

Syntactic and prosodic factors in the interpretation of ambiguous *at least*

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Introduction: Ambiguous *at least*

- *At least* allows two interpretations:

(1)

- | | | |
|---|---|--|
| a. At least Simone Biles won SILVER.
~> <i>it could've been worse</i> | → | (CONCESSIVE)
<u><i>evaluativity</i></u> |
| b. Simone Biles won at least SILVER.
~> <i>it might've been gold</i> | → | (EPISTEMIC)
<u><i>uncertainty</i></u> |

Introduction: Ambiguous *at least*

- *At least* allows two interpretations:

(1) It's too bad Simone Biles didn't win gold.

a. **At least** she won SILVER... (CONCESSIVE)
~> *it could've been worse* → *evaluativity*

b. #She won **at least** SILVER... (EPISTEMIC)
~> *it might've been gold* → *uncertainty*

➤ Nakanishi & Rullmann (2009), Kay (1992), Chen (2018):
interpretation linked to syntactic position

- ▶ *investigate claims experimentally*
- ▶ *secondarily, explore role of prosody*

Background: Syntax of *at least*

- Prior research has argued for following distribution:

		N&R a.o.
(2)	a. <u>Initial(/ Sentential)</u> At least Simone Biles won SILVER.	<hr/> ~ <i>only</i> CON
	b. <u>Preverbal</u> Simone Biles at least won SILVER.	EPI <i>or</i> CON
	c. <u>Prenominal</u> Simone Biles won at least SILVER.	<i>only</i> EPI

Background: Syntax of *at least*

- Prior research has argued for following distribution:

	N&R a.o.	Biezma (2013)
(2) a. <u>Initial(/Sentential)</u> At least Simone Biles won SILVER.	<i>~only</i> CON	
b. <u>Preverbal</u> Simone Biles at least won SILVER.	EPI <i>or</i> CON	
c. <u>Prenominal</u> Simone Biles won at least SILVER.	<i>only</i> EPI	EPI <i>or</i> CON

Background: Semantics of *at least*

	<i>initial</i> → CON	<i>prenominal</i> → EPI
(i) <i>uncertainty</i>	-	higher alternative open/possible
(ii) <i>entailment</i>	prejacent entailed	-
(iii) <i>evaluativity</i>	higher alternative preferable	-

- (3) It's too bad Simone Biles didn't win gold.
- a. **At least** she won SILVER...
 - b. #She won **at least** SILVER...

Background: Semantics of *at least*

	<i>initial</i> → CON	<i>prenominal</i> → EPI
<i>(i) uncertainty</i>	higher alternative false*	higher alternative open/possible
<i>(ii) entailment</i>	prejacent entailed	-
<i>(iii) evaluativity</i>	higher alternative preferable	-

*Biezma (2013),
Chen (2018)

- (3) It's too bad Simone Biles didn't win gold.
a. **At least** she won SILVER...
b. #She won **at least** SILVER...

Background: Semantics of *at least*

	<i>initial</i> → CON	<i>prenominal</i> → EPI
<i>(i) uncertainty</i>	-	higher alternative open/possible
<i>(ii) entailment</i>	prejacent entailed	-
<i>(iii) evaluativity</i>	higher alternative preferable	-

- (4) I'm not sure if Simone Biles won gold.
- a. ??**At least** she won SILVER...
 - b. She won **at least** SILVER...

Background: Semantics of *at least*

	<i>initial</i> → CON	<i>prenominal</i> → EPI
(i) <i>uncertainty</i>	-	higher alternative open/possible
(ii) <i>entailment</i>	prejacent entailed	-
(iii) <i>evaluativity</i>	higher alternative preferable	-

- (5) A: I really wish that the students pass.
- a. B: #**At least** the teacher failed SOME students...
- b. B: The teacher failed **at least** SOME students...

