Prosody comes first? Phonetic realization of long vowels in Drenjongke

Céleste Guillemot[1], Tomoko Monou[1], Shigeto Kawahara[2], Seunghun J. Lee[1,3]
International Christian University[1], Keio University[2], University of Venda[3]

INTRODUCTION: The standard thinking in generative phonology is that segments are given first, and prosodic structures are built based on the segmental composition. However, there are patterns like reduplication, in which prosodic shapes are given first, and segmental contents are filled in later. Evidence from psycholinguistic and neurolinguistics studies also show that in speech production planning, prosodic shapes are specified at least as early as—if not before—segmental contents (see Keating 2003; Shattuck-Hufnagel 2006; Long et al. 2016). The issue thus remains as to whether which comes first, segments or prosody? In this paper we report a new phonological observation bearing on this debate. What used to be historically long vowels in Drenjongke show interesting inter- and intra-speaker variability in such a way that what is consistent beyond these variations is the fact that they are realized with two moras. Our previous production study (Lee et al. 2019) found that Drenjongke speakers produce their "long" vowels in various ways: e.g. (i) longer duration, (ii) a short vowel followed by a consonant, (iii) creaky voice or (iv) different vowel quality. The current study explored whether Drenjongke speakers actually judge these various phonetic forms as acceptable realizations of long vowels.

METHOD: In the current experiment, listeners were visually presented a word which contains either a short vowel or a long vowel. They were also presented with auditory stimuli; half of the auditory stimuli "matched" the visual prompt in terms of their phonological length status; the other half contained a "mismatched" vowel. The "match" condition shows various realizations of long vowels which were not necessarily phonetically long (see the figure legend below). They rated goodness-of-fit using 1-to-7-point scale, where 7 being the perfect fit. Thirty-nine native speakers participated in the experiment.

RESULTS: Figure 1 shows the distribution of the ratings for the match and mismatch conditions. It shows that the match conditions show high goodness-of-fit ratings whereas the mismatch conditions low ratings. This result shows that Drenjongke speakers judge different realizations of long vowels as acceptable, even if they do not contain a phonetically long vowel. Overall, this pattern seems to suggest that what is important is that these syllables be bimoraic.
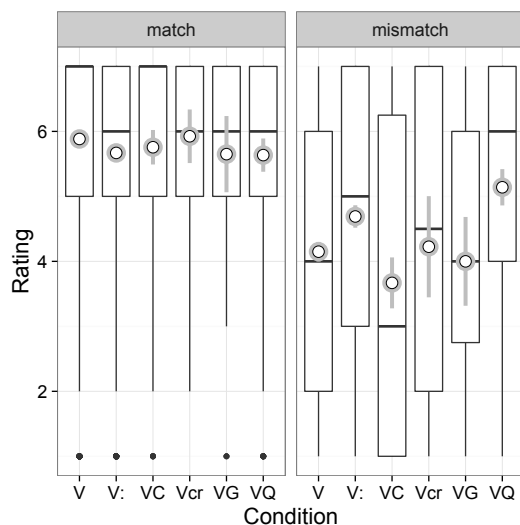

Figure 1: Distribution of goodness-of-fit ratings. Match=visual prompts and auditory stimuli match in terms of their phonological length; mismatch=they do not. V = short vowel; V: = long vowel; VC = vowel+consonant; Vcr = creaky vowel; VG = vowel+glide; VQ = voice quality difference.