The prosodic marking of rhetorical questions in German

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Background:
- Information-seeking questions (ISQs) elicit answers (Han, 2002)
- Rhetorical questions (RQs) as hybrid type of utterance (Grésillon, 1980), may function as assertion (Sadock, 1971) → no knowledge gap (Meibauer, 1986)
- Interrogative syntactic structure vs. assertive function (e.g., Sadock, 1971, 1974) of the opposite polarity (Han, 2002)
- e.g., Did he lift a finger to help you? → suggests: he did not → Mismatch between form and function (Rohde, 2006)
- Recognition of correct illocutionary force may be facilitated by discourse situation, lexical triggers (modal particles) and/or prosodic realization of the interrogative
- Little work on prosodic realization: English RQs said to have falling intonation (Han, 2002) → but not supported by experimental results of e.g., Hedberg et al., 2010

Research Questions:
1. Do German RQs have falling intonation, irrespective of their position in the discourse (utterance-media vs. final)?
2. What phonological and phonetic means do speakers use to mark syntactically ambiguous interrogatives as rhetorical or information-seeking?

Interaction Study: Materials & Methods
- 32 experimental trials: 8 wh-questions (WhQ), 8 polar questions (PoiQ)
  - Sentence final objects, mostly sonorant: e.g., Wer spielt denn Domino? Who plays Domino?
  - For each interrogative, two short contexts were generated: One that favored an RQ reading, one an ISQ reading
  - Target utterance: turn-final or turn-medial position

Phonological results:
- Final boundary tone: Rhetorical PoiQs often did not rise as strongly as ISQs (higher proportion of H-% compared to H^+H%)
- Nucear Pitch accent: Rhetorical WhQs showed higher proportion of L^+H nuclear accents (44%) than ISQs (10%)

Phonetic results: (✓ = significant difference)

<table>
<thead>
<tr>
<th>Measured variables</th>
<th>PoiQ</th>
<th>WhQ</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial pitch</td>
<td>✓</td>
<td>✓</td>
<td>On average 9.2 Hz lower in RQs than in ISQs</td>
</tr>
<tr>
<td>Overall utterance duration</td>
<td>✓</td>
<td>✓</td>
<td>RQs on average 39.9ms longer than ISQs</td>
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<tr>
<td>Duration sentence final object</td>
<td>✓</td>
<td>x</td>
<td>3% longer for RQs than for ISQs</td>
</tr>
<tr>
<td>Duration wh-word or verb</td>
<td>✓</td>
<td>x</td>
<td>2% shorter for RQs than for ISQs</td>
</tr>
<tr>
<td>Pitch range first constituent</td>
<td>✓</td>
<td>x</td>
<td>On average 1.6 st narrower for RQs than for ISQs</td>
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<tr>
<td>Spectral tilt (H1-A3) at the center of first vowel</td>
<td>✓</td>
<td>✓</td>
<td>Steeper for RQs than for ISQs → RQs produced with breathier voice than ISQs</td>
</tr>
</tbody>
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Discussion:
- RQs and ISQs differ with respect to prosody
  - Differences in distribution of boundary tones and accent types
  - Rhetoricity / non-interrogativity already marked early in the utterance
    - Wh-phrase less prominent in RQs than in ISQs
    - Initial pitch lower and speakers’ voice softer in RQs → Softer voice may serve to attenuate the assertive force of RQs
- Polar RQs are less marked phonetically – rhetoricity is signaled by choice of boundary tone