Overview

	<i>initial</i> → CON	<i>prenominal</i> → EPI	
<i>(i) uncertainty</i>	-	higher alternative open/possible	} → Exp 1A/B
<i>(ii) entailment</i>	prejacent entailed	-	
<i>(iii) evaluativity</i>	higher alternative preferable	-	

Overview

	<i>initial</i> → CON	<i>prenominal</i> → EPI	
<i>(i) uncertainty</i>	-	higher alternative open/possible	} → Exp 1A/B
<i>(ii) entailment</i>	prejacent entailed	-	
<i>(iii) evaluativity</i>	higher alternative preferable	-	→ Exp 2 (Pilot)

Experiment 1A: Design

- Sample item: 2x3 (CONTEXT x SYNTAX)

(6) a. CONCESSIVE Context

A: It's too bad Yvette didn't win a gold medal.

B: True, but (**at least**) she (**at least**) won (**at least**) silver.

▶ *EPI bad due to uncertainty violation/redundancy*

b. EPISTEMIC Context

A: Do you know whether Yvette won a gold medal at the school olympics?

B: Not sure, but (**at least**) she (**at least**) won (**at least**) silver.

▶ *CON bad due to clash btw "not sure" and entailment*

Experiment 1A: Design

- Additional between-item manipulation regarding types of alternatives (EXCLUSIVE vs COMPATIBLE):

(7) a. CONCESSIVE Context

A: It's a bit embarrassing that Eric didn't stay for both acts of the play.

B: True, but (**at least**) he (**at least**) stayed (**at least**) until the intermission.

b. EPISTEMIC Context

A: Do you know whether Eric stayed for both acts of the play?

B: Not sure, but (**at least**) he (**at least**) stayed (**at least**) until the intermission.

▶ *did not affect results so data will be collapsed across this factor*

Experiment 1A: Design

- Method/Procedure:

- dialogues presented on screen in full
- prompt by A additionally presented auditorily
- after listening to prompt, participants record their response
- after recording, participants give naturalness rating on 6-point scale

➤ Göbel (2019) (based on Pierrehumbert & Hirschberg 1990)
argues that pitch delay (L*+H) linked to evaluative scale

