Polar questions in Russian: experimental perspectives

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Overview

1. Introduction
2. Positive polar questions in Russian
3. Negative polar questions in Russian
4. Experiment
5. Conclusion

Question/statement opposition

- Three components (Abeillé et al. 2013):

Syntactic	clause type	interrogative	declarative
Semantic	denotation	set of propositions	proposition
Pragmatic	illocutionary force	query	assertion

- We focus on the **semantic component** and its interface with **intonation**.
- We argue that the nuclear pitch accent form and placement in Russian influence the semantics and not only the pragmatics of the utterance.

Polar question (PQ) meaning

(1) Do you like cats?

- **At-issue component**: Denote a set of propositions → Question operator
  - Bipolar (Hamblin 1973) : $\{p; \neg p\}$
  - Singleton (Biezma & Rawlins 2012) : $\{p\}$
- **Non-at-issue component**: presuppositions, conversational implicatures, etc. conveying additional information (Sudo 2013)
  - Includes felicity conditions depending on context. Even a "neutral" PQ is restricted in this sense (Büring & Gunlogson 2000) :

(2) scenario: A enters S's windowless computer room wearing a dripping wet raincoat.

a. S: What's the weather like out there? Is it raining?

b. #S: Is it sunny?

PQ Bias

Sudo (2013); Repp & Geist (to appear)

(3) *Context: Ben walks into the office with a plate full of food that looks like it is from the cafeteria (p). Amy had assumed that the cafeteria is not open yet (¬p).*

a. The cafeteria is already open?
b. Is the cafeteria already open?

1. Evidential bias (contextual evidence) - compatibility with contextual evidence concerning the possible answers.
2. Speaker bias (epistemic) - conveys speaker's epistemic state concerning the possible answers.

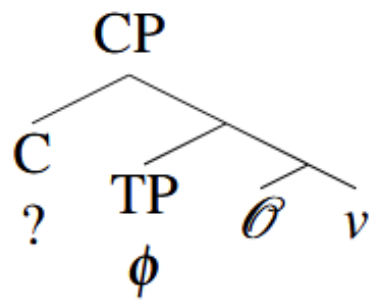
- Bias profile - a feature-based system to account for felicity conditions of different PQ types (like declarative question in (3a)).

PQ Bias

Sudo (2013); Goodhue (2024)

Speaker bias	Evidential bias
private	public
signaling own stance	reaction to context

- Goodhue (2024): Analysing evidential bias (Contextual Condition) as an anaphoric relation to a contextually salient proposition:



- Strong vs. weak bias: entailment – presupposition – implicature

Polar question marking

- Most common strategies across world's languages (Dryer 2013):
  1. Question particle
  2. Interrogative intonation only
  3. Interrogative verb morphology

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- Two strategies in Russian:
  1. **Verb fronting** + **particle *li*** - extensively discussed in the literature, claimed to be the canonical strategy (Dryer 2013) , we are not focusing on it today.

     (4) Vyigrala li Daša priz?
     won LI Daša prize
     'Did Daša win a prize?' (Onoeva & Staňková 2025)

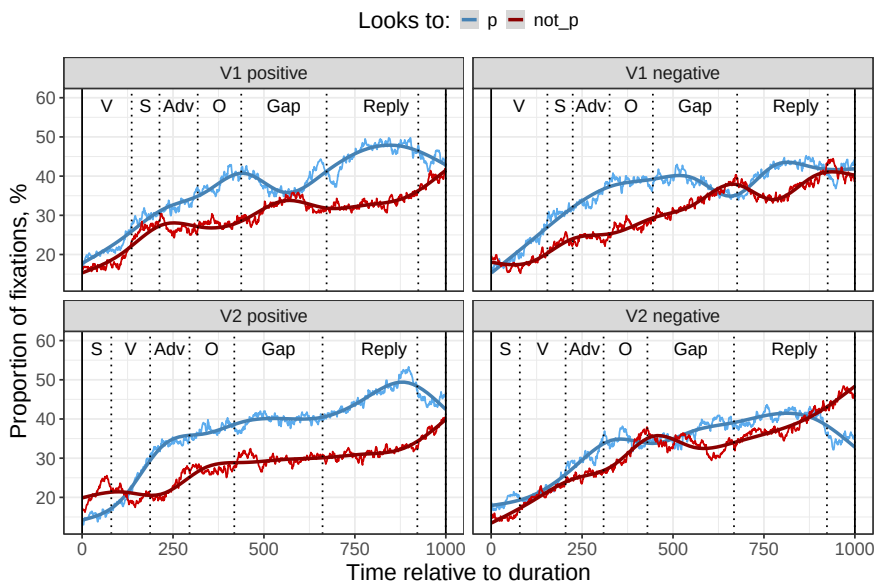
  2. **SVO word order** + **intonation** - predominant in spoken data (Onoeva & Staňková 2025) , under-researched - our focus in this study.

     (5) Daša vyigrala priz?
     Daša won prize
     'Did Daša win a prize?' (Onoeva & Staňková 2025)

Processing PQs: Eye-tracking evidence

Razguliaeva et al. (submitted)

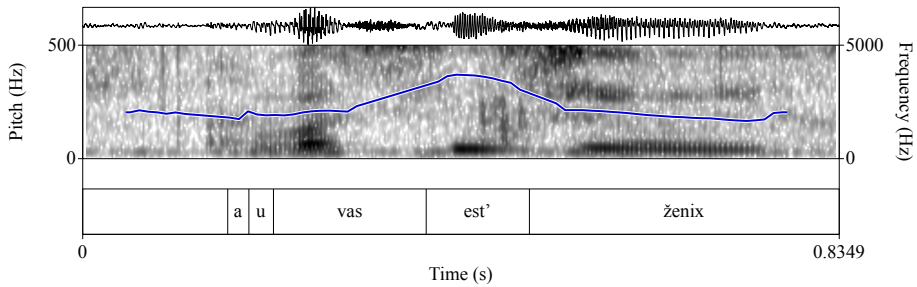
- **Setup**: Participants listened to PQs and short replies while looking at pictures corresponding to p and $\neg p$ while their fixations were tracked.
- **Design**: PQ-marking strategy (V1+li vs. V2) and polarity (positive or negative) were manipulated.
- **Results**: A significant preference for positive picture across the board, V1+li did not lead to balanced looks.
- Did positive bias (either speaker or evidential) influence processing?



