The realization of Greek vowels in spontaneous speech

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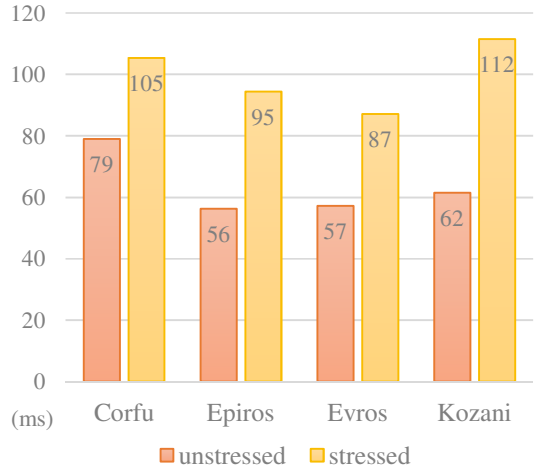
Abstract

This is a three-part study on the acoustic realization of Greek vowels in spontaneous speech. The analysis is based on dialectal speech from a number of varieties spoken in Northern Greece. The role of dialect, although central in the analysis, is not the only factor of variation under examination. The first part of the study focuses on speaker gender and the stress condition of vowels, the second on a number of factors related to the phonetic environment of vowels, and the third on another number of factors related to the prosodic position of vowels. The acoustic correlates of variation in all three parts of the study are the vocalic duration and quality, the latter as expressed through the first two formants of the spectrum. According to the Null Hypothesis Testing (NHT), *dialect* and *stress condition* have a significant effect, whereas *speaker gender* is not associated with extensive variation. Specifically, stressed vowels are generally prosodically stronger, as they are longer and more peripheral than unstressed ones. However, there is interaction between *stress condition* and *dialect*, as the differences in vowel duration and quality between the southern dialect of Corfu and the three northern dialects are enhanced in the sample of unstressed vowels. Moreover, vowel raising is detected in the unstressed high vowels of the three northern dialects. The differences between men and women are less pronounced; although there are differences in vowel duration and quality, these are not consistent, making the speech of the two genders quite similar. Regarding the role of the phonetic environment of vowels, there are several specific cases of significant difference in vowel realization due to adjacent consonant voice, manner of articulation, and place of articulation. Significant variation is also detected for the different configurations of the prosodic position of vowels, which have to do with the length of the carrier-word, the presence of prosodic boundaries, the relative position in the carrier-word, and the effect of adjacent stressed syllables. Although the NHT shows the direction of the findings generally follows the trends in the literature, the power analysis suggests that the magnitude of the effects is minor. The relatively large number of factors of variation with little practical effect on vowels dictates that their role should be downgraded in favor of those factors that are of much more importance to vowel realization.

Figures

Figure 1. Mean vowel duration (in milliseconds) per dialect and stress condition.

Figure 2. Vowel quality (F1 and F2 in Hz) per dialect.



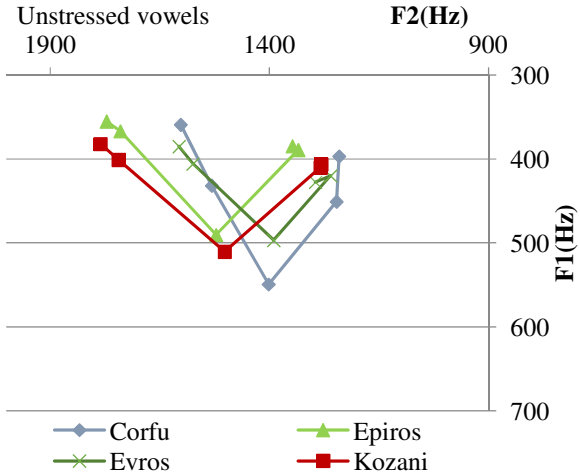
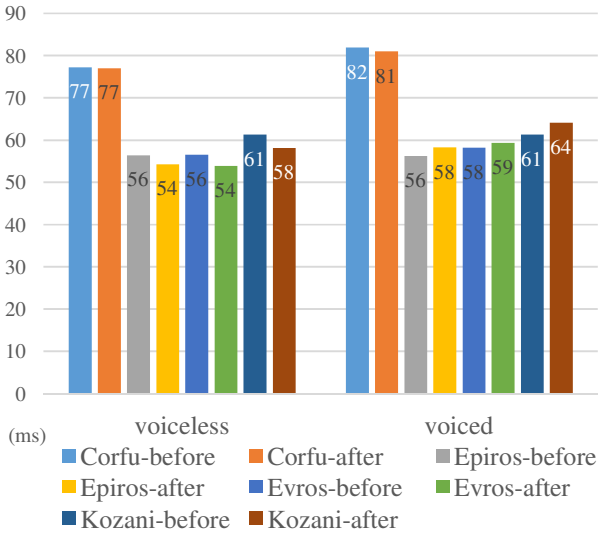
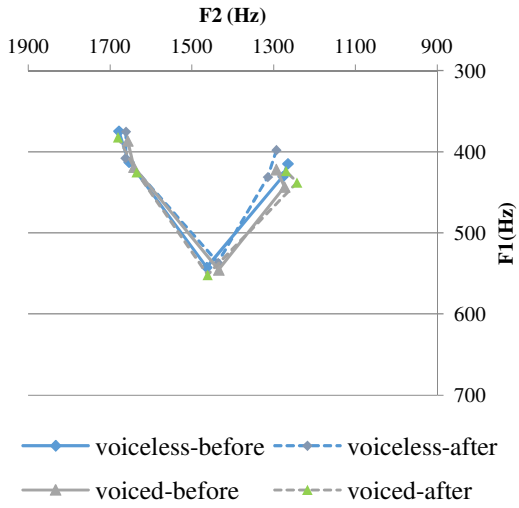


Figure 3. Mean vowel duration per dialect, voice, and position of consonant (before/after).
Figure 4. Vowel quality per voice and position of consonant (before/after).





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