Syntax and prosody of negative polar questions

Anja Arnhold, Bettina Braun, Filippo Domaneschi and Maribel Romero

Project BiasQ: Bias in polar questions

Workshop “Questions, Answers and Negation”
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BiasQ: Bias in Polar Questions

Original speaker bias (epistemic)
Kathleen and Jeff have just come from Chicago on the Greyhound bus to visit Bob in Ithaca.
Bob: You guys must be starving. You want to get something to eat?
Kathleen: Yeah, isn’t there a vegetarian restaurant around here---Moosewood, or something like that? (from Ladd 1981:164)
The speaker thinks there is a restaurant
Bias for \( p \), where \( p = \text{there is a vegetarian restaurant} \)

Contextual evidence bias (evidential)
A: Since you guys are vegetarians, we can’t go out in this town, where it’s all meat and potatoes.
B: Is there no vegetarian restaurant around here? (from Büring & Gunlogson 2000:9)
The speaker encounters evidence that there is no restaurant
Bias against \( p \), where \( p = \text{there is a vegetarian restaurant} \)
What we are not looking at (for now)

Other kinds of biases
- *Don’t you like it?*
  What the speaker expects/wishes to be true ➔ *Bouletic bias*
- *Aren’t you ashamed of yourself?*
  What the speaker thinks should be true according to a general rule/law ➔ *Deontic bias*
(see van Rooy & Šafárová 2003, Huddleston & Pullum 2002, Reese 2006)

Other types of questions
- *Alternative questions*
- *Declarative questions*
- *Tag questions*
Today

Question forms
- *Is Paul a vegetarian?* ➔ Positive polar question (PosQ)
- *Really? Is Paul a vegetarian?* ➔ *really-*Positive polar question (really-PosQ)
- *Isn’t Paul a vegetarian?* ➔ Negative polar question with high negation (HiNQ)
- *Is Paul not a vegetarian?* ➔ Negative polar question with low negation (LowNQ)

Focus on negative polar questions
1. Syntax
2. Prosody
Syntax

(see Domaneschi, Romero & Braun, submitted)
Previous literature

**Original speaker bias** (Ladd 1981, Romero & Han 2004)
- HiNQ mandatorily express a positive original speaker bias, LowNQ do not

**Contextual evidence bias** (Büring & Gunlogson 2000)
- HiNQ are incompatible with evidence for p
- LowNQ are only compatible with evidence against p

Looking at either original or contextual bias

**Either kind of bias** (van Rooy & Šafárová 2003)
- No grammatical distinction between negative polar question forms
- All require negative bias
- Can be original or contextual bias, disambiguated by pragmatic context and polarity items

**Both kinds of bias**
- Sudo (2013): Did not discuss LowNQs
- Roelofsen et al. (2012): Different approach, some open questions
Syntax research questions

Which pragmatic biases is the choice of polar question form sensitive to?
- Speaker bias
- Contextual bias
- Both
- **Hypothesis: Both**

What is the mapping between pragmatic condition and question form?
- *Is Paul a vegetarian?* ➔ Positive polar question (PosQ)
- *Really? Is Paul a vegetarian?* ➔ *really*-Positive polar question (really-PosQ)
- *Isn’t Paul a vegetarian?* ➔ Negative polar question with high negation (HiNQ)
- *Is Paul not a vegetarian?* ➔ Negative polar question with low negation (LowNQ)

- Are they all distinct polar question types preferred in different pragmatic conditions?
- **Hypothesis: Distinct syntactic question types**
Hypotheses continued

What is the mapping between pragmatic condition and question form?

<table>
<thead>
<tr>
<th>Contextual evidence</th>
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<tbody>
<tr>
<td>p</td>
<td>Neutral</td>
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<tr>
<td>p</td>
<td>Neutral</td>
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<tr>
<td>Neutral</td>
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**Hypotheses continued**

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<tr>
<td></td>
<td>p</td>
</tr>
<tr>
<td>$\neg p$</td>
<td>HiNQ</td>
</tr>
<tr>
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Hypotheses continued

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<td>Büring &amp; Gunlogson (2000)</td>
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<tr>
<td>p</td>
<td>Neutral</td>
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<tr>
<td>¬p</td>
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BiasQ: Arnhold, Braun, Domaneschi & Romero
What is the mapping between pragmatic condition and question form?