Intonational PQs in Russian

- Declarative word order, questionhood is marked by intonation...

(6) A u vas est' ženix? 🔊
and at you is fiance
'And do you have a fiancé?'



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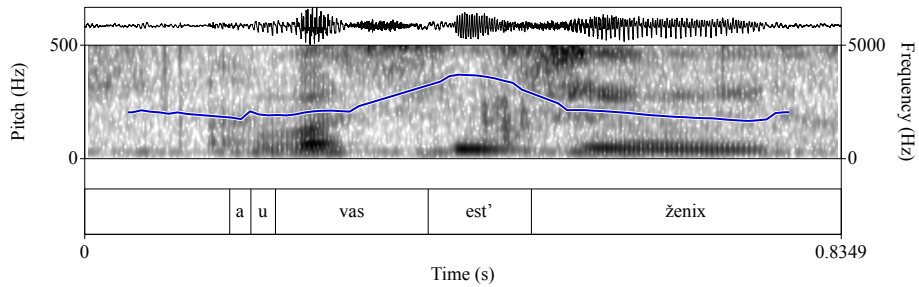

- ...but not by a final rise like, e.g., in English and Czech.
- A rising **nuclear pitch accent** followed by a low boundary tone.
- In "neutral" PQs, it is placed on the inflected verb (Esipova 2025).
- Differ from English rising declaratives (Gunlogson 2003).

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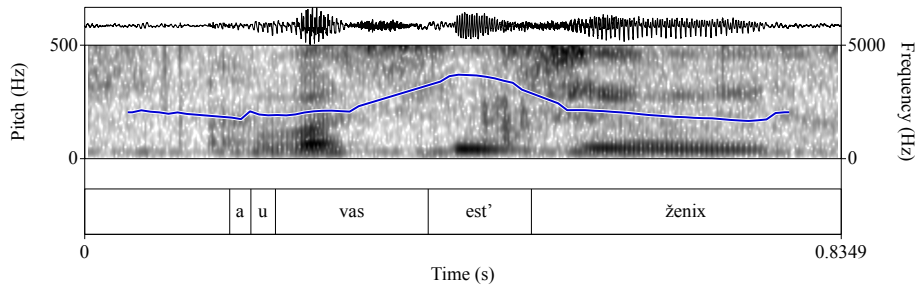

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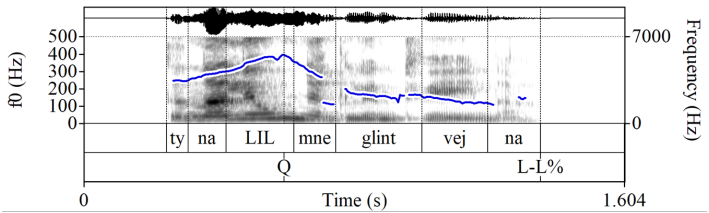
- Differ from English rising declaratives (Gunlogson 2003) .
- "a steep L + H* with peak delay into the postnuclear syllable" (Meyer & Mleinek 2006).
- Q-peak (Esipova 2025) - a special pitch accent distinct from the focus accent in assertions.

Two types of intonational PQs in Russian

Mehlig (1990); Esipova & Romero (2023); Esipova (2025)

(7) *Context: You were meant to pour me mulled wine. I ask if you did.*

Ty naLIL$_Q$ mne glintvejna?
you pour me mulled-wine
'Did you pour me mulled wine?'



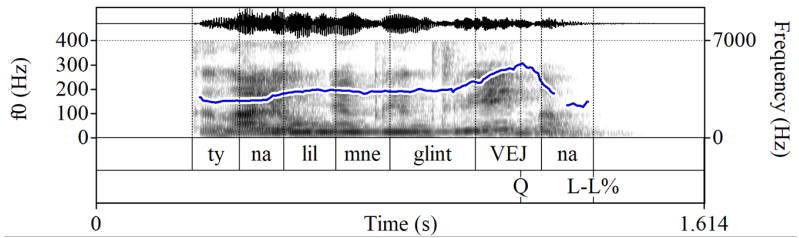
- **Information-seeking** (or polarity-seeking)
- Q-peak on the inflected verb
- "just evoke $\{p, \neg p\}$ alternatives and don't signal any non-trivial parent QUD" (Esipova 2025)

Two types of intonational PQs in Russian

Mehlig (1990); Esipova & Romero (2023); Esipova (2025)

(8) *Context: We're having dinner. I stepped away for a minute and come back to a glass of mulled wine next to my plate. I ask for an explanation for this.*

Ty nalil mne glintVEJ$_Q$na?
you pour me mulled-wine
'Did you pour me mulled wine?'

