

Similarity-based interference in online and offline sentence processing

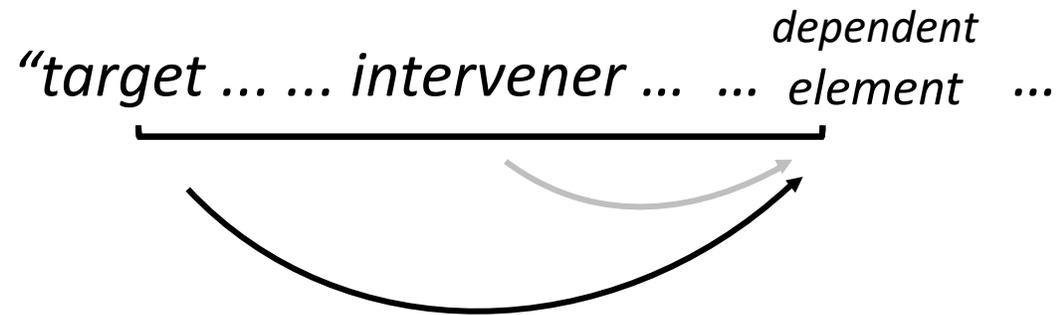
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Similarity-based interference

When?

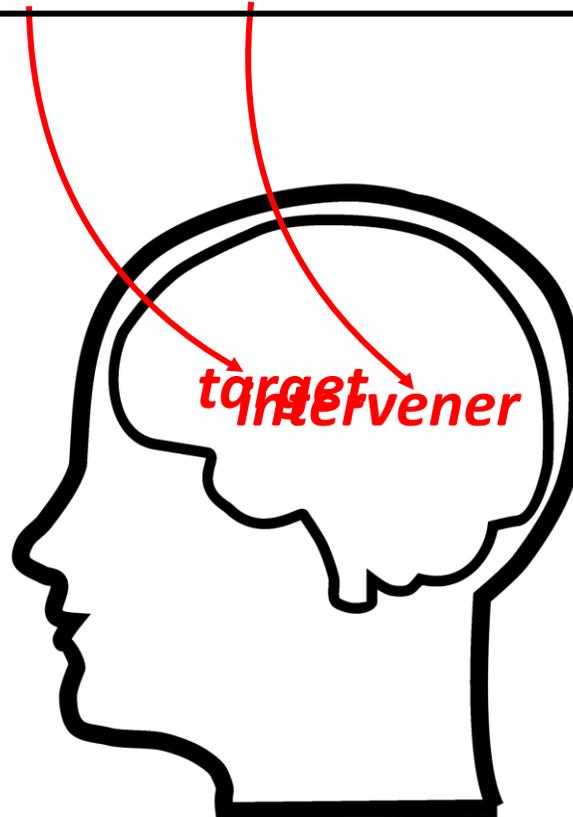


Similarity-based interference

When?

→ **encoding**

*“target intervener dependent
... .. element ...*



Oberauer and Kliegl (2006),
Laurinavichyute et al (2017), Villata et al (2018)

Similarity-based interference

When?

