

## **The Interaction of Prosodic Factors in Lending Prominence to Syllables in Persian Poly-syllabic Words**

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### **Extended abstract**

#### **1- Introduction**

Linguistic stress and pitch accent are two prosodic cues to word-level prominence. Lexical stress is a prosodic event that helps disambiguate minimal stress pairs (Silber-Varod, Sagi, and Amir, 2015). It happens in polysyllabic words to lend prominence to a syllable as compared to other syllables in the same word. Thus, lexical stress implies the prominence of one syllable in relation to other syllables within a word. But, prominence is not restricted to the word level. It may also occur at the sentence level. This second kind of prominence is called pitch accent. Accent is an intonational event according to which some words in a sentence are produced with more prominence for pragmatic purposes (Sluijter and van Heuven, 1996). Thus lexical stress belongs to linguistic competence, while accent belongs to linguistic performance (Eslami, 2010; Sadeghi, 2014).

According to the typological classification of Hyman (2014), languages are of two prosodic types: stress-accent and non-stress-accent languages. Stress-accent languages are those in which stress is phonetically realized in a word to make one syllable more prominent than other syllables. In contrast, non-stress-accent languages are those in which syllables are free of any phonetic prominence at the word level, and prominence in these languages is the result of pitch accent at the sentence level.

In addition to lexical stress and pitch accent, the prosodic position of a syllable may also affect its prominence in a word. The present paper addresses the role (or contribution) of stress, accent and syllable position on word level prominence in Persian. Prominence is operationalized in this research through three acoustic parameters, namely F0, duration and overall intensity.

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## **2- Theoretical framework**

The present research is carried out within the framework of Laboratory Phonology. Any research within this theoretical framework starts with a phonological hypothesis. This hypothesis is assumed to represent a phonological model of the phonetic pattern in question. Then, a production or perceptual experiment is conducted to evaluate the hypothesis. For this purpose, a sample of data related to the phonological hypothesis is designed and calculated. Some acoustical correlates are selected and measured under experimental control of all factors that are assumed to affect the result of the experiment. The values of the parameters calculated are statistically processed, and the results obtained are used to assess the validity of the hypothesis formulated.

## **3- Methodology**

A corpus of 144 sentences was used to evaluate the hypothesis in question. The target words used in the sentences included all the six vowels of the Persian language. There were two types of words in the data: two-syllable words with cv.cv syllable structure and three-syllable words with cv.cv.cvc syllable structure. Stressed and unstressed syllables were embedded in the two-syllable words in final and initial positions respectively, while syllables in the medial position of the three-syllable words were undefined for prominence. All the three-syllable words were formed by adding a stress-bearing mono-syllable affix (inflectional or derivational) to the two-syllable words. All the target words were embedded in two intonational contexts to yield accented and unaccented productions. All acoustic parameters were measured using Praat, version 5.2.12. Measurements were made simultaneously on F0 contour, intensity contour and spectrograph.

## **4- Results & Discussion**

The results for F0 showed no syllables except for the final syllable receive a prominence-lending pitch movement. The results for overall intensity indicated that like F0, intensity correlates with accent rather than stress or syllable position. The results for duration suggested that the initial unstressed syllables are longer than final stressed syllables, and that final stressed syllables are longer than medial unstressed syllables. Furthermore, differences in duration between the syllables concerned were found to be significant even in the unaccented condition. These results were interpreted as suggesting that there are two prosodic factors

affecting word-level prominence in the paradigmatic axis, namely stress and syllable position, where syllable position outweighs stress in lending more prominence to initial syllables in poly-syllabic words.

### 5- Conclusions & Suggestions

Overall, the results suggested that unlike F0 and intensity, duration in Persian is an acoustic correlate of both stress and syllable position which interacts with each other to determine the prominence of syllables in Persian poly-syllabic words.

**Key words:** lexical stress, pitch accent, syllable position, prosodic prominence, duration

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