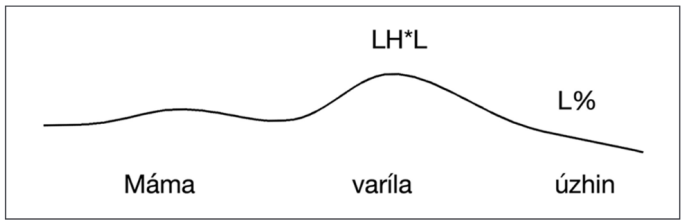


- **Explanation-seeking**
- Q-peak on the linearly last stressed syllable (or, more precisely, on the most deeply embedded constituent)
- "evoke a Why?-type parent QUD, with their prejacent being one of the potential answers to this parent QUD' (Esipova 2025)

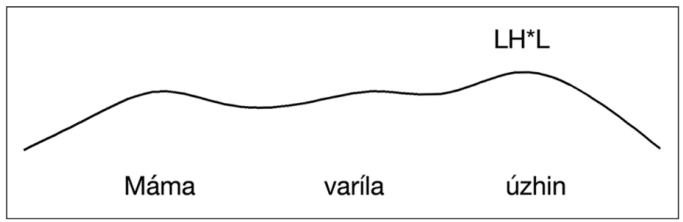
Evidence from production

Munteanu & Kiss (2025)

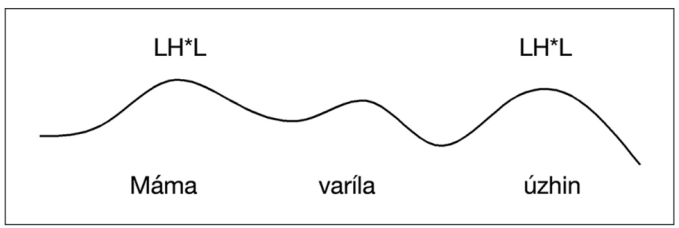
- Participants pronounced PQs presented to them in text form in three different contexts:
  1. neutral, information-seeking
  2. eliciting confirmation PQ (similar to explanation-seeking)
  3. eliciting surprise PQ
- Applied principal component analysis to determine the location and character of the most significant differences between those three contours



Information PQ



Confirmation PQ



Surprise PQ

Intonational polar questions in Russian

- How do these types match to bias profiles?
- Explanation-seeking PQs seem to by conditioned by contextual evidence (infelicitous with evidence for $\neg p$), which is not the case for information-seeking PQs:

(9) S knows that Nina was supposed to have an exam. S and A have just seen Nina crying in the hallway.

a. S: Čto slučilos'? Nina sdaLA$_Q$ ekzamen?
what happened Nina passed exam
´What happened? Did Nina pass the exam?'

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- Possible analysis (Goodhue 2024):
  1. Explanation-seeking PQs include an anaphoric reference to a contextually salient proposition v adjoined together with $\mathcal{O}$. It presupposes that PQ is only felicitous when the anaphora v entails the prejacent p.
  2. Information-seeking PQs lack this component.

Interim summary

- If tuneless, two PQs forms are linearly identical but have distinct prosodic contours and different meaning → investigating intonation is crucial
- Explanation-seeking PQs are under-researched:
  - What role does bias play?
  - Are there contexts that are unique for explanation-seeking PQs?
  - Are there contexts where they intersect with information-seeking PQs?
  - In which contexts are they not available?

Research question 1

How do explanation PQs differ from information-seeking PQs in terms of speaker and evidential bias?

Negative intonation PQs (intonNPQs)

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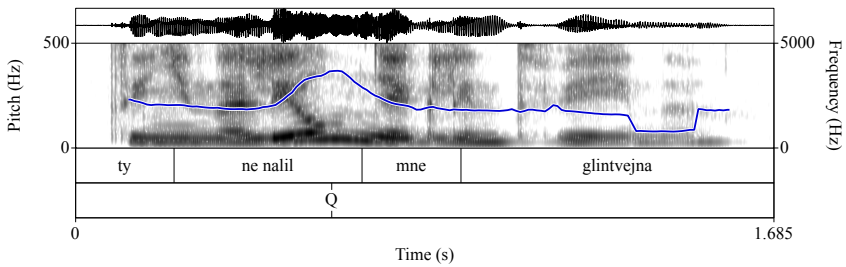
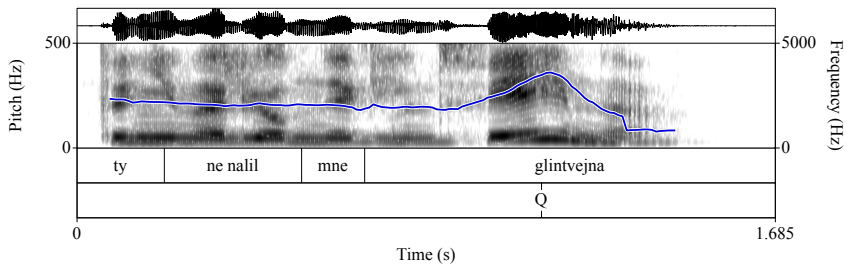
'Did you not pour me mulled wine?'

verb Q-peak , end Q-peak





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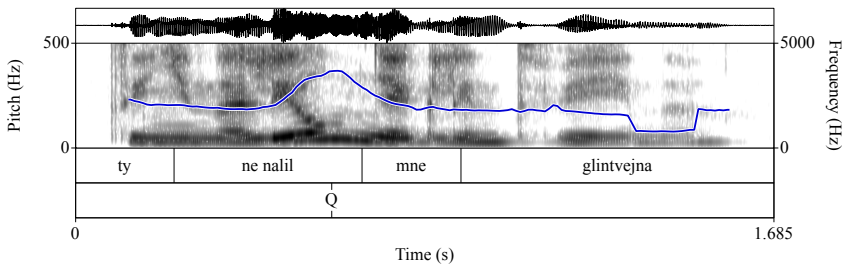

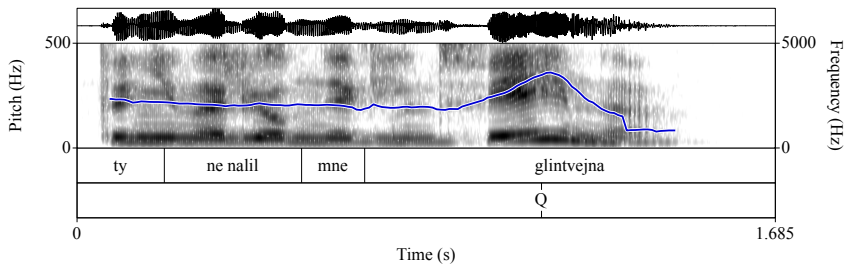

Research question 3

Do these 2 structures have the **same** or **different** meaning?

