Intonation of prominence in declaratives and interrogatives in Urdu/Hindi Farhat Jabeen University of Bielefeld

This research offers the first detailed account of the prosodic realization of prominence in declaratives, polar, and wh-questions in Urdu/Hindi. While there have been investigations of prosodic prominence in declaratives in Urdu/Hindi (Patil et al., 2008; Genzel & Kügler, 2010; Féry et al., 2016; Jabeen, 2017), there is as yet no analysis of prominence realization in wh-questions and the questioned (prominent) word in polar questions. This study aims to address this and investigates if prominence is achieved using the same prosodic cues in declaratives, polar, and wh-questions. Moreover, this study also analyzes if the prosodic realization of prominence varies on the basis of the position of the prominent word in a sentence.

We set up a production experiment to investigate this and recorded eleven native speakers of Urdu from Pakistan. The participants were presented with ditransitive statements (in wide and narrow focus), polar questions, and wh-questions (with three wh-phrases kis=ne 'who', kis=ko 'whom', $k \ge h\tilde{a}$ 'where') and asked to produce them in a natural manner. Wide focus was elicited by using the statement 'What happened' whereas the noun providing the answer to a wh-question was interpreted as narrowly focused (Krifka, 2008). The prominent words in declaratives and polar questions as well as wh-phrases were placed at either sentence initial, medial or immediately preverbal position. Five items were used for each position in each sentence type. Polar questions in Urdu/Hindi optionally use a particle kya that can be placed at different positions in the sentence (Bhatt & Dayal, 2015). In order to control for this, kya was always placed at the sentence final position in the target polar questions. The recordings were annotated manually. F0 valleys and peaks in each sentence were identified while paying attention to microprosody. The peaks and troughs were labeled as Hs and Ls respectively. The F0 on each of those points was extracted using a Praat script. The resulting F0 values were converted into semitones (st.) using the F0 minimum in each sentence as the reference point. In order to analyze the difference in the scaling of high tones in the target sentence types, multiple Linear Mixed Effects Regression models were run using F0 scaling (st.) as the dependent variable and sentence type and position of prominence as fixed factors. Items and speakers were used as random effects. The results of the statistical analysis are discussed as follows.

Table 1 presents the scaling of F0 peaks on prominent words and wh-phrases placed at different positions. It shows that regardless of their position, F0 peaks on the questioned constituent in polar questions and on the wh-phrases are scaled the highest. Overall, the peaks are scaled the lowest in wide focus and the highest in questions. However, this effect is not uniform for all positions. At the sentence initial position, there is no significant difference in the scaling of F0 peaks between focused nouns in declaratives, the questioned word in polar questions, and the F0 peaks in wh-phrases. At the sentence medial position, F0 peaks in prominent nouns in polar questions are scaled significantly higher (β : 12.2st, SE = 0.8, p_{Adjusted} = 0.01) as compared with the F0 peaks in the narrowly focused nouns (β : 8.6st, SE = 0.7). At the immediately preverbal position, wh-phrases were found to have significantly higher F0 peaks (β : 10.5st, SE = 0.7, p_{Adjusted} = 0.05) than the narrowly focused nouns (β : 7.3st, SE = 1). The difference in the scaling of F0 peaks in polar and wh-questions was found not to be significant at any position. This points to the gradient scaling of F0 peaks used to mark prominence in statements on one hand and questions on the other as (1) shows.

Further analysis shows that all the consecutive F0 peaks in statements produced in wide focus are downstepped with reference to the immediately preceding F0 peak. However, in polar questions, the questioned constituent, notwithstanding its position, carries the highest F0 peak and the widest F0 range in the sentence. Similarly, the wh-phrases carry the highest F0 peak.

Thus the pattern of downstep is disrupted when the questioned constituent or the wh-phrase is placed at a non-initial position. However, this upstepping is never found on the narrowly focused noun as it does not carry the highest F0 peak in the sentence. This is evident in the F0 contour of examples presented in Figure 1. This shows that the upstepped F0 peak on the prominent constituent is a feature of interrogatives only and that prosodic prominence is realized differently in statements and questions.

To summarize, the realization of prominence in Urdu/Hindi differs on the basis of sentence type. The wh-phrases and the questioned nouns in polar questions carry local prosodic prominence indicated by an upstepped F0 peak. Narrowly focused nouns, on the other hand, do not carry the highest F0 peak. This constitutes first evidence of variable prosodic realization of prominence in questions and statements. It also shows that the prosodic marking of interrogativity differs from that of narrow focus in Urdu/Hindi. Smith (2014) had found similar results for her analysis of the prosody of wh-questions and narrow focus in Fukuoka Japanese. These findings raise questions against the existing understanding that the questioned entities are narrowly focused. My data shows that like Fukuoka Japanese, a distinction needs to be made between prominence marking to indicate narrow focus vs. interrogativity in Urdu/Hindi as well.

Prominence	Polar	Wh-Phrase	Narrow focus	Wide focus
Initial	11.8	11.8	11.7	8.6
Medial	12.3	10.6	8.7	7.0
Im. Preverbal	9.6	10.7	8.1	4.1

(1) Wide focus < narrow focus < wh-phrase = polar question

Table 1: Mean scaling (st.) of high tones with reference to F0 minimum in the sentence.



Figure 1: F0 scaling of sentence medial F0 peaks in different sentence types.

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