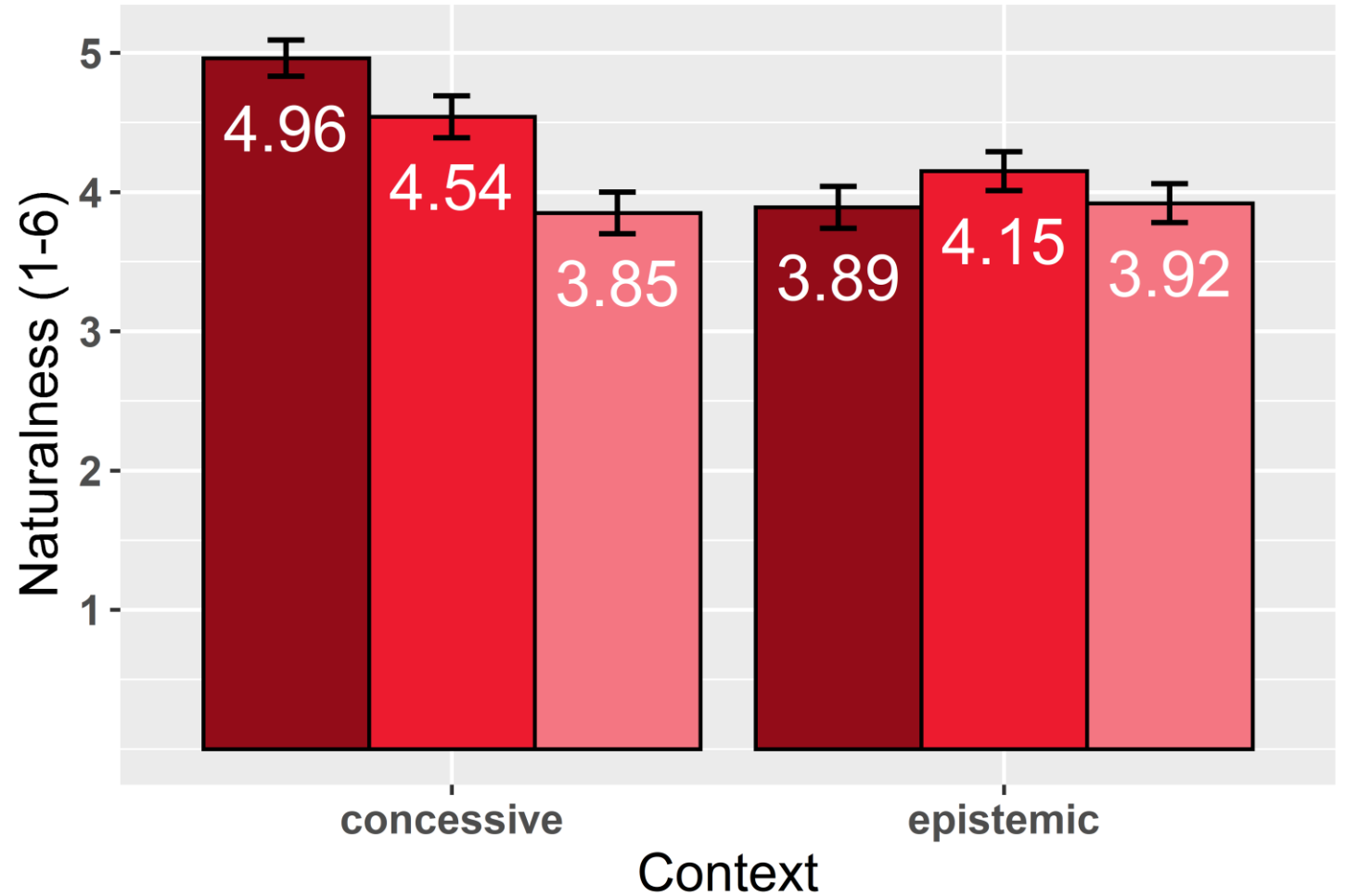
▶ *predicts more pitch accents with delayed peak for CON*

Experiment 1A, Rating Results (N=21)