Negation in English PQs

Ladd (1981); Büring & Gunlogson (2000); Romero & Han (2004)

(11) a. Don't you like cats? high/preposed
b. Do you not like cats? low/non-preposed

Negation in English PQs

Ladd (1981); Büring & Gunlogson (2000); Romero & Han (2004)

(11) a. Don't you like cats either/too? high; inner and outer
b. Do you not like cats either/*too? low; inner

- polarity items test: NPI *either*, PPI *too*
- if negation is semantically interpreted → NPIs ✓ PPIs ✗
  - inner; double-checking $\neg p$
- if negation is not semantically interpreted → NPIs ✗ PPIs ✓
  - outer/expletive/pleonastic; double-checking p

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AnderBois (2019); Goodhue (2022)

(12) a. Don't you like cats *either/too? high
b. Do you not like cats either/*too? low

Negation in Russian PQs

Form

- liNPQs – negation is high
- intonNPQs – negation is low

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- liNPQs – negation is high
- intonNPQs – negation is low

Meaning

- liNPQs: outer/expletive/pleonastic

  Brown & Franks (1995); Abels (2005); cf. Zanon (2024)

- intonNPQs with verb Q-peak: ⓒⓒⓒ

- intonNPQs with end Q-peak: ⓒⓒⓒ

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- intonNPQs with verb Q-peak: ⍰⍰⍰
  → hypothesis: outer/expletive/pleonastic and inner
- intonNPQs with end Q-peak: ⍰⍰⍰
  → hypothesis: inner

Polarity items test I

Geist & Repp (2023); Repp & Geist (to appear)

- examine negative PQs with *razve* and *neuželi*
- *uže* ≈ PPI *already*, *eščë* ≈ NPI *yet*

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(13) *Ty uže ne nalil mne glintvejna?
you already.PPI not poured.PF me mulled-wine
'Did you not pour me mulled wine already?'

verb Q-peak , end Q-peak

(14) Ty eščë ne nalil mne glintvejna?
you yet.NPI not poured.PF me mulled-wine
'Did you not pour me mulled wine already?'

verb Q-peak , end Q-peak

Polarity items test I: *uže* ≈ PPI *already*

(15) Možet byt' partner odnaždy uže ne opravdal vašego doverija?
may be partner once already.PPI not proved.PF your trust
'Is it the case that your partner has already failed your trust?'
verb Q-peak , end Q-peak

(16) To est' teper' dvux sverxpopuljarnyx modelej uže ne xvatit dlja
it is now two super-popular models already.PPI not suffice.PF for
povtorenija predyduščego uspexa?
repeating previous success
verb Q-peak , end Q-peak
'So now two super-popular models are no longer enough to repeat the previous success?'

(17) K 1998 godu vy uže ne zanimali nikakix oficial'nyx
by 1998 year you already.PPI not occupied.IMPF which.NCI official
postov v pravitel'stve?
positions in government
verb Q-peak , end Q-peak
'By 1998, did you no longer held any official positions in the government?'

RuTenTen11 (Kilgarriff et al. 2014)

Polarity items test I: *eščë* ≈ NPI *yet*

(18) Vy eščë ne opredelilis' s vyborom trub dlja vašej vannoj komnaty?
you yet.NPI not decided.PF with choice pipes for your bath room
'Have you not decided on the choice of pipes for your bathroom yet?'

verb Q-peak , end Q-peak

(19) Vy eščë ne ustali otmečat' prazdniki?
you yet.NPI not tired.PF celebrate holidays
'Are you not tired of celebrating holidays yet?'

verb Q-peak , end Q-peak

(20) Ty ego eščë ne načal gotovit' k kar'ere borca?
you him yet.NPI not started.PF prepare to career fighter
'Have you started preparing him for a fighter career yet?'

verb Q-peak , end Q-peak

RuTenTen11 (Kilgarriff et al. 2014)

Polarity items test I

Research question 3

Do these 2 structures have the **same** or **different** meaning?

	verb Q-peak	end Q-peak
NPI *uže*	✓/✗	✓/✗
PPIs *eščë*	✓	✓

uže ≈ PPI *already*

- (13) is ungrammatical, why?
- property of the items but not negation in PQs
- unavailable in (18) and (19) but fine in (20)

eščë ≈ NPI *yet*

- verb Q-peak with inner reading?

Polarity items test II: NCIs

- negative concord items (NCIs) based on *wh*-words
- one semantic negation expressed by several items
- NCIs are only possible if licensed by the predicate negation
- Dočekal (2020): NCIs are not strong NPIs
  - Eng. *in weeks, until Monday, lift a finger*
  - Cz. *ani jeden* NP ‘even one NP’