→ **encoding**

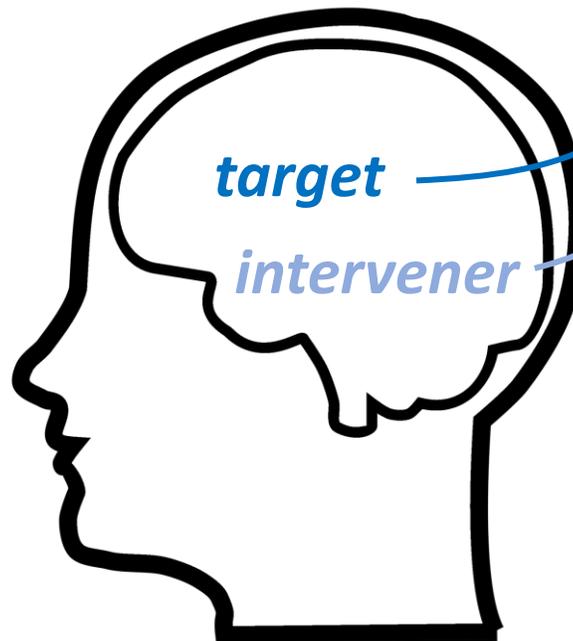
→ **retrieval**

“target intervener element ...”
dependent

$+ \alpha$
 $+ \beta$

$+ \alpha$

$+ \alpha$
 $+ \beta$ } retrieval cues



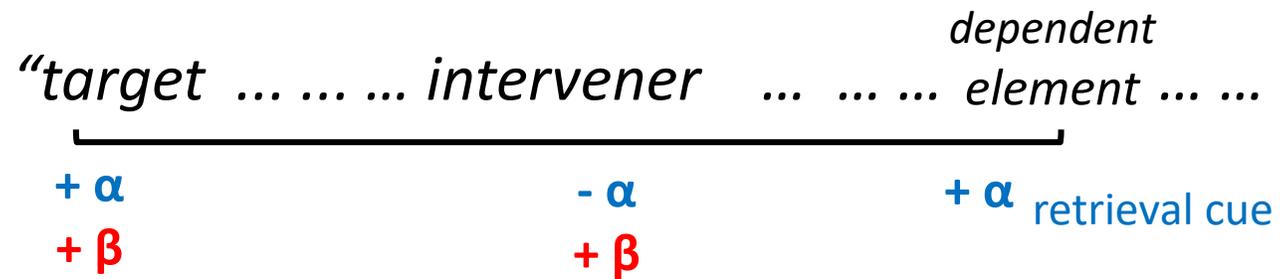
Lewis and Vasishth (2005), McElree (2000)

Case study: adjunct control

When?

→ encoding

→ retrieval



Case study: adjunct control

When?

→ encoding

→ retrieval

*The nurse the secretary dependent
element*

+ α		- α		+ α retrieval cue
3p		3p		
sg		sg		
anim		anim		
female <i>(stereotypically)</i>		female		
...		...		

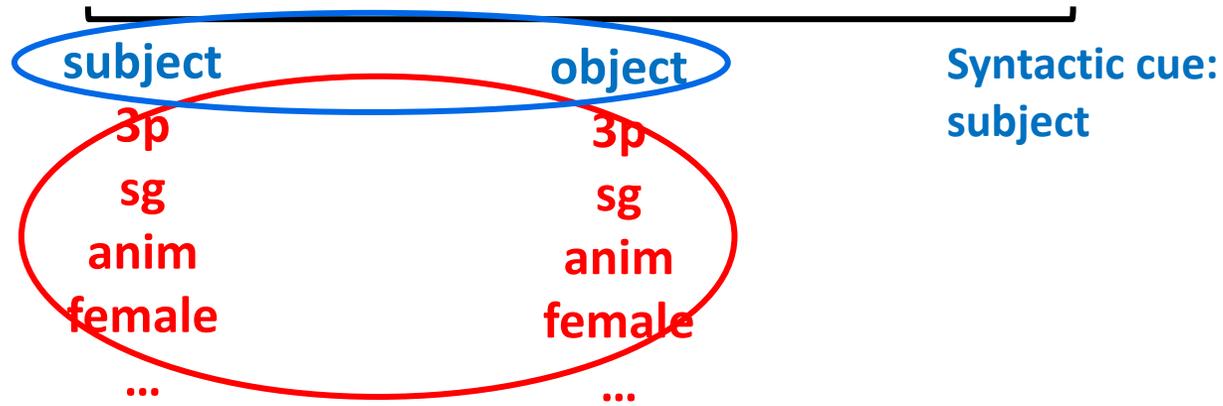
Case study: adjunct control

When?

→ encoding

→ retrieval

The nurse assisted the secretary before \emptyset receiving the report



= nurse received the report (subject interpretation)

96%, n=20

100%, n=6

96%, n=32

★ Predictions:

✓ encoding
x retrieval

Gerard et al (2018), Gerard (2021)

Chomsky (1981)

The nurse assisted the secretary at the hospital before receiving the medical report herself in the very crowded examination room

Design: gender similarity

MATCH

target *intervener*

The nurse assisted the secretary before \emptyset receiving the report

female **female**

MISMATCH

The doctor assisted the secretary before \emptyset receiving the report

male **female**

	target/intervener
MATCH	8 female/female
	8 male/male
MISMATCH	8 female/male
	8 male/female

Prolific, n=33 (+3 excluded <70% fillers)

Parker, Lago, & Phillips (2015)

The nurse assisted the secretary at the hospital before receiving the medical report herself in the very crowded examination room

Predictions

- Online measure: SPR
Offline measure: yes/no comprehension question:
“Did the secretary receive the medical report?”

