

# Rhetorical questions in Persian

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Rhetorical questions (RQs), their pragmatic interpretation and their acoustic representations have been of increasing interest in recent years [1] [2]. In a survey on RQs in different, partly unrelated languages<sup>1</sup>, [3] establish major cross-linguistic phonological and phonetic cues of RQs (in comparison to information seeking questions (ISQ)), and showed that RQs differ reliably from ISQs with respect to F0-features, duration, and often also voice quality.

In the present study we extend this typological overview to a member of the Iranian languages family, Persian. Persian is an Iranian SOV language [4], and thus allows for a first detailed investigation of rhetorical questions in a verb-final language (the only other one in previous work being Japanese which was restricted to sentences containing only the question word and a verb, cf. [3]).

Most research on Persian prosody assumes two higher prosodic units: the Accentual Phrase (AP) and the Intonational Phrase [5, 6]. The AP usually consists of a content word carrying an (L+)H\* pitch accent on the stressed (i.e., mostly the last [7]) syllable of the word, with L occurring in polysyllabic words. Declaratives are often characterized by a series of L+H patterns (APs) with the last rise being the most prominent in the sentence.

So far, research in Persian prosody has only been concerned with canonical questions. [8], for example, looked at polar questions and constituent questions in general. For polar questions he found an H% boundary tone and, in comparison to declaratives, a higher pitch excursion and greater final lengthening on the last AP. For constituent questions he found a falling intonation similar to declaratives with the nuclear pitch accent on the wh-constituent.

In order to enhance investigations into Persian interrogatives in general, and to enrich the research on RQs with a language with a fundamentally different word order/from a different language family, we conducted a production experiment following the protocol established in [2]. The experiment includes 21 items with two question types, respectively: polar questions (1) and constituent questions (2).

- |                           |         |        |                    |         |        |
|---------------------------|---------|--------|--------------------|---------|--------|
| (1) Kasi                  | Karafs2 | mixurE | (2) Ki             | Karafs2 | mixurE |
| anyone                    | celery  | eat    | who                | celery  | eat    |
| “Does anyone eat celery?” |         |        | “Who eats celery?” |         |        |

Both question-types were constructed so they could be interpreted as both, ISQs or RQs, depending on context. The experimental material was divided into two lists, each containing one half of the polar questions (ISQ and RQ) and the constituent questions (ISQ and RQ)). Twelve native speakers of Persian (4 males) participated in the experiment, resulting in 504 produced sentences.

Results showed strong significant durational effects on the Subject and the Object in both question-types, with each constituent being significantly longer in the RQ condition compared to the ISQ condition ( $p < 0.01$ ). Smaller durational effects were also found on the verb for polar questions ( $p < 0.05$ ), but not for constituent questions. With respect to F0, we found a higher F0-excursion with the ISQs compared to the RQs, with the greatest difference found on the verb in the final position (Figure 1).

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<sup>1</sup>German, English, Icelandic, Italian, Standard Chinese, Cantonese, Japanese, and French

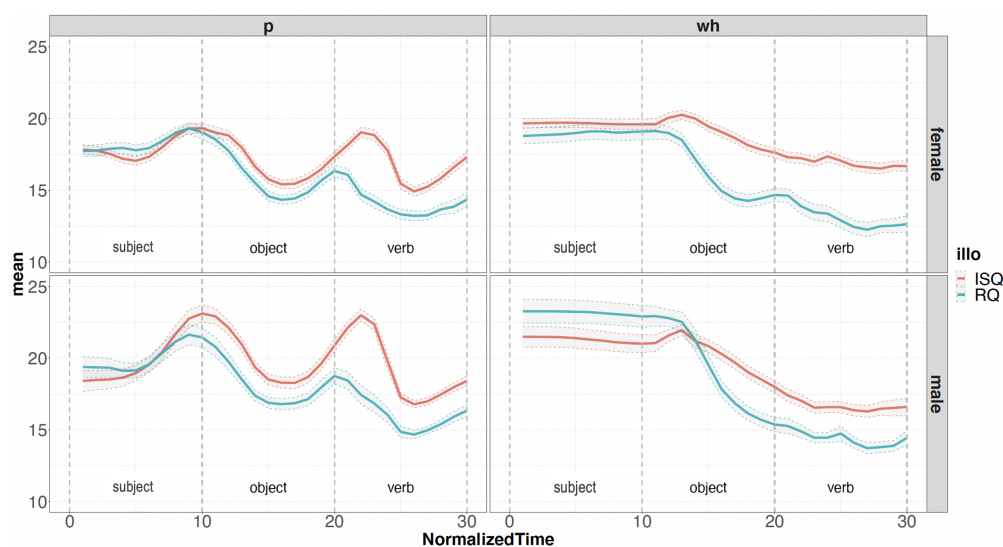


Figure 1: Mean  $f_0$  in semitones (relative to 50Hz for male and 100Hz for female speakers), separated by gender and question type (p=polar right panel, wh=constituent question left panel) for ISQ (red line) and RQ (green line).

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