The interaction of tone and stress in Seoul Korean

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Background: Seoul Korean prosody

- In this system, LH-LH is a basic tonal pattern unless the AP-initial segment is aspirated/tensed, H, or l-.

Unresolved issues in the K-ToBI system

- Why is LHLH a basic tonal pattern?
- Why does H occur on the second and fourth syllables?
- Given that H is universally marked (de Lacy 2002, Prince and Smolensky 1993), why is LL-LL not preferred over LH-LH?
- Why is LHLH never found in Seoul Korean?

The goal of this study

- To shed light on the prosodic nature of Seoul Korean through a perception experiment.
- To provide an OT analysis of Seoul Korean prosody.
- To test the K-ToBI framework.
- To prove that the occurrence of H tone is disfavored on the first and third syllables.

Method

- The pitch contours of the following two utterances were modified to generate 16 tonal patterns (two tones in the four syllable positions)*2 using a TD-PSOLA synthesis function through Praat.
- L was set up to 105 Hz, and H to 125 Hz (Figure 1).
- Eleven Seoul Koreans evaluated the extent of naturalness on each tonal pattern using a 7-point scale ("very natural"=7, "very unnatural"=1).

Results

- LLLL (6.05), LHLH (5.98), LLLL (5.7), and LHLL (5.57): the most favored results.
- LHHH (4.64), LHLL (4.07), HHLLH (3.95), HHLL (3.91), LHLL (3.86), and HHLL (3.84): neither natural nor unnatural.
- The remaining tonal patterns: unnatural.

Discussion

- The most favored tonal patterns have something in common: H does not occur on the first and/or third syllable, which shouldn’t be random.
- We conjecture that the stress pattern of Seoul Korean (iambic) seems to be related to the preference of these tonal patterns.
- Based on de Lacy’s framework, we propose that LHLH is derived from iambic stress pattern.
- de Lacy’s work (2002): In light of de Lacy’s work (2002) on the interaction of tone and stress, this study proposes that the preferred tonal patterns in Seoul Korean are reflected by its metrical structure.
- This kind of tonal pattern is called stress-driven tone, where a metrical structure determines the distribution of tone.

Proposals:

- We assume that Seoul Korean parses sequences of syllables into weak-strong rhythmic units (iambic).
- Foot heads attract H tone and foot non-heads attract L tone (de Lacy 2002).
- The reason LH-LH is preferred over HL-HL is because Seoul Korean has iambic foot structure, and foot heads in the second and fourth syllable attract the H tone (i.e. [j]./luin/[j].).

OT constraints:

- Undominated constraints:
  - A foot must contain two syllables: Ft-Bin
  - All syllables are parsed by feet: Parse-Syl
  - The candidates with trochaic foot structure are ruled out: ReTypeII

Implications

- This study proves that LHLH is also perceptually favored.
- This study shows that the occurrence of H tone is disfavored on the first and third syllable.
- This study demonstrates that the previous approaches to Seoul Korean prosody and its stress system are not opposed to each other, but rather closely related.

References