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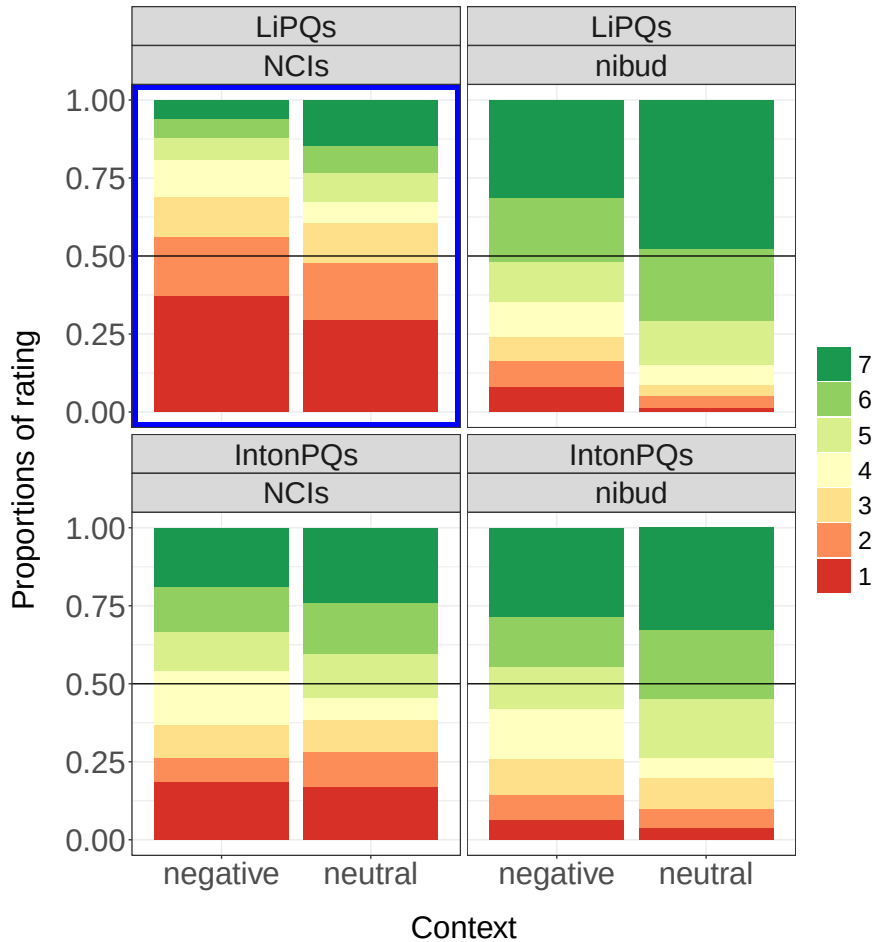
Brown & Franks (1995); Abels (2005); Zanon (2024)

- NCIs are banned from LINPQs (Ru high negation)
- evidence for expletive negation in these PQs
- experimentally confirmed in Onoeva & Šimík (2023)

Negative PQs with NCIs: experiment

- replication of Staňková (2023)
- naturalness judgment task
- online LRex, no audio
- $2 \times 2 \times 2$

STRATEGY	INDEFINITE	CONTEXT
LINPQs	NCIs	negative
INTONNPQs	*nibud'*	neutral



Onoeva & Šimík (2023), descriptive stat

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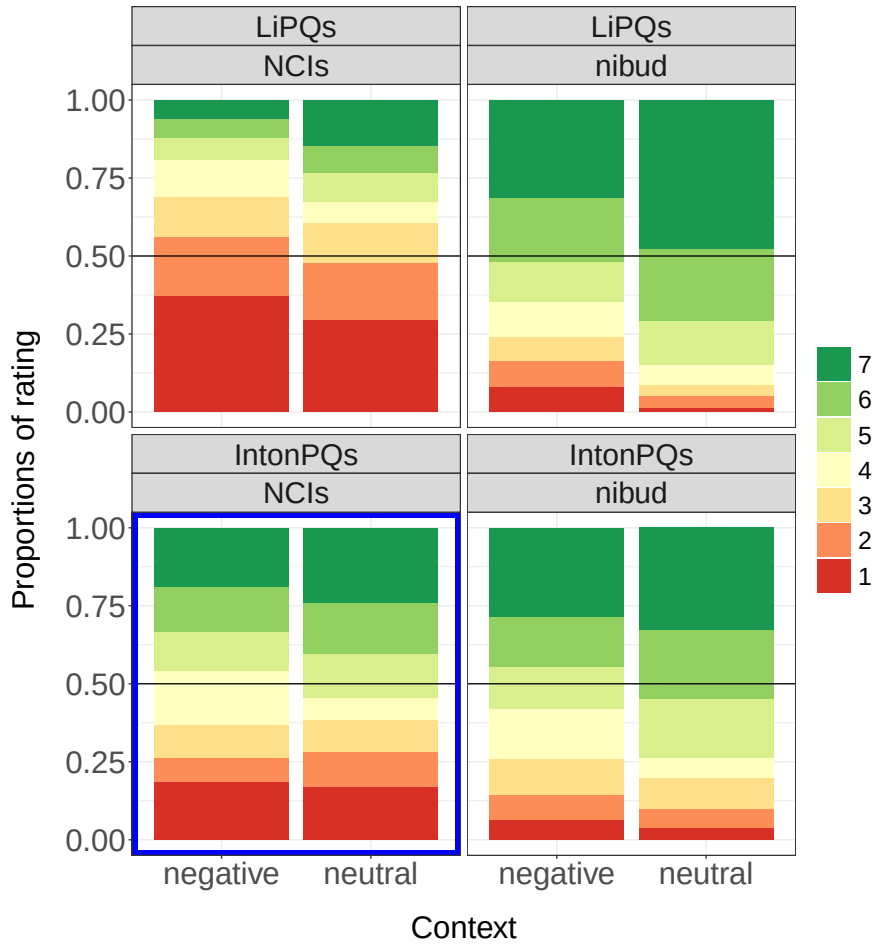
What is happening in INTONNPQs?