→ if encoding: **MATCH slower than MISMATCH**: before ___ **receiving the** medical report
MATCH less accurate than MISMATCH (fewer subject responses)

	target/intervener
MATCH	8 female/female
	8 male/male
MISMATCH	8 female/male
	8 male/female

Prolific, n=33 (+3 excluded <70% fillers)

The nurse assisted the secretary at the hospital before receiving the medical report herself in the very crowded examination room

Predictions

- Online measure: SPR

Offline measure: yes/no comprehension question:

“Did the secretary receive the medical report?”

→ if encoding: **MATCH slower than MISMATCH**: before ___ **receiving the** medical report

MATCH less accurate than MISMATCH (fewer subject responses)

- Emphatic reflexive

The nurse assisted the secretary after receiving the report { **herself** (GRAMMATICAL)
himself (UNGRAMMATICAL) }

→ if subject interpretation (nurse received report):

UNGRAMMATICAL slower than GRAMMATICAL at reflexive

	target/intervener	GRAMMATICAL	UNGRAMMATICAL
MATCH	8 female/female	herself	himself
	8 male/male	himself	herself
MISMATCH	8 female/male	herself	himself
	8 male/female	himself	herself

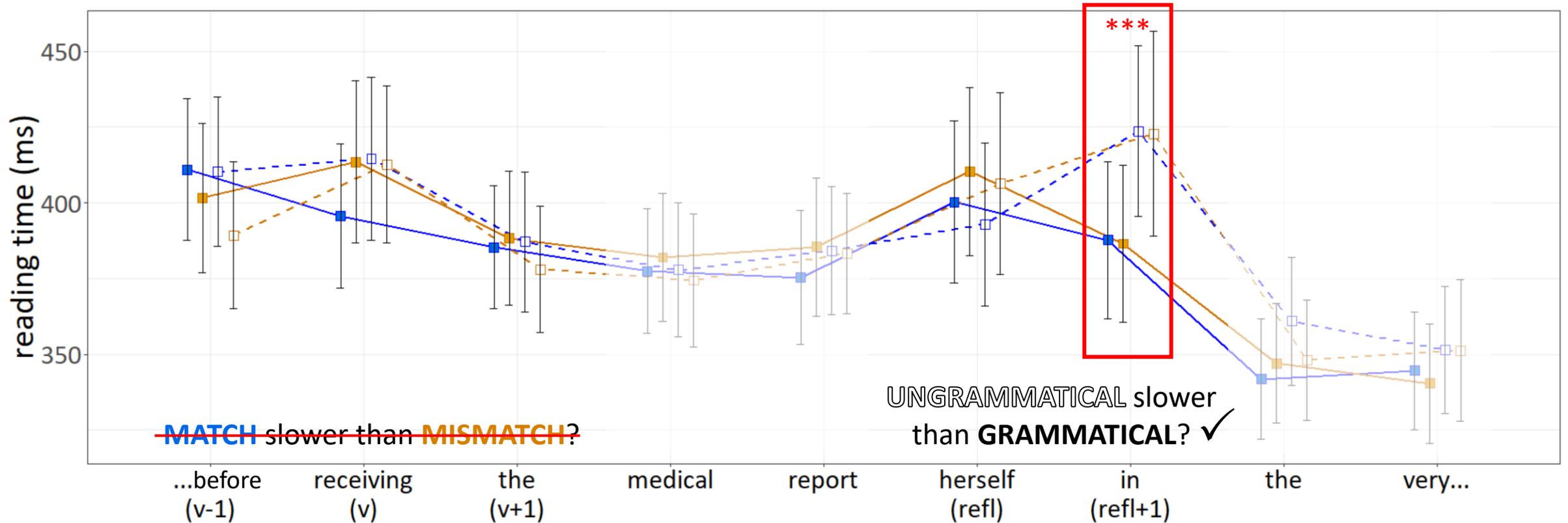
Prolific, n=33 (+3 excluded <70% fillers)

The nurse assisted the secretary at the hospital before receiving the medical report herself in the very crowded examination room



