

Vowel contrasts in Indian English by native Marathi speakers at different acquisition levels

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With English spoken widely in India across varied sociolinguistic and educational backgrounds, it is of interest to consider whether a universal and distinctive phonology exists for Indian English [1]. There have been few acoustic studies on the effect of linguistic backgrounds on the variety of English spoken, e.g. about precisely which phonetic features of the native language constitute L1 influence in the speech of Indian English (IE) speakers. It might be supposed that L1 influence, if any, would be more prominent at lower proficiency levels [2]. Vowel contrasts in English that do not occur in a speaker's L1 constitute a good case for the investigation of L1 influence. An acoustic-phonetic study of IE vowels by Punjabi L1 and Hindi L1 speakers found that the lax-tense contrast is realized with duration alone by the Punjabi IE speakers [3]. In this work, we investigate acoustic differences corresponding to the lax-tense contrast of English high vowels in order to understand whether and how speakers of IE differ from native English speakers, and the extent of L1 influence if any. We consider Marathi L1 speakers of IE of two different proficiencies. Marathi, representative of Indo-Aryan languages, offers the interesting aspect that the contrasting high vowel pairs are part of the orthography, encoded as vowel length distinction, but not used in regular speech [4,5].

We consider the lax-tense vowel contrasts of IE as uttered by Marathi L1 speakers on the basis of the acoustic quality (first 2 formant frequencies) and quantity (duration) attributes. We also compare the acoustic properties of the same vowels of American English (AE), uttered by native speakers, with the corresponding IE vowels uttered by model (i.e. proficient) Indian English speakers. Further, the comparison is extended to the acoustic properties of the Marathi vowel contrasts by native Marathi speakers. We consider high front /ɪ, i:/ and high back /ʊ, u:/ lax-tense vowel pairs for this study. For AE native speech, we chose 16 male and 16 female speakers across 8 dialects reading 10 sentences each from the TIMIT speech dataset [6]. Model-IE and Marathi-IE speech was based on the elicitation text *Stella, The North Wind and the Sun, and Rainbow*[7-9]. The model-IE speakers (Marathi L1) have spoken English since early childhood and been schooled with English as the medium of instruction. The Marathi IE speakers were schooled in

Marathi medium and were judged to be less intelligible than the proficient speakers in discriminating the English contrasting vowels in perceptual testing by good IE speakers.

Acoustic measurements corresponding to formants and duration of segmented vowels are compared across speaker groups for both IE and Marathi (Fig. 1 shows the distributions for the high front vowel for the female speakers). The main findings are that the lax-tense English vowels uttered by proficient IE speakers demonstrate *both* quantity and quality contrasts whereas Marathi speech evinces the contrast only in stressed speech (i.e. isolated words) and chiefly with quantity. The IE speakers at lower acquisition levels demonstrate L1 influence by the absence of the quality distinction. On the other hand, proficient speakers seem to have adopted the native English quality contrast even when the more familiar phonetic cue of duration is sufficient to distinguish the L2 vowels. The quantity aspect in IE can therefore be viewed as constituting L1 influence whereas the presence of a significant quality distinction suggests that learning of L2 target phonology occurs even when more familiar L1 phonetic cues are sufficient.

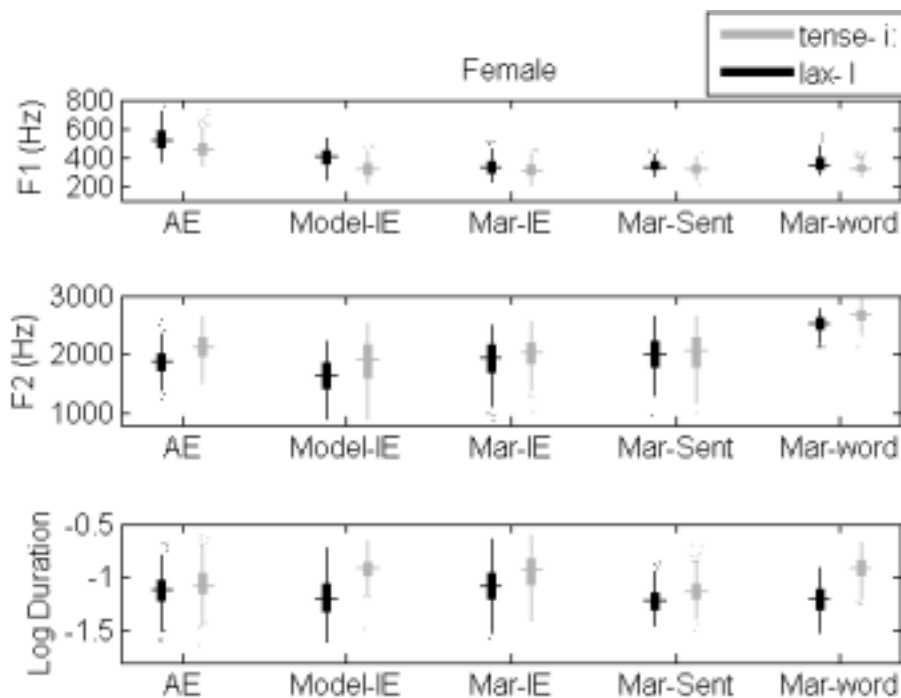


Figure 1. Box plots of acoustic features for vowel pair /i: - ɪ/ of (a) female speakers. AE: American English, Model-IE: model Indian English, Mar-IE: IE by lower proficiency speakers of Marathi L1, Mar-Sent & Mar-word: Marathi sentence and word data by native Marathi speakers [10]

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