ordinal mixed effects models
with Helmert coding +
pairwise comparison

- for EPI,
no significant effect of
SYNTAX

- for CON,
INITIAL > PREVERBAL >
PRENOMINAL



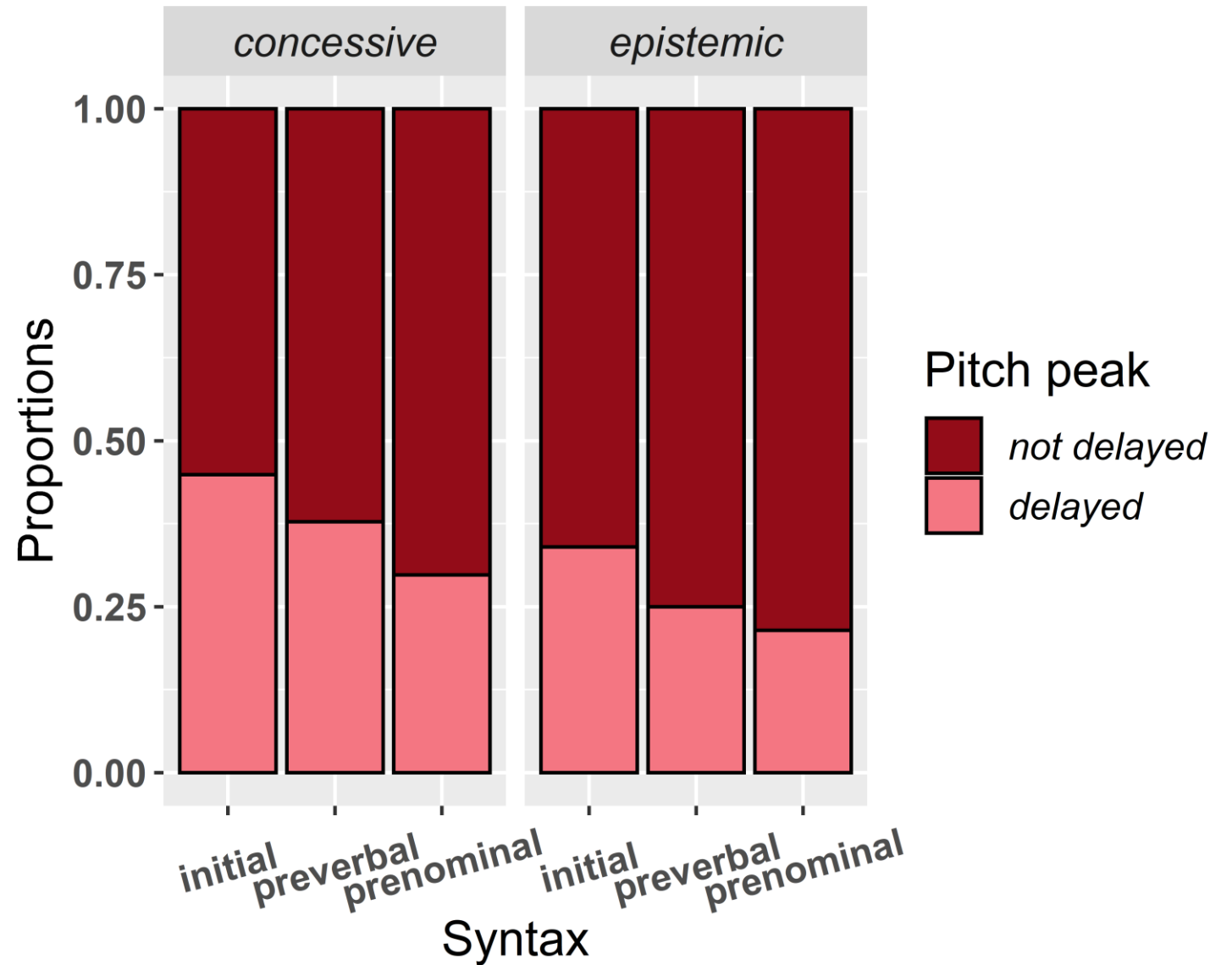
Syntax *initial* *preverbal* *prenominal*

...(at least) she (at least) won (at least) silver.

Experiment 1A, Production Results (N=18)

logistic mixed effects models
with Helmert coding +
pairwise comparison

- marginal effect of CONTEXT



Experiment 1A: Discussion

	<i>initial</i> → CON	<i>prenominal</i> → EPI	Exp 1A
<i>(i) uncertainty</i>	-	higher alternative open/possible	✓
<i>(ii) entailment</i>	prejacent entailed	-	✗
<i>(iii) evaluativity</i>	higher alternative preferable	-	

