Similarity-based interference, timing, and strategies in processing

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Long-distance dependencies

- Encoding, storage, and retrieval [1-2]
- Interference from non-target elements, especially with shared features [3-5]

target … … … intervener … … … dependent element … …

- α + β + α + β + α retrieval cue

➢ Similarity-based interference: **encoding** vs **retrieval**

➢ Encoding interference: offline vs online

Current Study: timing and variation in interference

- **Encoding interference**
  - ⇨ **Offline, but not online** [6]
- **Individual variation**
  - ⇨ ***Interference, RTs predicted by "yes" answer bias*** [7-8]

Adjunct control

(1) The nurse$_1$ assisted the doctor$_2$ before $\emptyset_{1/*2}$ receiving the report.

➢ Retrieval cues: syntactic [9-11]

➢ Morphosyntactic (gender, number) → encoding

Experiment 1: gender (n=100)

➢ **Factors: MATCH/MISMATCH X GRAMMATICALITY**

(2) The **nurse** / **doctor** assisted the **secretary** at the hospital before *receiving* the medical report **herself** / **himself** in the very crowded examination room.

- Online: self-paced reading
- Offline: yes/no comprehension question about subject
  "Did the secretary receive the medical report?"

➢ **Predictions:**

⇨ ***Interference***: for **MATCH** (nurse…secretary)
- Online: slower RTs at verb (*receiving*)
- Offline: lower accuracy

⇨ ***if subject retrieved at the verb***:
- Online: slower RTs at ungrammatical reflexive

➢ **Design (m=male, f=female)**

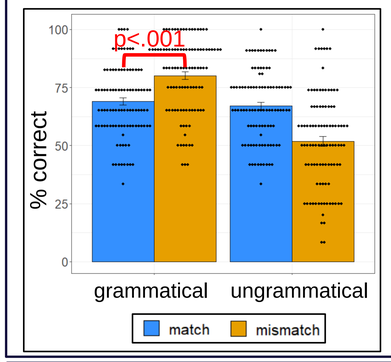
	subj/obj	GRAMMATICAL	UNGRAMMATICAL
MATCH	m/m	**him**self	**her**self
	f/f	**her**self	**him**self
MISMATCH	m/f	**him**self	**her**self
	f/m	**her**self	**him**self

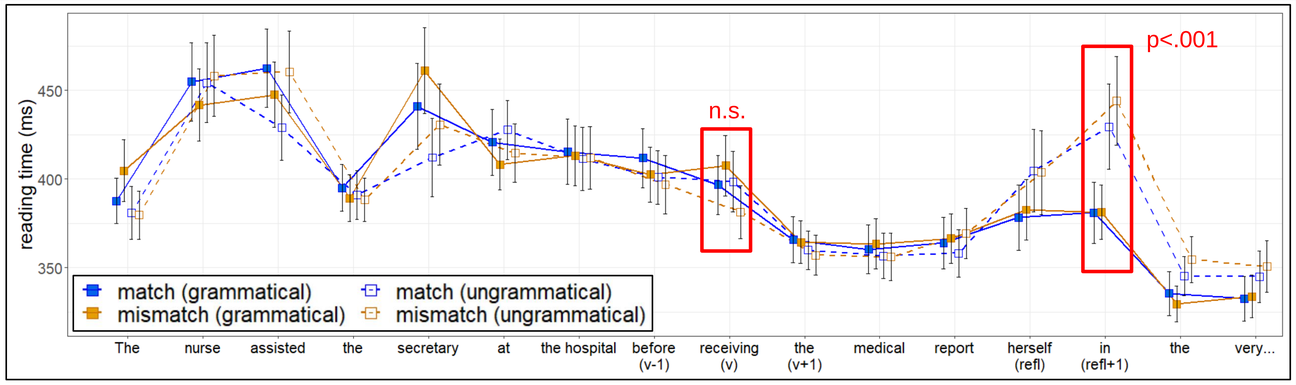
E1 Results: gender

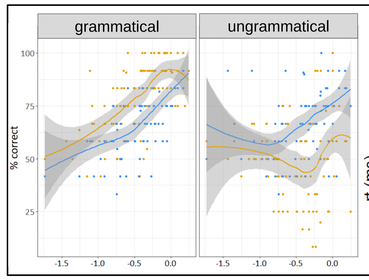
➢ **Online (lmer):**
- ✗ match/mismatch
- ✓ grammaticality