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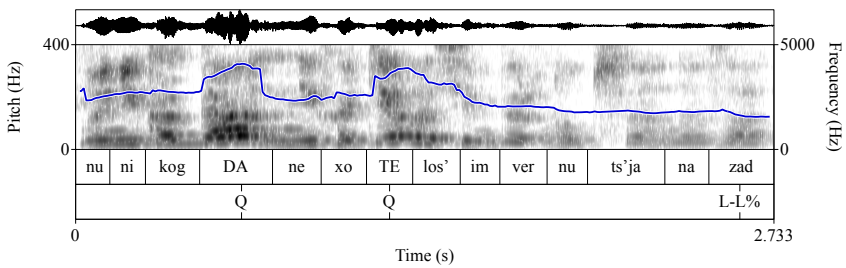
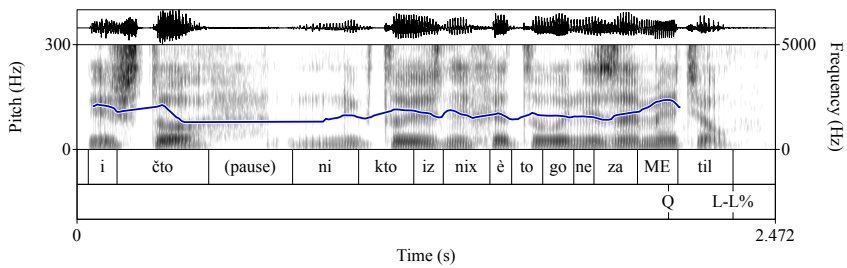
Corpus examples

- NCIs attested in verb and end Q-peak NPQs (Onoeva & Razguliaeva 2025)

(21) Nu nikogDA$_Q$ ne xoTE$_Q$los' im vernut'sja nazad$_{L-L\%}$? 🔊 verb Q-peak
well WHEN.NCI not wanted them return back
'Well, have they ever wanted to go back?'



Pitch contour of (21)



Pitch contour of (22)

(22) I čto, nikto iz nix ètogo ne zaME$_Q$til$_{L-L\%}$? 🔊 end Q-peak
and what WHO.NCI from them this not noticed
'So none of them noticed that?'

Multi-modal Rucorpus (Grišina 2015)

Polarity items tests: summary

Research question 3 (repeated)

Do these 2 structures have the **same** or **different** meaning?

	verb Q-peak	end Q-peak
NPI *uže*	✓/✗	✓/✗
PPIs *eščë*	✓	✓
NCIs	✓	✓

- polarity items are not really useful in meaning distinction
  - but they work for LIPQs
- test different indefinites as wh-*libo* (NPI; Rossyaykin 2022), wh-*to*, wh-*nibud'*
- something is definitely going on but we omit them for now

Compatibility with modal particles

Chodounská (2024); Zanon (2024); Chirpanlieva (2025); Bill & Koev (to appear)

- *slučajno* 'accidentally' as a modal particle
  - Cz. *náhodou*; Pol. *czasem, przypadkiem*; Bg., BCMS *slučajno*
  - Eng. *by any chance*

(23) Nina slučajno ne sdala èkzamen? verb Q-peak , end Q-peak
Nina SLUČAJNO not passed exam
'Did Nina pass an exam by any chance?'

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Restan (1972); Meyer (2004); Bernasconi (2023); Onoeva (2024)

- a modal particle *čto li* 'what whether'
  - Eng. *or something*, Ger. *wohl*, Hun. *talán*
  - available in statements, imperatives and PQs

(24) Nina ne sdala èkzamen čto li? verb Q-peak , end Q-peak
Nina not passed exam ČTO LI
'Did Nina not pass an exam or something?'

Answers to intonNPQs

Meyer (2004); Goodhue & Wagner (2018); Esipova (2021); Geist & Repp (2023), a.o.

(25) Nina ne sdala èkzamen?
Nina not passed exam
'Did Nina not pass an exam?'

a. Da, sdala. [AGREE, +]
'Yes, she did.'

b. Net, sdala. [REVERSE, +]
'No, she did.'

c. Da, ne sdala. [AGREE, −]
'Yes, she didn't.'

d. Net, ne sdala. [REVERSE, −]
'No, she didn't.'

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a. Da, sdala. [AGREE, +] verb Q-peak , end Q-peak
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c.	Da, ne sdala. 'Yes, she didn't.'	[AGREE, −]	verb Q-peak , end Q-peak
d.	Net, ne sdala. 'No, she didn't.'	[REVERSE, −]	verb Q-peak , end Q-peak

- interchangeability of *yes* (25c) and *no* (25b) only for end Q-peak
- verb Q-peak answer pattern is the same as for positive PQs

Context and evidence

(26) S knows that Nina was supposed to have an exam.

a. no evidence: S merely wants to know whether she passed or not.

b. evidence for $\neg p$: S and A have just seen Nina crying in the hallway, S wants to know why.

c. evidence for p: A told S that Nina is in a very good mood today.

(27) S: Nina ne sdala èkzamen?
Nina not passed exam
'Did Nina not pass the exam?'
p = Nina passed the exam.

Context and evidence

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(27) S: Nina ne sdala èkzamen?
Nina not passed exam
'Did Nina not pass the exam?'
p = Nina passed the exam.

- verb Q-peak is fine in (26a) because of speaker bias for p

Towards possible analysis

Esipova & Romero (2023); Goodhue (2024); Esipova (2025)

Positive PQs (slide 11)

1. Explanation-seeking PQs include an anaphoric reference to a contextually salient proposition v adjoined together with $\mathcal{O}$. It presupposes that PQ is only felicitous when the anaphora v entails the prejacent p.
2. Information-seeking PQs lack this component.

Towards possible analysis

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Positive PQs (slide 11)

1. Explanation-seeking PQs include an anaphoric reference to a contextually salient proposition v adjoined together with $\mathcal{O}$. It presupposes that PQ is only felicitous when the anaphora v entails the prejacent p.
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Negative PQs

- end Q-peak PQs are explanation-seeking, so they also have an anaphoric reference to a contextually salient proposition
- verb Q-peak PQs require *heavy* semantics, i.e., semantically encoded pragmatic operators

Towards possible analysis

Goodhue (2024)

- two choice points for polar question semantics

(28) *Symmetry* (bipolar vs. monopolar/singleton; slide 2)

a. A *symmetrical* semantics is one in which all questions have identical denotations, e.g. PPQ = NPQ = $\{p; \neg p\}$

b. In an *asymmetrical* semantics, they have different denotations, e.g. PPQs = $\{p\}$, NPQs = $\{\neg p\}$

(29) *Weight*

a. A *heavy* semantics includes semantically encoded pragmatic operators, e.g. speech act operators, conversational/doxastic modals, attitude predicates.

b. A *light* semantics lacks such operators, e.g. sets of propositions, partitions, functions from answers to truth values.