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</tr>
<tr>
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</table>
Method

Same study conducted in English and German
- 42 participants for each language
- All students

<table>
<thead>
<tr>
<th>English participants</th>
<th>German participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age 20-36 years, mean 25.0</td>
<td>Age 18-37 years, mean 24.7</td>
</tr>
<tr>
<td>25 female</td>
<td>27 female</td>
</tr>
<tr>
<td>University College London</td>
<td>University of Konstanz</td>
</tr>
</tbody>
</table>

Procedure
- Participants had to imagine ordinary conversation scenarios
- Manipulated original (=speaker) bias
- Manipulated contextual evidence
- Participants chose a polar question form and uttered it aloud
You are planning to go out for dinner after work tomorrow evening with your colleagues. You are exchanging mails to decide who will take the car. Laura writes to you:

Don't worry,
I have the car!
The day after, Laura enters the office and says:

Can you please give me a lift this evening?
What question would you ask to find out if she has taken the car?

Select the question that you consider more natural, then pronounce it:

- Have you taken the car?
- Really!? Have you taken the car?
- Have you not taken the car?
- Haven't you taken the car?
- Other ways of asking if she has taken the car
## Method

### Materials
- 30 scenarios + 16 filler scenarios
- 6 bias conditions
- 6 lists
- Bias conditions distributed with Latin square design

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Results: English

(Domaneschi, Romero & Braun, submitted)

Separate by-participant and by-item one-sample t-tests
Most frequent choice constitutes majority in all conditions except n/p
Results: German
(Domaneschi, Romero & Braun, submitted)

Separate by-participant and by-item one-sample t-tests

Most frequent choice constitutes majority in all conditions except n/p
Evaluation

Which pragmatic biases is the choice of polar question form sensitive to?
- Speaker bias
- Contextual bias
- Both
- **Hypothesis: Both**

What is the mapping between pragmatic condition and question form?
- *Is Paul a vegetarian?* ➔ Positive polar question
- *Really? Is Paul a vegetarian?* ➔ *really*-Positive polar question
- *Isn’t Paul a vegetarian?* ➔ Negative polar question with high negation
- *Is Paul not a vegetarian?* ➔ Negative polar question with low negation

- Are they all distinct polar question types preferred in different pragmatic conditions?
- **Hypothesis: Distinct syntactic question types**
Prosody
Previous literature

Prosody plays a role in marking pragmatics of questions

Information-seeking vs. confirmation-seeking questions
(\sim neutral vs. positive speaker bias)
- Produced with different boundary tones in (Saxonian) German (Kügler 2003)
- Cued by pitch scaling in Catalan (Vanrell, Mascaró, Torres-Tamarit & Prieto 2013)
- Produced with different accent patterns, in addition to lexico-syntactic markers, in Sardinian (Vanrell, Ballone, Schirru & Prieto 2014)

Commitment and agreement
- Catalan listeners judge different nuclear contours to be appropriate depending on level of speaker commitment and agreement between speaker and addressee (Borràs-Comes & Prieto 2015)
Another reason to look at prosody

Ladd’s ambiguity
- HiNQ can be used to check p or ¬p
  - *Isn’t Paul a vegetarian, too?* ➔ checking p
  - *Isn’t Paul a vegetarian, either?* ➔ checking ¬p

Verum focus
- Romero & Han (2004) suggest this is a scope ambiguity between negation and epistemic operator VERUM (cf. Höhle 1992)
- VERUM is used to assert that the speaker is certain that p should be added to the common ground

**VERUM can be spelled out…**
- With really: *Is Paul really a vegetarian? / Really, is Paul a vegetarian?*
- With a (nuclear) accent on the auxiliary or main verb: *Paul IS a vegetarian.* (Höhle 1992)
- With a (nuclear) accent on the negation: *Paul is NOT a vegetarian.* (Romero & Han 2004)
Research questions & hypotheses

How do biases and syntactic question form influence the prosodic realisation of negative polar questions?