Online results

	target/intervener	GRAMMATICAL	UNGRAMMATICAL
MATCH	8 female/female	herself	himself
	8 male/male	himself	herself
MISMATCH	8 female/male	herself	himself
	8 male/female	himself	herself



- match (grammatical)
- mismatch (grammatical)
- match (ungrammatical)
- mismatch (ungrammatical)

The nurse assisted the secretary at the hospital before receiving the medical report herself in the very crowded examination room

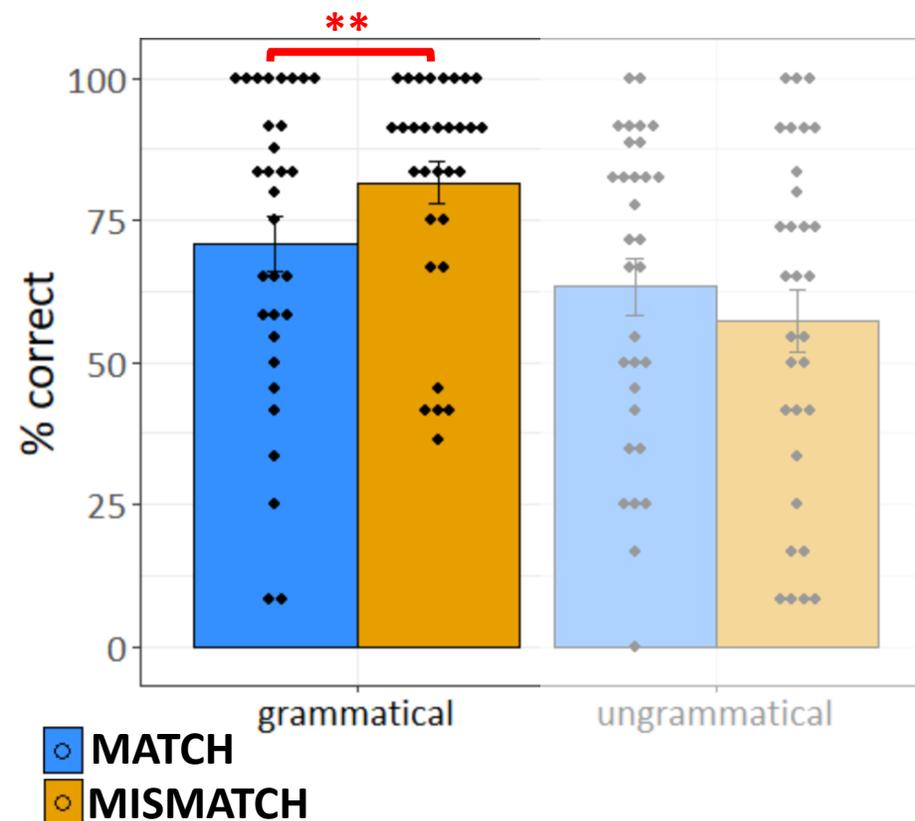
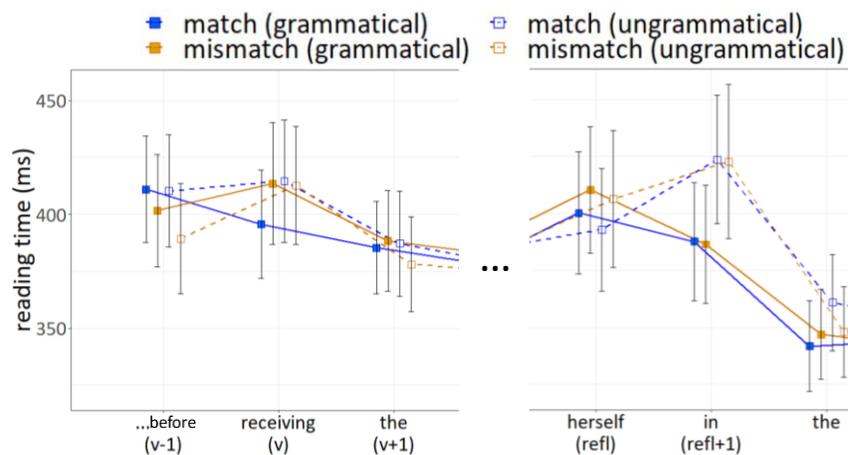
Offline results

	target/intervener	GRAMMATICAL	UNGRAMMATICAL
MATCH	8 female/female	herself	himself
	8 male/male	himself	herself
MISMATCH	8 female/male	herself	himself
	8 male/female	himself	herself