Towards possible analysis

Negative PQs

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- verb Q-peak PQs require *heavy* semantics, i.e., semantically encoded pragmatic operators

Staňková (2023); Chodounská (2024); Šimík (to appear)

- high-negation in Czech PQs expresses existential modal
- weaker speaker attitude (≈ speaker bias) in Cz NPQs compared to Eng high-negation PQs

Experiment

We have discussed these PQs:

- positive with verb Q-peak
- positive with end Q-peak
- negative with verb Q-peak
- negative with end Q-peak

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Hypothesis 1

4 different structures have 4 different bias profiles.

Experiment

We have discussed these PQs:

- positive with verb Q-peak
- positive with end Q-peak
- negative with verb Q-peak
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Hypothesis 1

4 different structures have 4 different bias profiles.

Hypothesis 2

PQs with end Q-peak include an anaphoric reference to a contextually salient proposition, thus they are felicitous in contexts with non-neutral evidence (independently from polarity).

Experiment

We have discussed these PQs:

- positive with verb Q-peak
- positive with end Q-peak
- negative with verb Q-peak
- negative with end Q-peak

Hypothesis 1

4 different structures have 4 different bias profiles.

Hypothesis 2

PQs with end Q-peak include an anaphoric reference to a contextually salient proposition, thus they are felicitous in contexts with non-neutral evidence (independently from polarity).

Hypothesis 3

Negative PQs with verb Q-peak are tied more closely to speaker bias.

Design

manipulated/independent variables:

- Q-PEAK – verb and end – 2 levels
- POLARITY – positive PQs and negative PQs – 2 levels
- BIAS – speaker and evidence – 3×3 levels
  - for p, for $\neg p$, neutral

Design

manipulated/independent variables:

- Q-PEAK – verb and end – 2 levels
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- fully crossed $2 \times 2 \times 3 \times 3 \rightarrow$ too many conditions!

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Roelofsen et al. (2012); Domaneschi et al. (2017); Oomen & Roelofsen (2023)

	EVIDENCE 0	EVIDENCE p	EVIDENCE $\neg p$
SPEAKER 0			
SPEAKER p			
SPEAKER $\neg p$			

Design

- 3 sub-experiments divided by EVIDENCE with 32 items each
- each has only 8 conditions

	SPEAKER	EVIDENCE	PEAK	POLARITY
a.	0	0	verb	positive
b.	0	0	verb	negative
c.	0	0	end	positive
d.	0	0	end	negative
e.	*p*	0	verb	positive
f.	*p*	0	verb	negative
g.	*p*	0	end	positive
h.	*p*	0	end	negative

Sub-experiment EVIDENCE 0

Design

- 3 sub-experiments divided by EVIDENCE with 32 items each
- each has only 8 conditions

	SPEAKER	EVIDENCE	PEAK	POLARITY
a.	0	p	verb	positive
b.	0	p	verb	negative
c.	0	p	end	positive
d.	0	p	end	negative
e.	$\neg p$	p	verb	positive
f.	$\neg p$	p	verb	negative
g.	$\neg p$	p	end	positive
h.	$\neg p$	p	end	negative

Sub-experiment EVIDENCE p

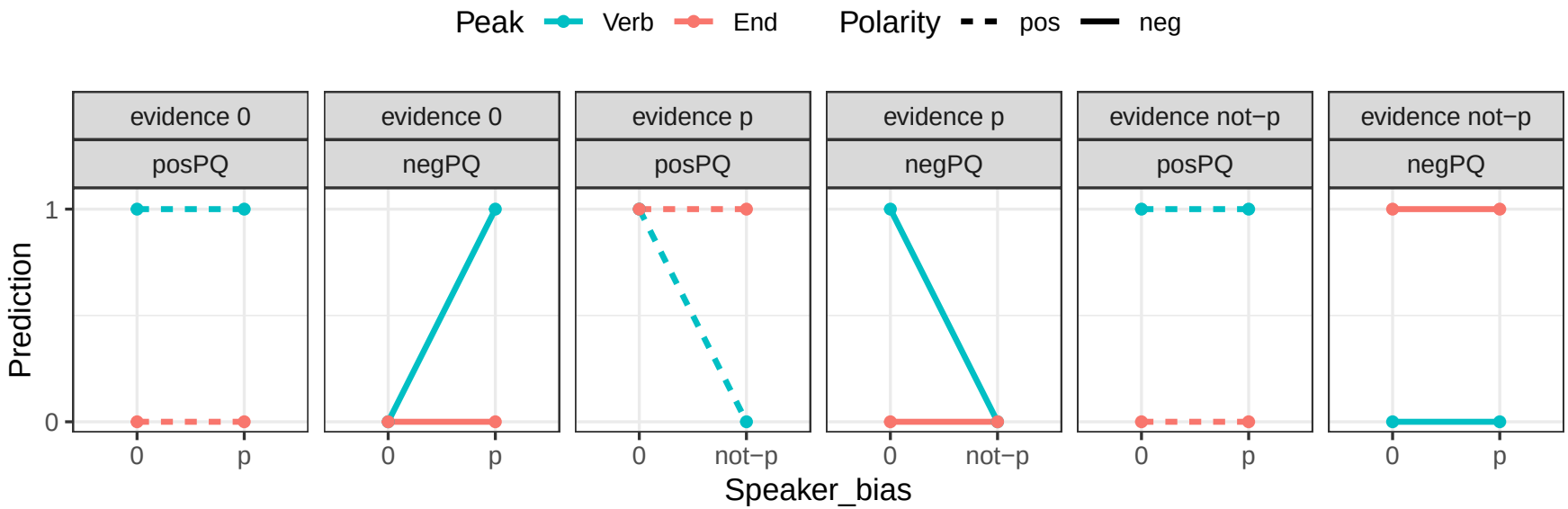
Design

- 3 sub-experiments divided by EVIDENCE with 32 items each
- each has only 8 conditions