➢ **Offline (glmer):**
- ✓ match/mismatch

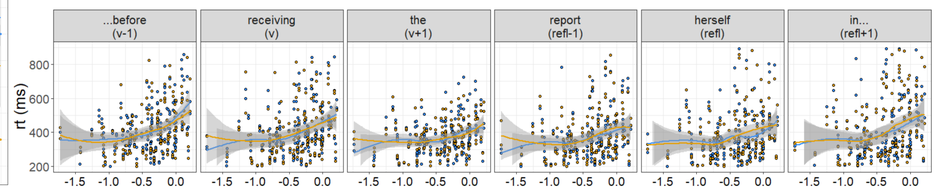
➢ **BUT, predicted by 'yes' bias:**
- offline interference (weak bias)
- RTs: ↑ bias → ↓ RT







bias (c), more negative = stronger "yes" bias: $-\frac{z(\text{correct "yes"}) + z(\text{incorrect "no"})}{2}$



Experiment 2: number (n=100)

➢ **Factors: MATCH/MISMATCH X GRAMMATICALITY**

(3) The **nurse** / **nurses** assisted the **secretary** at the hospital before *receiving* the medical report **herself** / **themselves**

➢ **Design (s=singular, p=plural)** [12]

	subj/obj	GRAMMATICAL	UNGRAMMATICAL
MATCH	s/s	herself*	themselves
	p/p	themselves	herself*
MISMATCH	s/p	herself*	themselves
	p/s	themselves	herself*

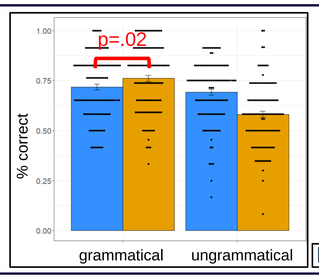
*gender was also counterbalanced, but always matched

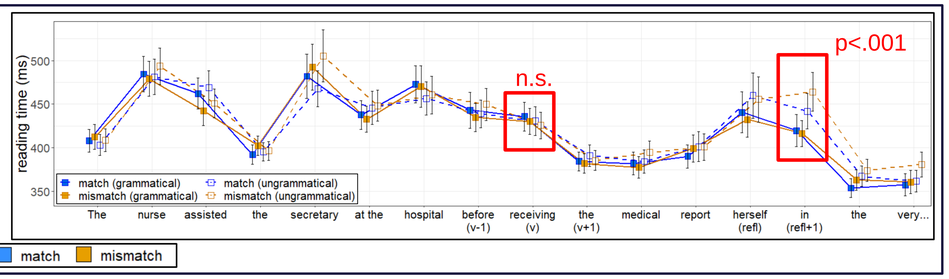
E2 Results: number

➢ **Online (lmer):**
- ✗ match/mismatch
- ✓ grammaticality

➢ **Offline (glmer):**
- ✓ match/mismatch

➢ **Same as E1 (including 'yes' bias)**





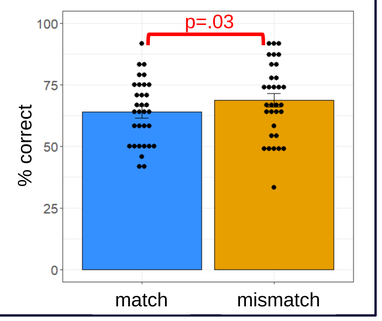
Experiment 3: gender, no reflexive (n=32)

Is the offline effect just retrieval interference from the (matching) reflexive? ⇨ *no.*

➢ **Factor: MATCH/MISMATCH (gender)**

(4) The **nurse** / **doctor** assisted the **secretary** at the hospital before *receiving* the medical report in the very…

➢ **Results:** interference offline, but not online (same as Experiments 1 and 2)



Conclusions

- Encoding interference for ***later*** representation, but not ***online***
- Quicker reading times observed with 'yes' bias
  → bias/shallower encoding may increase likelihood of offline interference
- Response strategy may mask online effect in other methods

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