☁ combined task might have affected ratings

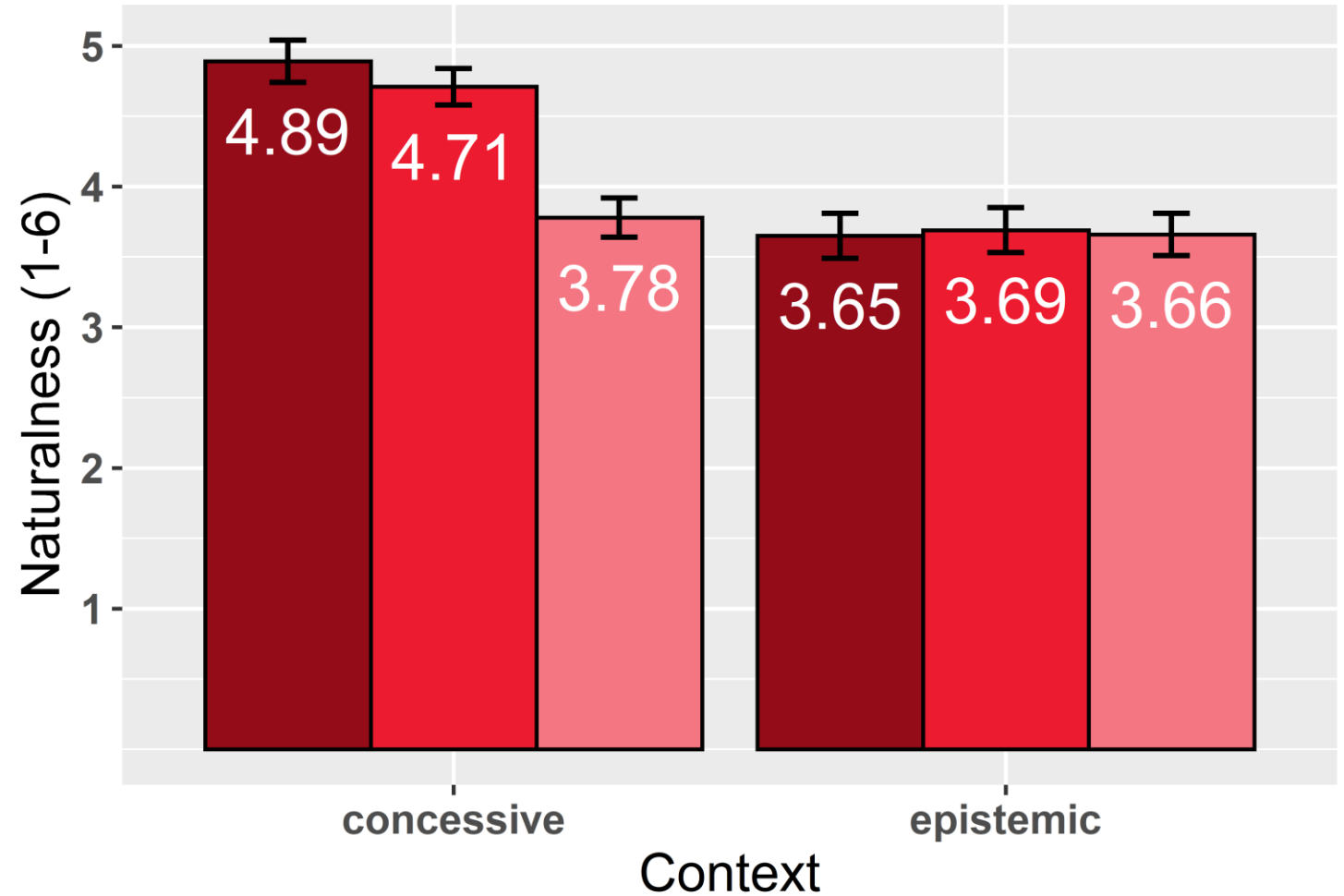
▶ *Exp 1B repeats study without production task to confirm ratings*

Experiment 1B, Results (N=22)

ordinal mixed effects models
with Helmert coding +
pairwise comparison

- for EPI,
no significant effect of
SYNTAX

- for CON,
INITIAL, PREVERBAL >
PRENOMINAL



Syntax *initial* *preverbal* *prenominal*

...(at least) she (at least) won (at least) silver.

Experiment 1B: Discussion

	<i>initial</i> → CON	<i>prenominal</i> → EPI	Exp 1A/B
<i>(i) uncertainty</i>	-	higher alternative open/possible	✓
<i>(ii) entailment</i>	prejacent entailed	-	✗
<i>(iii) evaluativity</i>	higher alternative preferable	-	

- ▶ CON *syntactically restricted*: pro N&R a.o., contra Biezma (2013)
- ▶ EPI not *syntactically restricted*: contra N&R a.o.

Experiment 1B: Discussion

	<i>initial</i> → CON	<i>prenominal</i> → EPI	Exp 2
<i>(i) uncertainty</i>	-	higher alternative open/possible	
<i>(ii) entailment</i>	prejacent entailed	-	
<i>(iii) evaluativity</i>	higher alternative preferable	-	?

