Its f0 value was significantly (<.0001) higher than that of the L-initial AP but significantly (<.0001) lower than canonical H-initial APs, i.e., those beginning with aspirated or tense consonants. Figure 1 shows the average f0 values for each tonal category for Seoul speakers in their 20s, living in Los Angeles. The f0 difference was significant for both (males:  $F(2, 1020) = 395.57, p < .0001$ ; females:  $F(2, 1193) = 1108.35, p < .0001$ ).

**Figure 1:** Average f0 (Hz) on H-toned [il], L-toned [il], and a H-toned syllable due to H-triggering consonants. Seoul speakers in LA in their 20s.

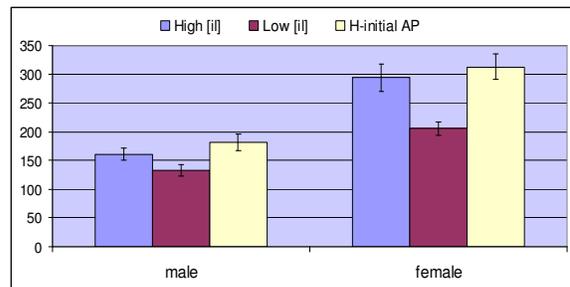
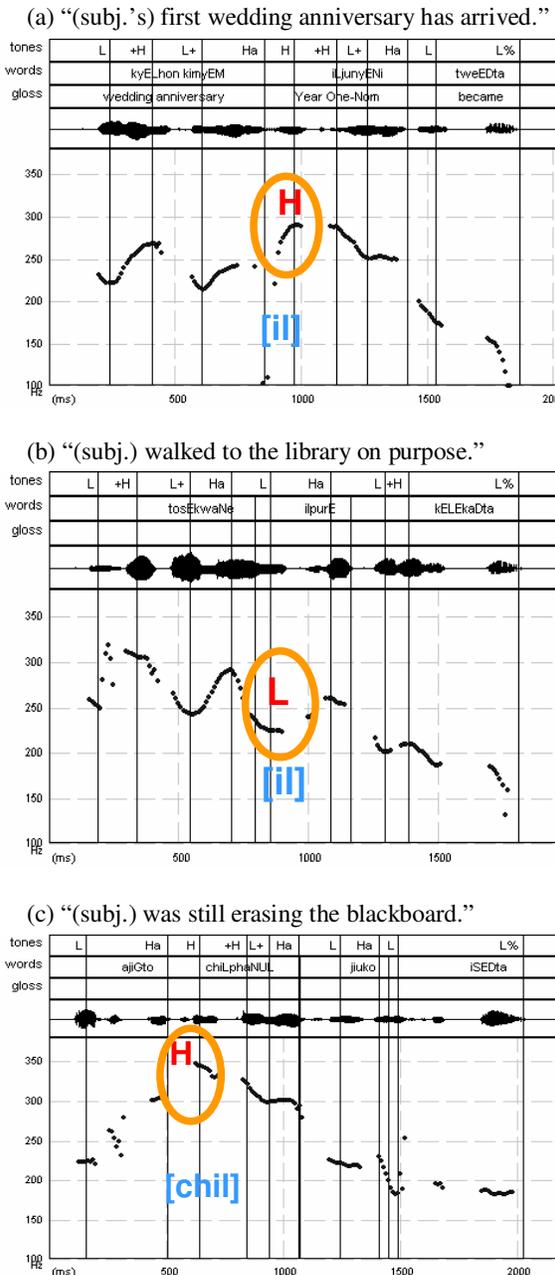


Figure 2 shows that the f0 peak of H-toned [il] in (a) (the 1<sup>st</sup> syllable of /iltʃunjʌn/ ‘anniversary’, circled) is much higher than that of the preceding AP or the L-toned [il] in (b) (the 1<sup>st</sup> syll. of /ilpurʌ/ ‘on purpose’, circled), but not as high as the H tone due to a H-triggering consonant in (c) (the 1<sup>st</sup> syllable of /tʃ<sup>h</sup>ilp<sup>h</sup>ʌnil/ ‘blackboard-acc.’, circled).

**Figure 2.** (a) High on [il], (b) Low on [il], (c) H-initial AP due to a H-tone triggering consonant. In the tones tier, ‘Ha’ marks the end of an AP.

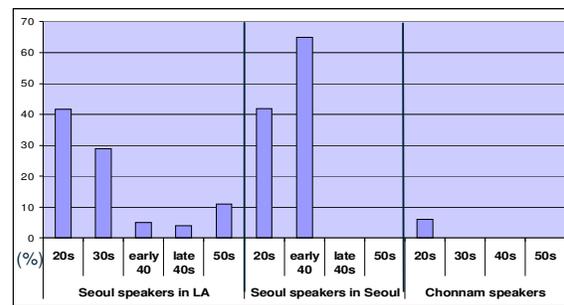


### 3.2. Age Range and Dialects

The High-on-[il] phenomenon was restricted to Seoul speakers. No Chonnam speakers produced High on [il] except for two speakers who had lived in Seoul for a short time: one speaker in her mid-20s who spent 1.5 years in Seoul in her early 20s produced 30% of [il]s with a H tone. Another speaker in her mid-20s who spent two months in Seoul in her early 20s also produced 15% of [il]s with a H tone.

