

Phonetic implementation of lexical and post lexical geminates in Persian

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Phonological research describes two different types of geminates with differing structures. Lexical geminates are phonemic and represent as single melodic units associated with two timing slots (Leben 1980), whereas post lexical geminates are formed by concatenation of two identical consonants across a word boundary or by total assimilation of a segment which takes the identity of the adjacent segment at a word internal morpheme boundary (McCarthy 1986; Lahiri and Hankamer 1988; Ridouane 2010; Oh and Redford 2012). Within phonetic implementation, lexical geminates are phonetically long segments which contrast with their singleton counterparts as short segments (Ladefoged and Maddieson 1996), whereas the post lexical geminates are not contrastive in length. The purpose of this study is to examine the phonetic interpretation of geminate contrast and the articulatory differences between the lexical and post-lexical geminates in Persian. In terms of two geminate types, the findings indicated that word-boundary geminates display the same temporal values as lexical geminates, however, unlike lexical geminate consonants, the phonetic implementation of adjacent identical consonants in word-boundary geminates are not allocated the feature [+tense]. Such phonologically difference affected the vowels preceding the two geminate types. Results from analyzing the qualitatively short and long vowels preceding the word-boundary geminates showed separate distributions for consonant sequences affected by different vowel types. Contrary to RMS amplitude, formant frequencies as a robust secondary cue, could contribute to the perception of the vowel and consonant discrimination in two types of geminates in Persian. These results demonstrate that temporal compensation is maintained with the interaction between the preceding vowels and consonants in two geminate types. Duration as a primary correlate would be enhanced by Formant Frequency values as an additional acoustic correlate and increases the perceptual distance between the phonemic categories.

Keywords: Persian, Lexical Geminates, Post-lexical Geminates, Tenseness.

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