- Comprehension question after SPR:

Did the secretary receive the medical report? (correct = No, 50/50 Yes/No)

MATCH less accurate
than **MISMATCH**? ✓



The nurse assisted the secretary at the hospital before receiving the medical report herself in the very crowded examination room

	target/intervener
MATCH	8 female/female
	8 male/male
MISMATCH	8 female/male
	8 male/female

Predictions

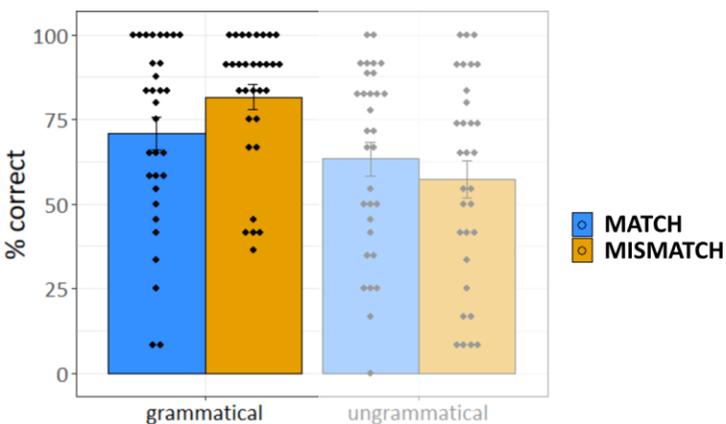
→ if encoding:

- ✗ MATCH slower than MISMATCH (online RTs)
- ✓ MATCH less accurate than MISMATCH (offline)

Late interference?

Experiment 2: number

The nurse(s) assisted the secretary(ies) at the hospital before receiving the medical report herself/themselves...



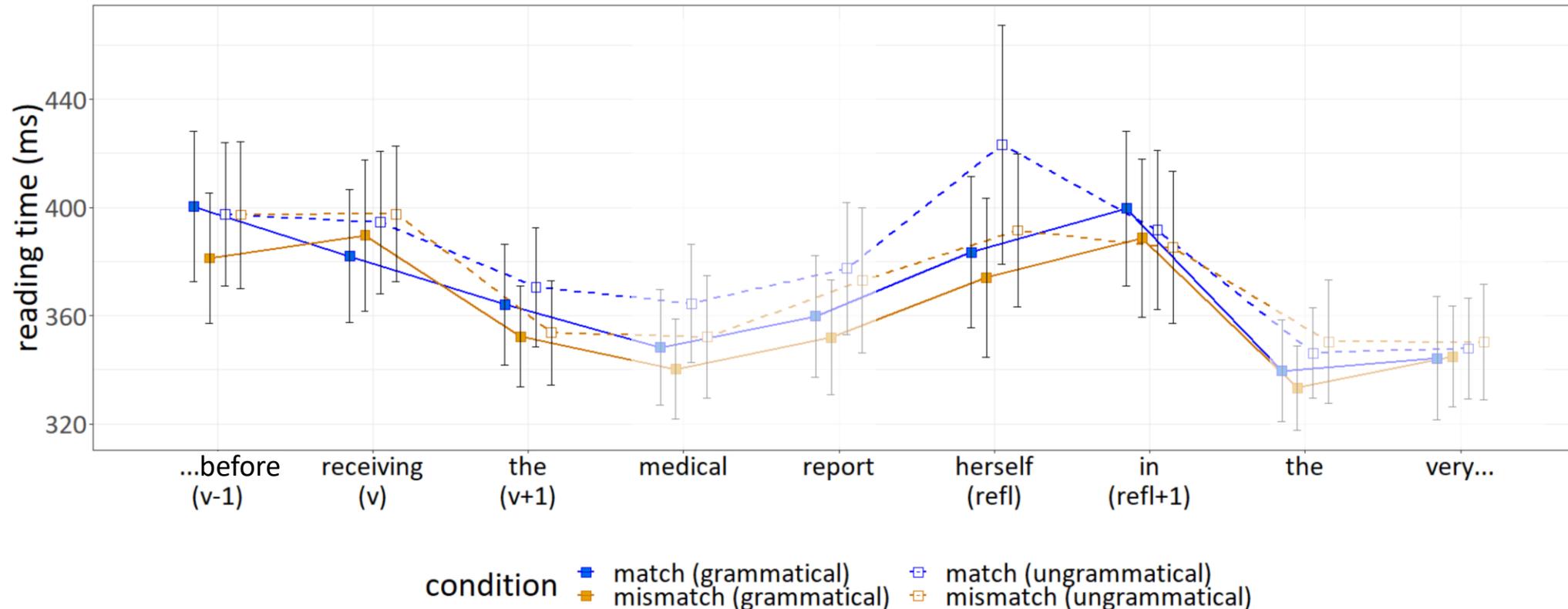
	target/intervener	GRAMMATICAL	UNGRAMMATICAL
MATCH	8 sg/sg	herself	themselves
	8 pl/pl	themselves	herself
MISMATCH	8 sg/pl	herself	themselves
	8 pl/sg	themselves	herself