However, the age range of speakers exhibiting this phenomenon was different between the two groups of Seoul speakers. Older (> mid-40s) Seoul speakers living in Seoul did not show this phenomenon, but Seoul speakers in LA still showed this phenomenon even in their 50s, though in much lesser degree (and only by a few speakers) than those in their 30s and younger. See Figure 3.

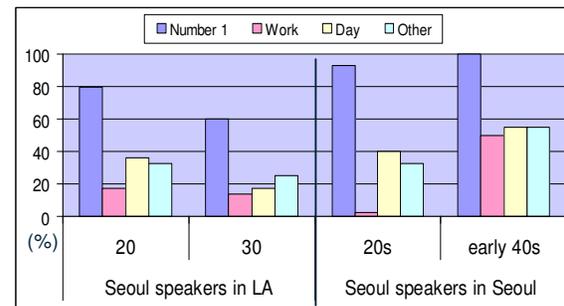
**Figure 3:** Percentage of High tone on [il] across age groups and dialects



### 3.3. Four meanings of [il]

The High-on-[il] phenomenon was also found on meanings other than ‘one’. But in all age groups, a High tone was produced the most often for [il] meaning ‘one’ and the least often for [il] meaning ‘work’. The other meanings fell in between. See Figure 4.

**Figure 4:** % of High on [il] depending on its meaning



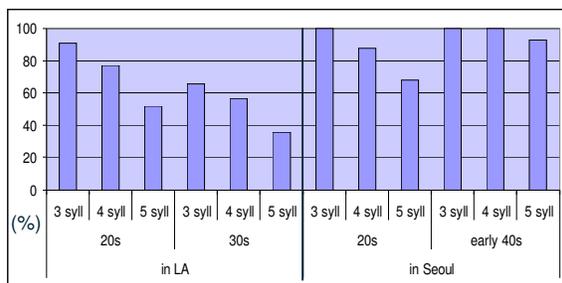
We also found that if a speaker produces High on [il] ‘one’ at all, this was almost always true for ‘1’ in multi-digit numbers (e.g., 21, 31, 101) when read as AP-initial. This was true even for speakers who did not produce High on words that start with [il] ‘one’ (e.g., *1 cho* ‘1 second’, *1 nyeon* ‘1 year’).

### 3.4. Effects of AP Size and Gender

The High-on-[il] phenomenon was more common in shorter APs. The effect of AP size is significant (Ch-square=23.52, df=2, p<.0001). Figure 7 shows the percentage of High on [il] ‘one’.

We expected females would produce a High tone on [il] more often than males, but there was no consistent pattern by gender across age groups.

**Figure 5:** % of High on [il] ‘one’ by the number of syllables in an AP



## 4. DISCUSSION and CONCLUSION

We have shown that the High-on-[il] phenomenon is found only in the Seoul dialect, and is adopted dominantly by speakers younger than mid 40s (i.e., those who were born around 1968 and later). This suggests that this phenomenon must have started sometime in 1980s (when those born in 1968 or later became a teenager.) How did it start? What would be the motivation? And why is [il] meaning ‘one’ the most common to have a High tone? We propose two possible triggers of this phenomenon. One is the influence from the Kyungsang dialect and the other is the perceptual confusion between [il] ‘one’ and [i] ‘two’.

First, unlike Seoul or Chonnam dialects, the Kyungsang dialect, spoken in the Southeastern part of South Korea, is a lexical pitch accent dialect. In this dialect (especially people from the two major cities, Taegu and Pusan), [il] ‘work’ has a Low tone while [il] ‘one’ and [il] ‘day’ have a High tone; High tones are also seen, albeit less consistently, on other meanings of [il]. Most former presidents and high-level political figures

in Korea are from the Kyungsang area, as are many current residents of Seoul, so Kyungsang speech may have influenced Seoul speech.

Second, [il] ‘one’ and [i] ‘two’ are quite similar acoustically and perceptually in modern Seoul Korean, as they have lost their former vowel length contrast. (In Chonnam, the vowel is still long in [i:], but short in [il].) It is possible that using a high pitch on [il] can enhance the perceptual difference between the two.

Furthermore, the fact that a High tone is found the most often when [il] means ‘one’ suggests that the High tone might have used to further emphasize the meaning of ‘number one’, i.e., ‘the best’.

Our finding suggests that the High-on-[il] phenomenon might have started from [il] meaning ‘one’ and has spread to other meanings of [il]. It is likely that the High-on-[il] phenomenon could be further generalized to include any word beginning with [il] and even with a vowel [i]. An experiment is in progress to test this possibility.

It seems that this phenomenon has become a social marker of Seoul speech. The High-on-[il] may have started as a morpheme-specific pitch accent, but its pitch-accent-hood seems to be weakened now to a phrasal tone. This introduces an exception to the intonational model of Seoul Korean. It needs to be seen how the system will develop in the future.

Finally, the current data show differences between Seoul speakers living in LA and in Seoul, especially those who are older than 40s. It’s possible that this was due to the difference in the social/linguistic contexts but more balanced data from these two groups should be collected to better understand the situation.

## 5. REFERENCES

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