- ▶ CON *syntactically restricted*: pro N&R a.o., contra Biezma (2013)
- ▶ EPI not *syntactically restricted*: contra N&R a.o.

Experiment 2: Design

- Sample item: 2x3 (VALENCY x SYNTAX)

(8) a. POSITIVE Context

A: You were worried that the teacher might not pass the students.

How many of the students do you think she passed?

B: I'm not sure. (**At least**) she (**at least**) passed (**at least**) some of the students.

b. NEGATIVE Context

A: You were worried that the teacher might fail the students.

How many of the students do you think she failed?

B: I'm not sure. (**At least**) she (**at least**) failed (**at least**) some of the students.

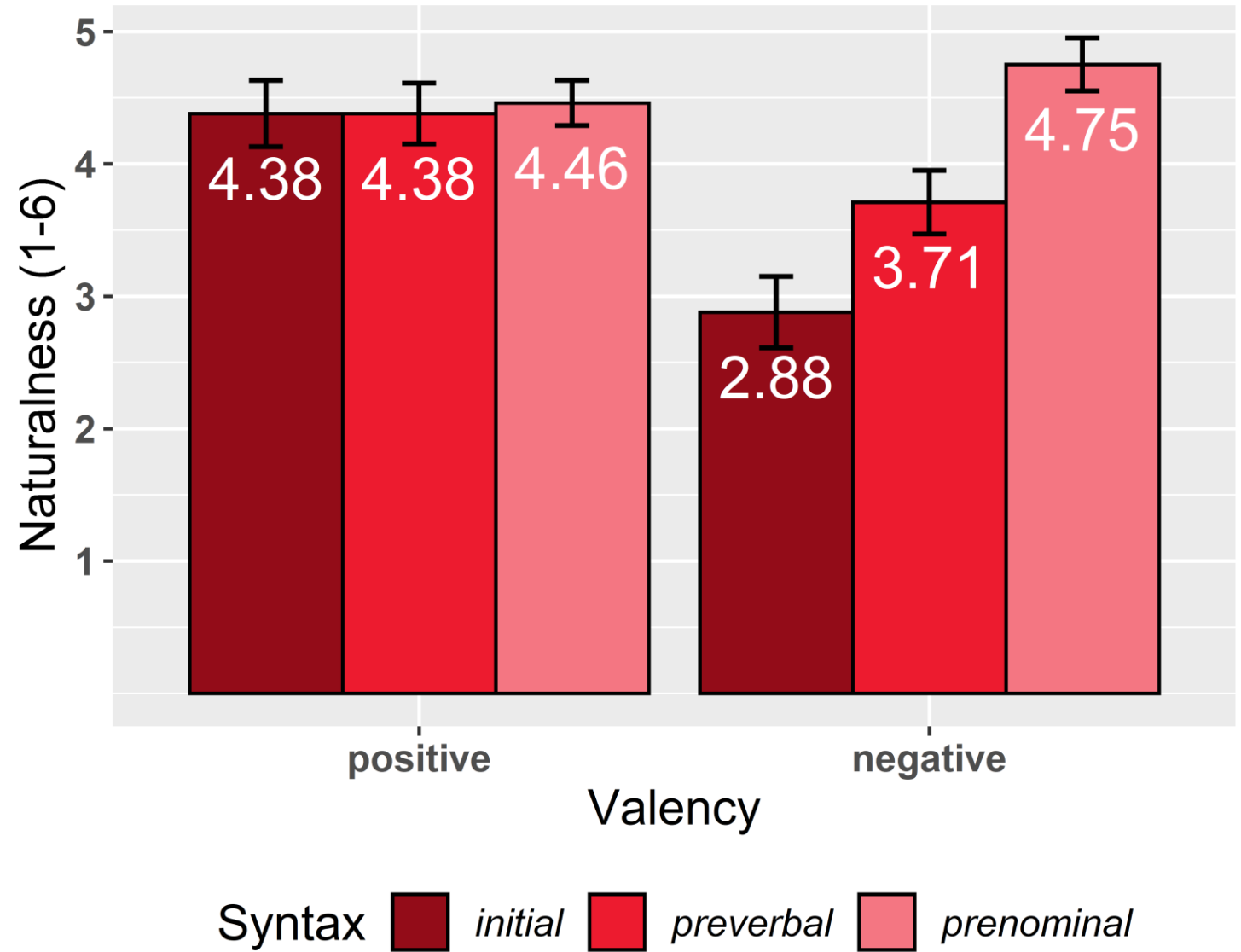
► *note: higher alternatives left open (contra Biezma, Chen)*

