

Phonological categories, phonetic gradience and semantic intensification in Seoul Korean

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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)

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*) *tuleysu*



'The girl has worn (red-ish, red, very red) dress.'

- Morpho-Phonological Category (MPC-Weak, -Strong and -Prefix) depending on the presence of the prefix, *say(s)-*, and the type of the colour-term-initial consonant
- three Steps (i, ii, iii) in each MPC

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)

References

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Korean consonants

- three-way phonemic distinction in plosives or affricates, lenis, aspirated and fortis, e.g. /p, p^h, p^{*}/; two-way distinction in fricatives, e.g. /s, s^{*}/
- 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)

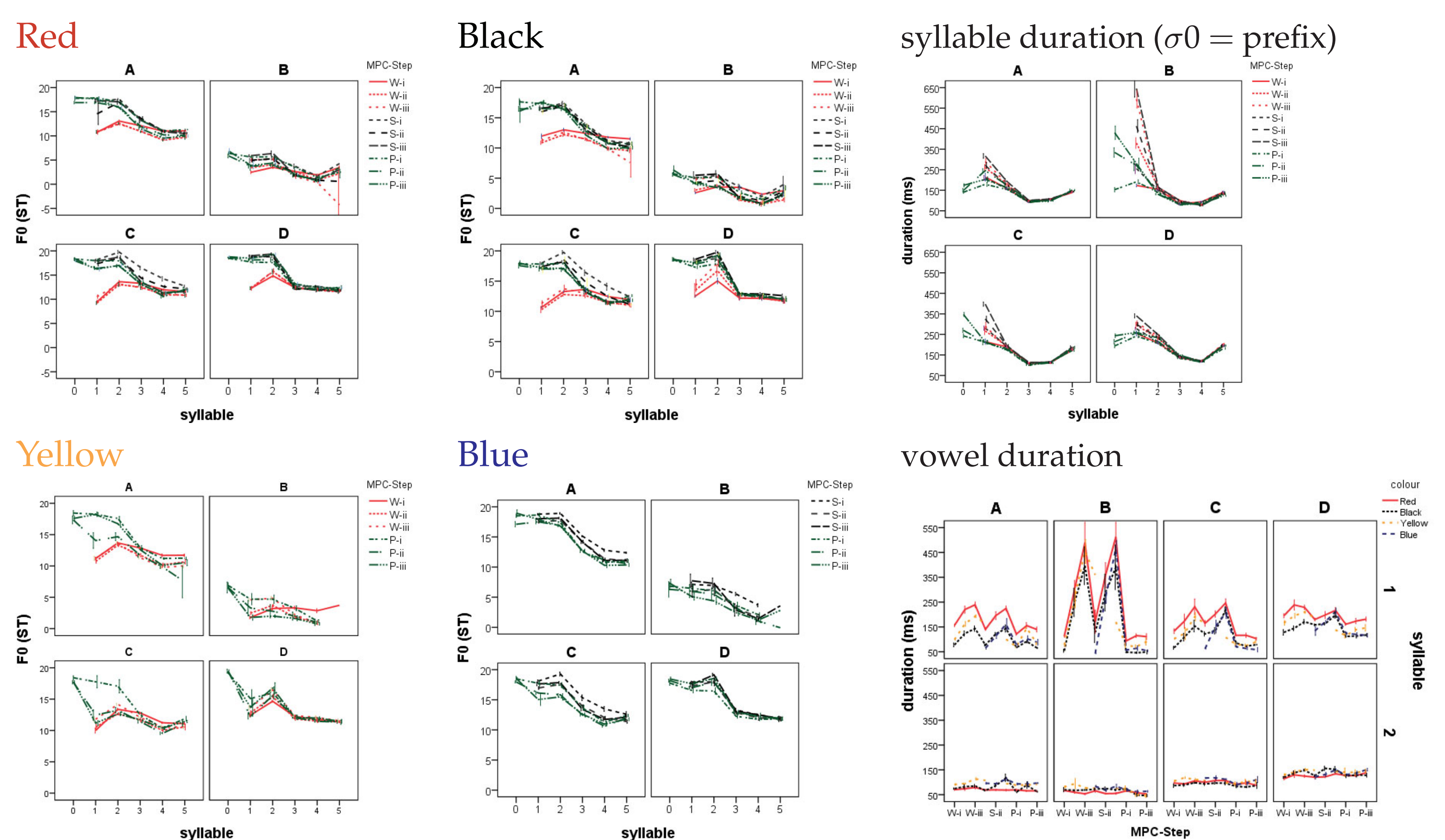
- underlyingly THLH; initial tone (T) tends to be determined by the laryngeal feature of the AP-initial segment
- initial tone is H when the AP initial segment is a fortis or aspirated consonant, or a fricative; otherwise L
- number of syllables in the AP as a factor determining the pitch contour shape;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

Native colour terms in Korean

ppalkan /p^{*}alɡan/, *kkaman* /k^{*}aman/, *nolan* /noran/, *phalan* /p^haran/ [5]

- Phonetic symbolism: fortis consonant considered strong counterpart of lenis consonant, e.g. /palɡan/, 'red-ish' vs. /p^{*}alɡan/, '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* < *saysnolan* (< *ssaysnolan*), *phalan* < *sayphalan* (< *ssayphalan*)

Results: F0, syllable/vowel duration



Segmental composition, presence of prefix, semantic intensification ⇒ phonetic shape of utterance

- 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 σ_0 and σ_1 for *saysnolan* ('very yellow') under emphasis, **probably due to the presence of the morphological boundary and /n/ (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 shortened 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

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**