Hyp1: Syntax and prosody are independent.
Hyp2: Non-canonical syntax and prosody form a unit.
Hyp3: Syntax and prosody complement one another.
Research questions & hypotheses

How do biases and syntactic question form influence the prosodic realisation of negative polar questions?

Hyp1: Syntax and prosody are independent.
- Syntax marks biases
- Prosody marks e.g.
  - Degree of speaker commitment
  - VERUM

Hypothesis: Negation is accented more often when there is a contradiction between original and contextual bias (cf. Romero & Han 2004 on VERUM marking)
Research questions & hypotheses

How do biases and syntactic question form influence the prosodic realisation of negative polar questions?

Hyp2: Non-canonical syntax and prosody form a unit.
Hyp3: Syntax and prosody complement one another.
- Prosody disambiguates
  - English: Checked proposition in HiNQ

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German:
- Checking p: HiNQ
- Checking ¬p: LowNQ

(cf. Romero & Han 2004)
(cf. Büring & Gunlogson 2002)
Research questions & hypotheses

Hyp3: Syntax and prosody complement one another.
- Prosody disambiguates
  - English: Checked proposition in HiNQ
  - German: Original bias in LowNQ

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<td>HiNQ</td>
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<tr>
<td>¬p</td>
<td>HiNQ/LowNQ</td>
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</tbody>
</table>
Prosodic analysis

German data
Negative polar questions
  - LowNQ (*kein*)
  - HiNQ (*nicht ein*)

Annotation
  - GToBI labels of negation and following noun
  - Classification into 5 types + other
**Negation – Annotation**

**Intonation types**

Type 1: Neg L*, N _, H-%

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<table>
<thead>
<tr>
<th>Type</th>
<th>Pitch (Hz)</th>
</tr>
</thead>
<tbody>
<tr>
<td>keine</td>
<td>200</td>
</tr>
<tr>
<td>Mensa</td>
<td>300</td>
</tr>
<tr>
<td>Neg</td>
<td>350</td>
</tr>
<tr>
<td>N</td>
<td>400</td>
</tr>
<tr>
<td>L*</td>
<td>200</td>
</tr>
<tr>
<td>H-%</td>
<td>400</td>
</tr>
</tbody>
</table>

'Is there no university cafeteria?'
Negation – Annotation

Intonation types
Type 2: Neg L*H-, N L*, H-%

‘Do you not have a garage?’
Negation – Annotation

Intonation types
Type 3: Neg H* L-, N L*, H-%

‘Do you not have a garage?’
**Negation – Annotation**

**Intonation types**

Type 4: Neg _, N L*, H-%

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<table>
<thead>
<tr>
<th></th>
<th>Pitch (Hz)</th>
</tr>
</thead>
<tbody>
<tr>
<td>keinen</td>
<td></td>
</tr>
<tr>
<td>Tutor</td>
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</table>

<table>
<thead>
<tr>
<th></th>
<th>Time (s)</th>
</tr>
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<tbody>
<tr>
<td>0</td>
<td></td>
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<tr>
<td>1.42</td>
<td></td>
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</tbody>
</table>

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‘Is there no tutor?’