Prolific, n=32 (+2 excluded <70% fillers)

The nurse(s) assisted the secretary(ies) at the hospital before receiving the medical report herself/themselves in the very crowded examination room

Results: number

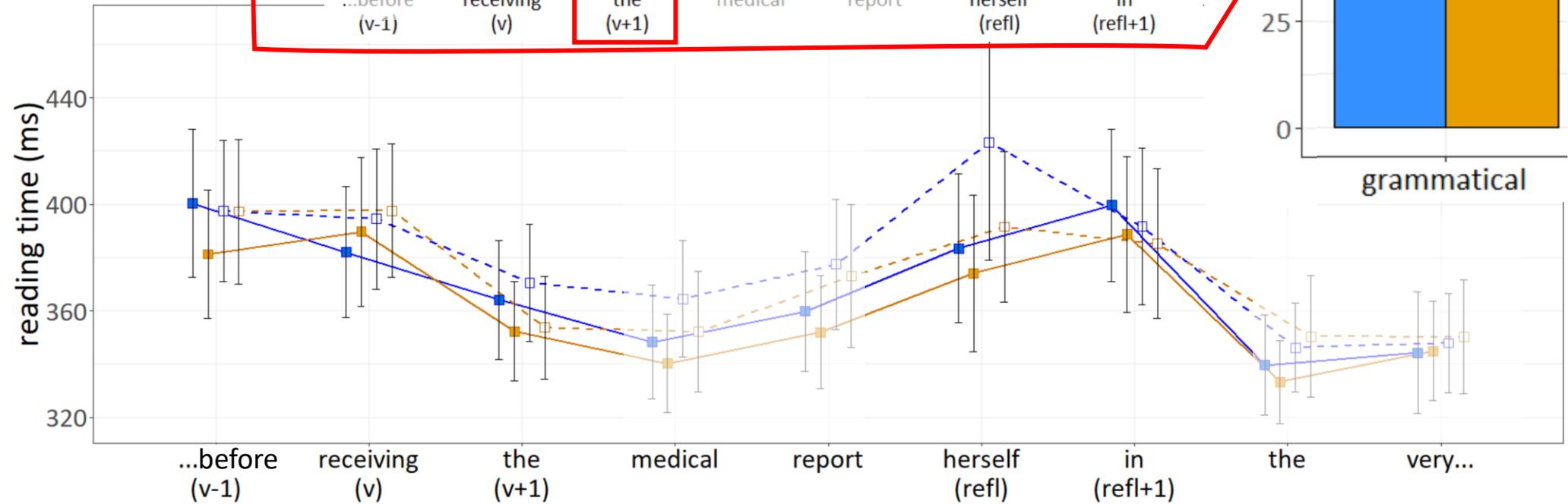
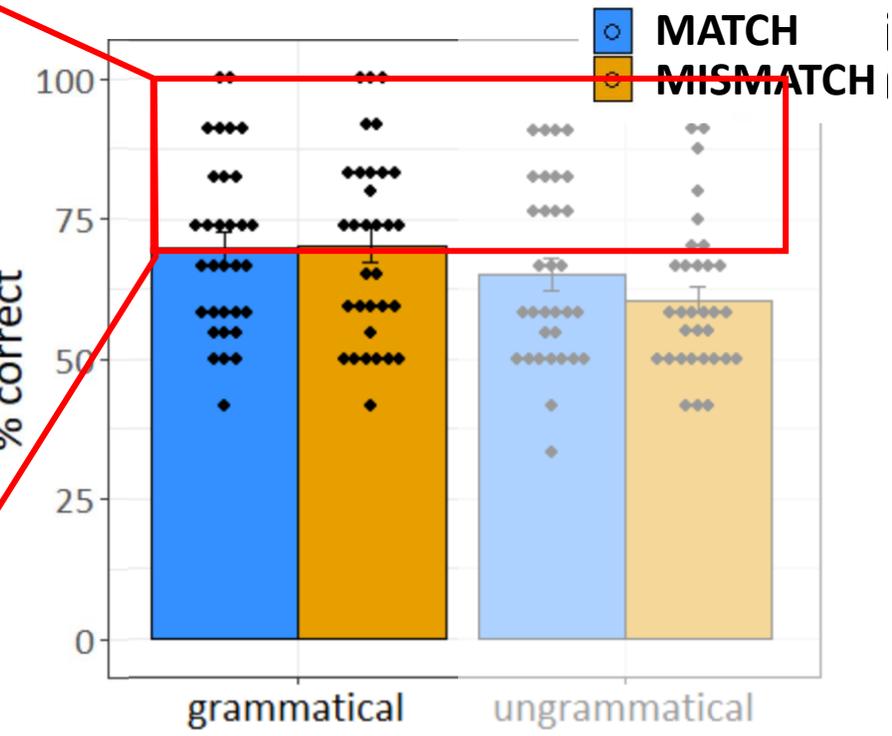
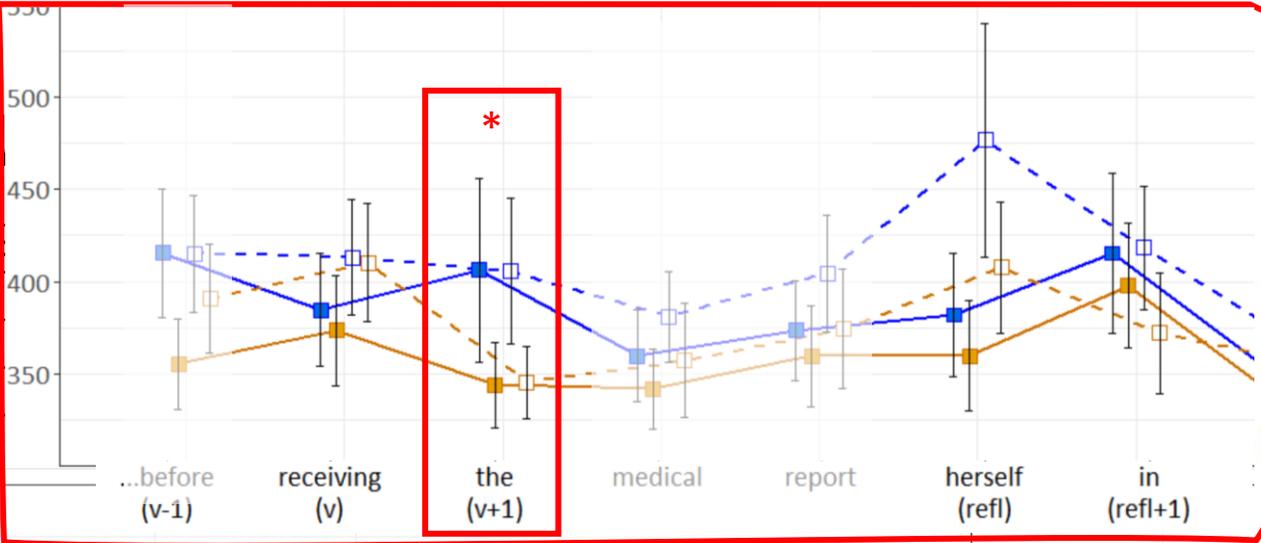
	target/intervener	GRAMMATICAL	UNGRAMMATICAL
MATCH	8 sg/sg	herself	themselves
	8 pl/pl	themselves	herself
MISMATCH	8 sg/pl	herself	themselves
	8 pl/sg	themselves	herself



The nurse(s) assisted the secretary(ies) at the hospital before receiving the medical report herself/themselves in the very crowded examination room

