

Intonation of Questions in Persian

Vahid Sadeghi*^{ID}

Abstract

The present paper aims at comparing the intonation of Persian statements and questions in terms of the pitch scaling of tonal events in Pre-nuclear and nuclear prosodic positions as well as utterance final position. Previous research suggest that the direction of the sentence-final fundamental frequency (F0) movement is the most salient intonational cue to questions and statements in Persian. Prototypical yes/no questions are often characterized by a high F0 rise (H%) whereas statements have a terminal F0 fall (L%). It has also been suggested that the H tone of the nuclear pitch accent as well as the pitch range is higher in questions than statements. The present study explored the question as to what extent the pre-nuclear, nuclear and boundary tones may contribute to tune meaning in Persian, thereby distinguishing between statements and questions. The research methodology was the one used in laboratory phonology. The results showed that the tonal structure of the F0 contour between the nuclear pitch accent and the end of the utterance is different in the two sentence type: statements are characterized by L-L% while questions are characterized by L-H%. The results further suggested that the differences between statement and question intonation are not limited to boundary tones as the pitch scaling of both the L and the H tones of pre-nuclear and nuclear pitch accents are also different in the two sentence types.

Keywords: pitch contour, statements and questions, tonal structure, phrase accent, boundary tone

Received: 1 July 2018
Received in revised form: 9 January 2019
Accepted: 17 February 2019

Corresponding author, Associate Professor, Department of Linguistics, Imam Khomeini International University, Qazvin, Iran; Email: vsadeghi@hum.ikiu.ac.ir;
ORCID ID: <https://orcid.org/0000000258161769>

1. Introduction

The present paper aims at comparing the intonation of Persian statements and questions in terms of the pitch scaling of tonal events in Pre-nuclear and nuclear prosodic positions as well as utterance final position. Previous research suggests that the direction of the sentence-final fundamental frequency (F0) movement is the most salient intonational cue to questions and statements in Persian. Prototypical yes/no questions are often characterized by a high F0 rise (H%) whereas statements have a terminal F0 fall (L%). It has also been suggested that the H tone of the nuclear pitch accent as well as the pitch range is higher in questions than statements.

Recent studies on other languages have shown that an utterance-final rise is not mandatory for the distinction of questions from statements, and that question and statement cues are not restricted to the intonational nucleus. For example, Face (2007) showed for Castilian Spanish that higher pre-nuclear F0 peaks are able to change the listeners' interpretation of a sentence from statement to question. Petrone and Niebuhr (2013) found for German questions that listeners could accurately identify sentence mode before listening to the terminal F0 movement. They used the shape, slope, and alignment differences of the preceding pre-nuclear accents preceding the final rises as a perceptual cue for question identification. In Neapolitan Italian, Petrone and D'Imperio (2008) and Petrone (2008) found that the F0 section between the nuclear and the preceding pre-nuclear accent varies according to sentence mode. In statements, the F0 after the pre-nuclear rise falls rapidly to the end of the accented prosodic word, creating a low plateau-like turning point. Conversely, in questions, the F0 fall after the pre-nuclear rise is shallower, so that the F0 contour takes a concave shape.

The present study explored the question as to what extent the pre-nuclear, nuclear and edge tones may contribute to tune meaning in Persian, thereby distinguishing between statements and questions. Based on the findings for Indo-Germanic languages, it was hypothesized that the F0 contours of statements and questions are not only different in the nuclear region but also different in the non-final pre-nuclear zones. The research methodology was the

one used in laboratory phonology. A corpus of 72 sentences was designed to test the hypothesis. The speakers (12 male and 12 female) read the test sentences on a computer screen. They were instructed to read each sentence naturally, with no special emphasis on any part of the sentence. The target sentences were recorded on DAT recorder using a high quality unidirectional head-mounted microphone (Shure SM58) in a sound proof booth. The recorded sentences were digitized at a sampling rate of 16 kHz. They were analyzed using the acoustic speech analysis software Praat (version 4.3.01; Boersma & Weenink, 2005). All the measurements were made on simultaneous visual displays of waveform, wideband spectrogram and f0 tracks. The following segmental and f0 landmarks were identified in each utterance: beginning of the consonant of the accented syllable in each accentual phrase; F0 minimum and F0 maximum in each accentual phrase and utterance-final F0. The results showed that the tonal structure of the F0 contour between the nuclear pitch accent and the end of the utterance is different in the two sentence types: statements are characterized by L-L% while questions are characterized by L-H%. The results further suggested that differences between statement and question intonation are not limited to boundary tones as the pitch scaling of both the L and the H tones of pre-nuclear and nuclear pitch accents are also different in the two sentence types. This finding thus may run against the 'nuclear' tide, providing evidence that the pre-nuclear contour does contribute to tune meaning. The results suggest that pre-nuclear accents do not obey only to rhythmic constraints. Rather, they can make a separate contribution to the meaning of the whole tune. The findings reported here agree with those of other studies which pointed out that the pre-nuclear F0 contour might contain cues for the question versus statement distinction