Experiment B, Results (N=12)

ordinal mixed effects models
with Helmert coding +
pairwise comparison

- for POSITIVE,
no significant effect of
SYNTAX

- for NEGATIVE,
INITIAL < PREVERBAL <
PRENOMINAL



(**At least**) she (**at least**) passed/failed (**at least**) some...

Experiment 2: Discussion

	<i>initial</i> → CON	<i>prenominal</i> → EPI	Exp 2
<i>(i) uncertainty</i>	-	higher alternative open/possible	
<i>(ii) entailment</i>	prejacent entailed	-	
<i>(iii) evaluativity</i>	higher alternative preferable	-	✓

- ▶ EPI *syntactically restricted: pro* N&R a.o.

Experiment 2: Discussion

	<i>initial</i> → CON	<i>prenominal</i> → EPI	Exp 2
<i>(i) uncertainty</i>	higher alternative false	higher alternative open/possible	✘
<i>(ii) entailment</i>	prejacent entailed	-	
<i>(iii) evaluativity</i>	higher alternative preferable	-	✓

- ▶ EPI *syntactically restricted: pro* N&R a.o.
- ▶ CON *available with higher alternatives left open: contra* Biezma, Chen

General Discussion

	<i>initial</i> → CON	<i>prenominal</i> → EPI	Exp 1A/B	Exp 2
<i>(i) uncertainty</i>	-	higher alternative open/possible	✓	
<i>(ii) entailment</i>	prejacent entailed	-	✗	
<i>(iii) evaluativity</i>	higher alternative preferable	-		✓