Res

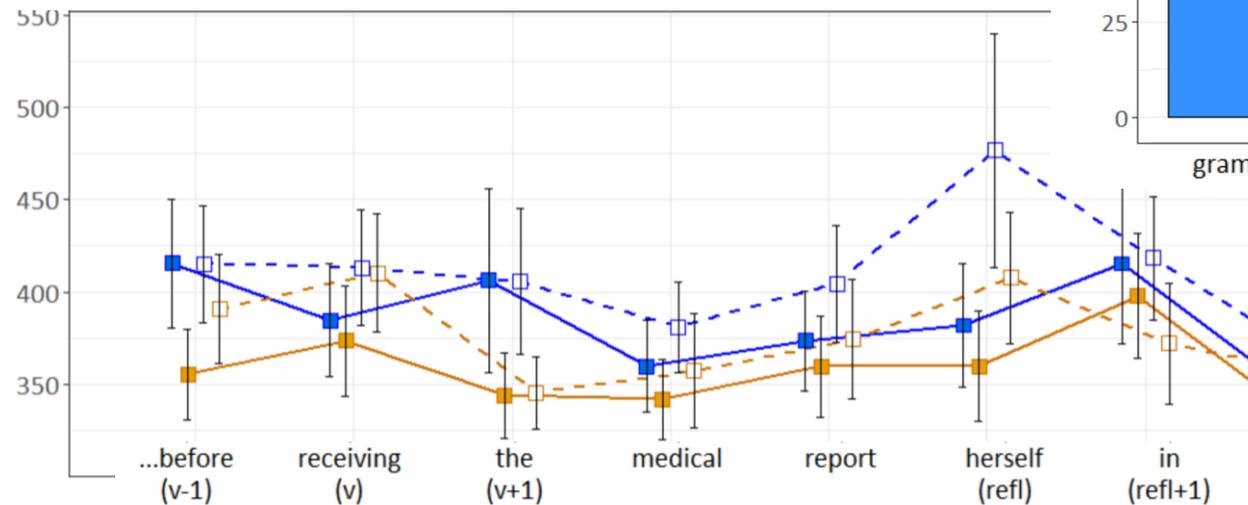
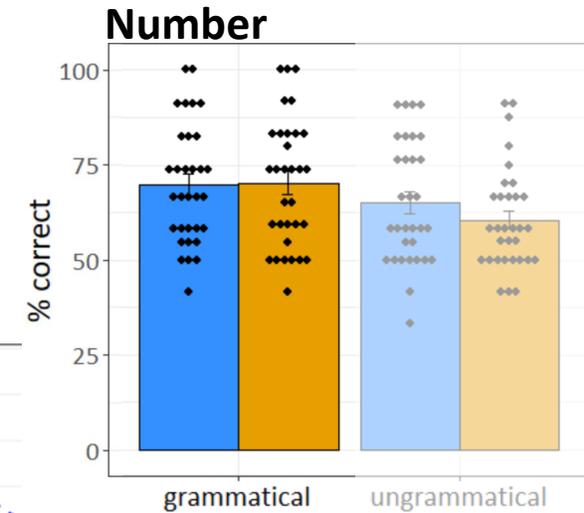
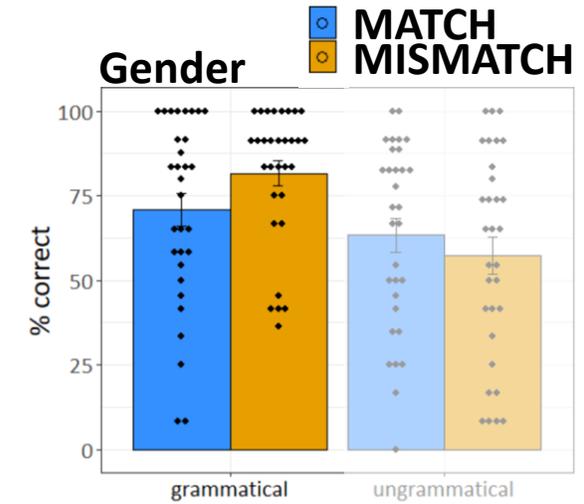
MATCH	
MISMATCH	



condition
 ■ match (grammatical) □ match (ungrammatical)
 ■ mismatch (grammatical) □ mismatch (ungrammatical)

Conclusions

- Later interference for gender (semantic)
- Online interference for number (syntactic)
 - object responses only
- Power analysis
- Interactions



Thanks!

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