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<p>| | | | |</p>
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<thead>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Neg</td>
<td>N</td>
<td>L*</td>
<td>H-%</td>
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</table>

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Universität Konstanz
Negation – Annotation

Intonation types
Type 5: Neg H*L-, N _, L-%

‘Is Paul not a vegetarian?’
Results

LowNQ (kein)

- Different intonation contours
- Most frequent:
  L* H- L* H-%
  kein N

![Graph showing different intonation contours and their realisations]
Results

LowNQ (*kein*)

- Different intonation contours
- Most frequent: *L* H- L* H-*%
k ein  N
- No difference between conditions *n/¬p* and *p/¬p*
  (paired by-subject and by-item t-tests)
Results

HiNQ (*nicht*)

- Strong preference for:
  L* H-%

nicht N
Results

HiNQ (*nicht*)

- Strong preference for:
  \[ L^* \text{ H}% \]
  nicht \ N
- No difference between conditions p/n and p/ \( \neg p \)
  (paired by-subject and by-item t-tests)
Results

LowNQ (kein)

HiNQ (nicht)
How do biases and syntactic question form influence the prosodic realisation of negative polar questions?
- Prosodic realisation differs between question forms (HiNQ vs. LowNQ)
- No difference between bias conditions
- But question type is influenced by bias condition

**Hypothesis:** Negation is accented more often when there is a contradiction between original and contextual bias (cf. Romero & Han 2004 on VERUM marking)
Evaluation

How do biases and syntactic question form influence the prosodic realisation of negative polar questions?

Hyp1: Syntax and prosody are independent.
- Syntax marks biases
- Prosody marks e.g.
  - Degree of speaker commitment
  - Verum

Hyp2: Non-canonical syntax and prosody form a unit.

Hyp3: Syntax and prosody complement one another.
- Prosody disambiguates
  - English: Checked proposition in HiNQ
  - German: Original bias in LowNQ
What’s next
Planned study: Ladd’s ambiguity

Possible factors not addressed in previous study:

− Information-seeking vs. confirmation-seeking questions (Vanrell, Mascaró, Torres-Tamarit & Prieto 2013, Kügler 2003)
− (Degree of) incredulity, speaker commitment (Ward & Hirschberg 1985, Borràs-Comes & Prieto 2015)
− Which proposition are you checking? (Ladd 1981, Romero & Han 2004)
  − p vs. ¬p
  − Speaker’s vs. addressee’s belief
Planned study: Ladd’s ambiguity

Factors manipulated
1. Checking p vs. \(\neg p\)
2. Checking speaker’s vs. addressee’s belief
3. Degree of speaker commitment to p

Manipulated in unison to create 2 conditions:

<table>
<thead>
<tr>
<th>Condition 1</th>
<th>Condition 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Checking p</td>
<td>Checking (\neg p)</td>
</tr>
<tr>
<td>Checking S’s belief</td>
<td>Checking A’s belief</td>
</tr>
<tr>
<td>S is committed to p</td>
<td>S is less committed to p</td>
</tr>
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Conducted first in German, then in English
The university is appointing a new professor of language acquisition didactics, and the commission has already invited the reviews.

<table>
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<th>Condition 2</th>
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</thead>
<tbody>
<tr>
<td>Checking p, Checking S’s belief, S committed to p</td>
<td>Checking ¬p, Checking A’s belief, S less committed</td>
</tr>
</tbody>
</table>

In the past, some of the reviews have always come from teachers when didactics positions were filled. So you are sure that commission is taking a teacher’s opinion into account this time, as well.

You are talking about the new appointment with a fellow student, who is new at the university.

Your fellow student says: "Damn! These reviewers know nothing about what is really needed for teaching at schools!"

You are surprised to hear this, but you still think you are right. However, to make sure, you want to check your assumption that the commission is considering people with experience at schools. You ask:

Aren’t they considering a teacher’s opinion?
Planned study: Hypotheses

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<td>Checking $\neg p$</td>
</tr>
<tr>
<td>Checking $S$’s belief</td>
<td>Checking $A$’s belief</td>
</tr>
<tr>
<td>$S$ is committed to $p$</td>
<td>$S$ is less committed to $p$</td>
</tr>
</tbody>
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**German:**

Condition 1 $\Rightarrow$ HiNQ
Condition 2 $\Rightarrow$ LowNQ

**English:**

Condition 1 $\Rightarrow$ HiNQ
Condition 2 $\Rightarrow$ HiNQ

Possibly with different prosody
Herzlichen Dank!

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