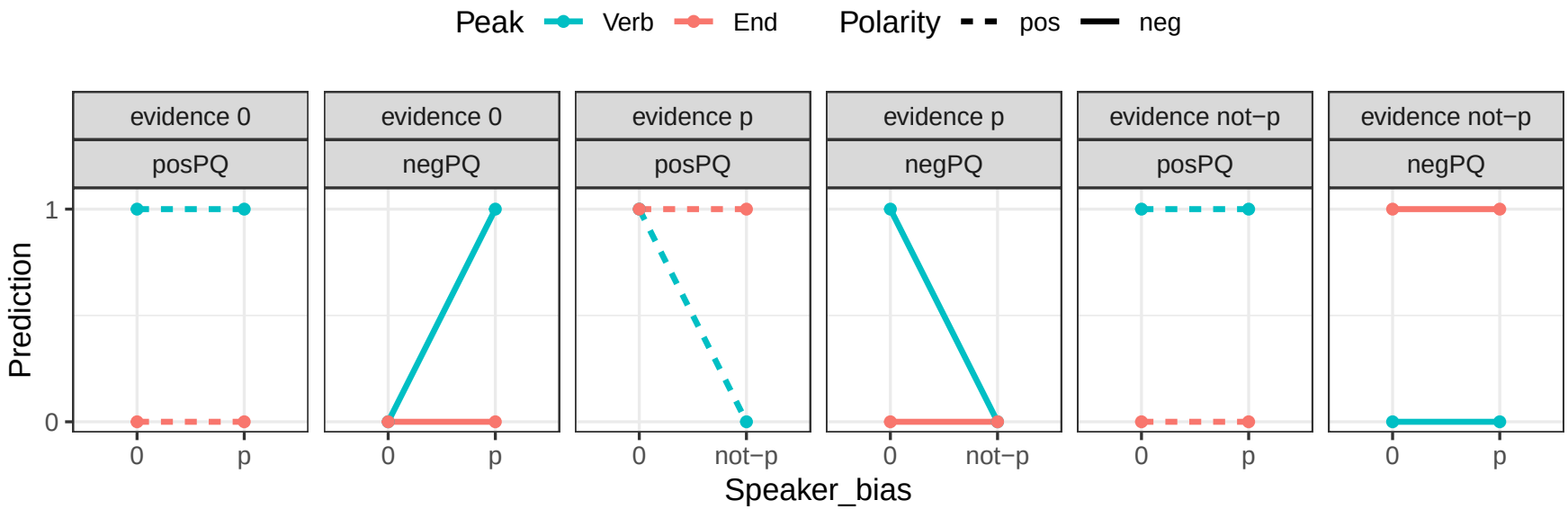
	SPEAKER	EVIDENCE	PEAK	POLARITY
a.	0	$\neg p$	verb	positive
b.	0	$\neg p$	verb	negative
c.	0	$\neg p$	end	positive
d.	0	$\neg p$	end	negative
e.	p	$\neg p$	verb	positive
f.	p	$\neg p$	verb	negative
g.	p	$\neg p$	end	positive
h.	p	$\neg p$	end	negative

Sub-experiment EVIDENCE $\neg p$

Predictions



Predictions



	EVIDENCE 0	EVIDENCE p	EVIDENCE $\neg p$
SPEAKER 0	pos+verb	pos+verb pos+end neg+verb	pos+verb neg+end
SPEAKER p	pos+verb neg+verb		pos+verb neg+end
SPEAKER $\neg p$		pos+end	

Prediction “1” from the plot above

Item structure

- No contextual evidence for either alternative (EVIDENCE 0)
- Speaker bias: No speaker bias (0) or speaker bias for p (1)
- Polarity: positive or negative
- Q-peak placement: Verb or End

Intro	**Speaker bias**	**Evidence (0)**	**Pre-item**
Dasha returned home after two months in the capital and met up with Katja to catch up on news about their mutual friends.	Dasha remembers that their mutual friend Kostja was contemplating whether to take a vacation or not.	Katja says: I called Kostja yesterday.	Dasha asks:
	Dasha remembers that Kostja had been working for a year without a day off and was going to take a vacation.		

(30) Kostja (ne) poe$_{(Q)}$xal na mo$_{(Q)}$re?
Kostja not went on sea
'Did(n't) Kostja go to the seaside?'

Methodology

Preparation:

- In each sub-experiment (for EVIDENCE 0, 1, and -1), all variables will be manipulated between-items and between-subjects (Latin square design)
- Stimuli in each list will be pseudo-randomized

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Setup:

- Participants will be asked to read the context, listen to the target utterance recording, and rate its naturalness in given context on the scale from 1 to 7
- Data collection online on L-Rex (Starschenko & Wierzba 2023) and Prolific (Prolific 2024), participants will be compensated
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Analysis:

- Reliability test based on special filler items, unreliable participants will be excluded
- Ordered regression (cumulative link) mixed models in R with ordinal package (Christensen 2023)

Conclusion

- We discussed intonational PQs in Russian – positive and negative.
- After Esipova (2025), we assume two possible positions of prosodic prominence which result in different meanings.
- We hypothesize that those meanings can be mapped to PQ biases – speaker and evidential.
- We've designed a naturalness judgment experiment to test these hypotheses where we manipulate the position of the peak, polarity, and bias.
- Data collection is estimated to begin in late July – early August 2025.
- Stay tuned for the results!

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