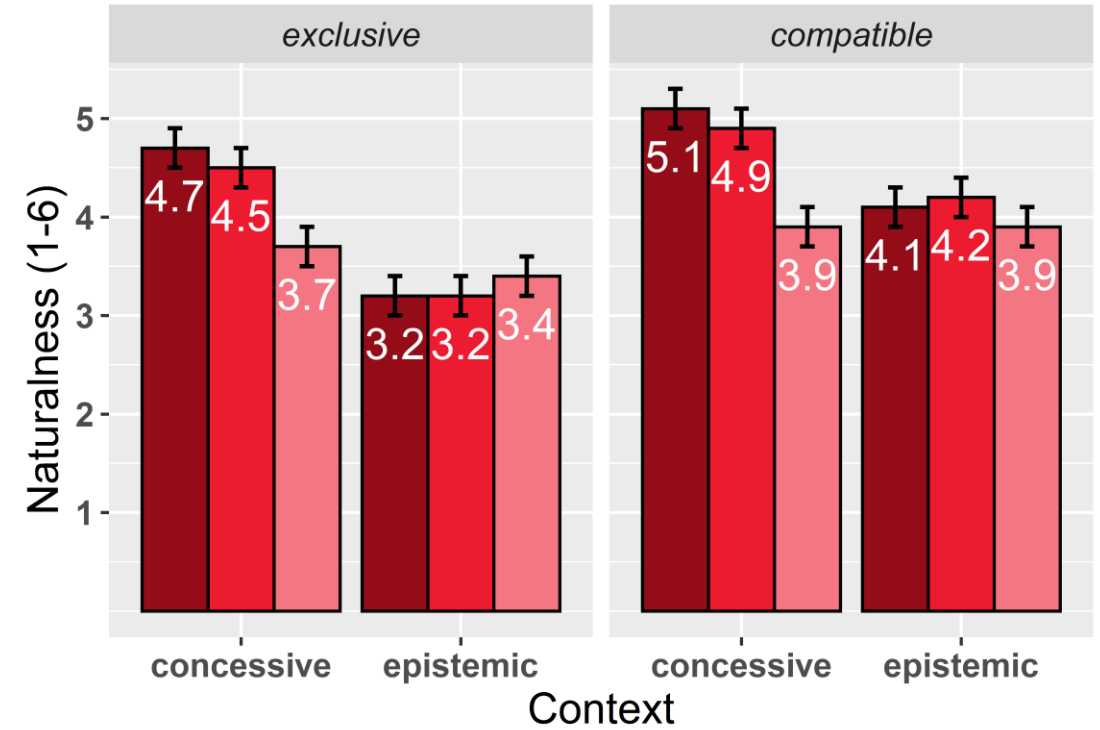
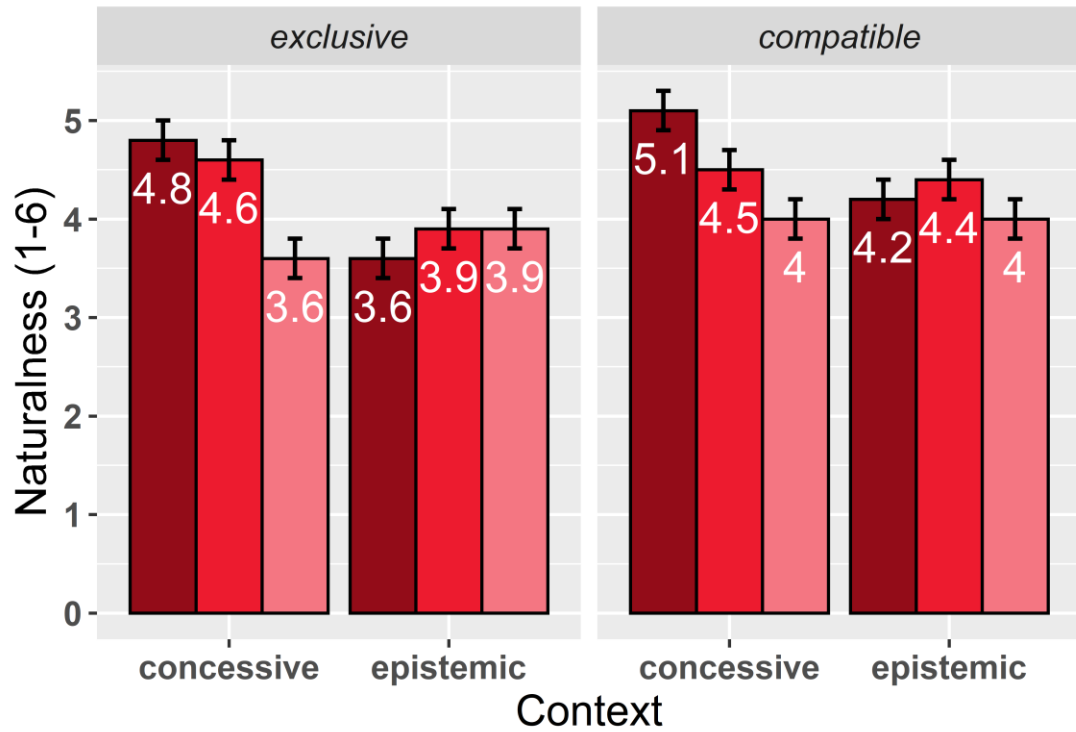
- 1) SYNTAX: Evidence in favor of mapping à la Nakanishi & Rullmann
 - ▶ *characterization (ii) might simply be wrong*
- 2) PROSODY: Weak evidence for role of peak delay → syntax too strong?
 - (9) **At least** [SOME]_F of the children ate their broccoli.
- 3) METHODOLOGY: Ratings comparable for reading silently vs. out loud

Thanks for listening!

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References

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Experiments 1A/B, w/ Alternatives