Phonological categories, phonetic gradience and semantic intensification in Seoul Korean

Hae-Sung Jeon  
HJeon1@uclan.ac.uk  
University of Central Lancashire, UK

Aims
- to explore the mapping between gradience in meaning and categories/gradience in the speech signal
- to examine native Korean speakers’ production of colour terms in varying intensity (i.e. saturation) related to the morpho-phonology/phonetics interplay and the Effort Code [3]: semantic intensification as a type of emphasis; increase in Effort Code expected (e.g. increase in duration, F0, articulatory strengthening)

Korean consonants
- three-way phonemic distinction in plosives or affricates, lenis, aspirated and Fortis, e.g. /p/, /b/, /pʰ/: two-way distinction in fricatives, e.g. /s/, /sʰ/
- categories distinguished by VOT (longest for aspirated), closure/fricative noise duration (longest for fortis), and the voice quality (creaky after fortis; breathy after aspirated and F0 of the following vowel (higher for fortis/aspirated than lenis) [2]
- significant articulatory strengthening in prosodically strong positions [1]

Accentual Phrase (AP)
- underlyingly THLH; initial tone (T) tends to be determined by the laryngeal feature of the AP-initial segment
- initial tone is H when the AP initial segment is a fortis or aspirated consonant, or a fricative; otherwise L
- number of syllables in the AP as a factor determining the pitch contour shape; tones may be undershot when there are three or less syllables in the AP
- at least 14 phonetic realisations (e.g. LH, LHH, LLL, HLH, etc.) [4]

Procedure
- four native Seoul Korean speakers (3 females and 1 male aged 24–26)
- recording in the Phonetics Laboratory at the University of Cambridge
- materials: pictures of objects in the same colour category with varying degrees of intensity on computer screen
- speakers described the objects as if explaining the degrees of, for example, redness to a listener who could not see the pictures; target phrase read 5 times between carrier phrases
- example slide for (palkan, ppalkan, sayppalkan) tulesyu

Native colour terms in Korean
- ppalkan /pʰ*algon/, kkaman /k*aman/, nolan /noran/, phalan /pʰ*algon/ [5]
- Phonetic symbolism: fortis consonant considered strong counterpart of lenis consonant, e.g. /palkan/, “red-ish” vs. /pʰ*palkan/, “red”; aspirated/nasal consonant has no counterpart
- prefix, say(s)-, (being “rich, sharp, or clear”) attached to the native Korean colour terms
- e.g. palkan < ppalkan < sayppalkan (< ssayppalkan), kaman < kkaman < saykkaman (< ssaykkaman), nolan < saynolan (< ssaynolan), phalan < sayphalan (< sayphalan)

Measurements
- duration of consonant closure, fricative noise, VOT, vowel, syllable, and word where appropriate
- F0 in the mid-point of the vowel
- H1-H2 in vowels and the centroid frequency of fricative noise: results not reported (no systematic variation related to experimental conditions)

Results: F0, syllable/vowel duration
- F0 patterns differ across colours due to differences in segmental composition; two clusters for Red and Black associated the phrase-initial consonant type; weak support for neat mapping between gradient variation in F0 and semantic intensification
- F0 jump (fall) between σ0 and σ1 for saynolan (“very yellow”) under emphasis, probably due to the presence of the morphological boundary and /i/. (F0-lowering segment)
- all speakers significantly lengthened phrase-initial syllable along the Steps (i.ii.iii) = 1:1.35:1.68, particularly vowel; syllables in the colour term shorted when prefixed
- noise/closure duration increased along the intensification steps in fricative, lenis/fortis consonants for some speakers; little systematic variation in VOT; it is not clear whether the inherent properties of the lenis consonant are strengthened or whether the lenis consonant becomes similar to the fortis consonant under emphasis (cf. [1])
- speaker B primarily relied on duration adjustment not F0

References

Conclusions
- language-specific morpho-phonological conditioning of F0 shape: the type of the word-initial and/or internal segment affects F0 contours in the utterance under emphasis • importance of the left edge of prosodic phrase in signalling discourse function in Korean • speakers make prosodic than segmental adjustments when there is gradient element in task • emphasis marked with multiple prosodic cues not by intonation-only