Cross-linguistic interpretation of Duration

Ellen Broselow, Jiwon Hwang, Nancy Squires
Department of Linguistics, Department of Psychology, Stony Brook University
ellen.broselow@stonybrook.edu, jihwang@ic.sunysb.edu, nancy.squires@stonybrook.edu

INTRODUCTION

• Native Korean
  - [l] and [r] do not contrast and Intervocalic [l] is realized as tap ([tal]/[lar-]) ‘moon/moon+nom’.
  - Loanwords
    - In English loanwords, intervocalic [l] is generally adapted as a geminate ([kola] → [k’ola] ‘cola’ but [saau] → [sara] ‘Sarah’).

→ What is the source of the mapping of [l] to [ll]?
  - In Korean, medial [r]-[ll] contrast is signaled by laterality and length.
  - muri = [lateral, short] ‘group’
  - mulli = [lateral, long] ‘physics’

→ Is [l] perceived as [ll]?
  - Is laterality, rather than length, the primary cue?

BACKGROUND

• Kim (2007)
  - Korean listeners heard stimuli such as [muri], [mulli], *[muli] then were forced to choose between ‘muri’ (‘group’ or ‘mulli’ (‘physics’).
  - 90% of [VIV] items was identified as [VIIV].

• Replication with nonwords: Hwang, Broselow, Squires (2008)

METHOD: Mismatch Negativity

• Mismatch Negativity (MMN) indicates brain response to change in an auditory stimulus. MMN is elicited even in the absence of attention to stimulus (e.g., while watching a silent movie).

• Various experiments have shown much stronger MMN to acoustic differences that cross NL phoneme boundaries than to differences within phoneme categories.
  - Hungarian vs. Finnish: [ae] vs. [a] (Winkler et al. 1999)
  - Hindi vs. English: [pa] vs. [ba] (Sharma and Dorman 2000)

RESULTS

• Subjects: 10 Korean speakers, normal hearing
  - 10 English native speakers, normal hearing

• Stimuli:
  - (1) elle vs. ele = not a possible NL contrast: *[ele] is illegal)
  - (2) ene vs. ene = possible NL contrast:
  - [kannan] ‘newborn’ vs. [kanan] ‘poverty’

48ms Lateral pair Nasal pair
98ms Lateral pair Nasal pair

Korean Within-category contrast Across-category contrast
English Within-category contrast Within-category contrast

Figure 1. Korean listeners

Figure 2. English listeners

Figure 3. Difference waveform

Figure 4. Mean amplitude

DISCUSSION

• Korean participants’ decreased responses to [l]-[ll] compared to [r]-[ll] is not an inherent perceptual difference between these two contrasts, as English participants did not show the same degree of difference in response.

• Duration in the Korean [r]-[ll] contrast is at best a secondary cue, as reflected in behavioral and electrophysiologic responses.

• English single [l] in intervocalic position is interpreted as Korean geminate [ll], with the result that the English [r]-[ll] contrast is mapped to the Korean [l]-[ll] contrast.

CONCLUSION

• Findings support the claim that auditory processing shows greater sensitivity to cues that signal lexical contrasts.

• Findings support the claim that foreign word adaptation may reflect misperception rather than misproduction.

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SELECTED REFERENCES