Interpreting Rhetorical Questions: The Influence of Pitch Accent Type, Voice Quality and the Modal Particle denn

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Background & Motivation:
- Information-seeking questions (ISQs) elicit new information with the goal of closing a knowledge gap. (Groenendijk & Stokhof 1984)
- Rhetorical questions (RQs) imply answers that are already known to all interlocutors. (Caponigro & Sprouse 2007)
- Wochner et al. (2015) identified breathy voice quality and a nuclear late-peak accent (L*+H) as characteristics in the production of German wh-RQs.
- particles have different functions in questions:
  → schon and auch are rhetorically connotated (Melbauer 1986)
  → denn can occur in both ISQs and RQs (Thurmair 1991)
  → RQ: Wer geht denn im Sommer Skifahren? (Who goes PRT skiing in the summer?)
  → ISQ: Wer geht denn heute zum Grillfest? (Who is going PRT to the barbecue today?)
- but influence of denn on question interpretation has not yet been empirically tested

Research Questions:
- Experiment 1: Are voice quality and nuclear pitch accent type relevant perceptual prosodic cues for the interpretation of German wh-questions as rhetorical or information-seeking when they are presented out of linguistic context?
- Experiment 2: Does the modal particle denn influence the interpretation of these prosodic cues?

Forced-Choice Perception Experiments: Materials & Methods

Experiment 1:
- 32 different wh-questions, pragmatically ambiguous between RQ and ISQ: Wer VERB denn OBJEKT? ‘Who VERB PRT OBJECT?’
- all questions were recorded in four experimental conditions:

<table>
<thead>
<tr>
<th>accent type</th>
<th>early-peak (H+!H*)</th>
<th>late-peak (L*+H)</th>
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<tbody>
<tr>
<td>voice quality</td>
<td>modal</td>
<td>breathy</td>
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Experiment 2:
- identical to Experiment 1 but particle denn was cut out of the recordings

Results:
- RQ interpretation: most frequent when wh-questions were produced with breathy voice quality and a nuclear late-peak accent (L*+H)
- ISQ interpretation: most often for wh-questions in modal voice quality with a nuclear early-peak accent (H+!H*)

Discussion:
- RQs and ISQs are both reliably identified based solely on their prosody, i.e. in absence of a disambiguating context
- prosodic configuration nuclear late-peak accent plus breathy voice quality could be a conventionalized prosodic contour to signal wh-RQs, following recent findings on conventionalized contours by Hellbernd & Sammler 2016
- when denn is absent, participants still identify the same prosodic combinations as RQ and ISQ
- presence of denn seems to facilitate decisions for the identified prosodic configurations for ISQ and RQ

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