Apples and oranges: How does learning context affect novel word learning?

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Contextual Diversity Workshop

University College London

21–22 September 2023

Learning context

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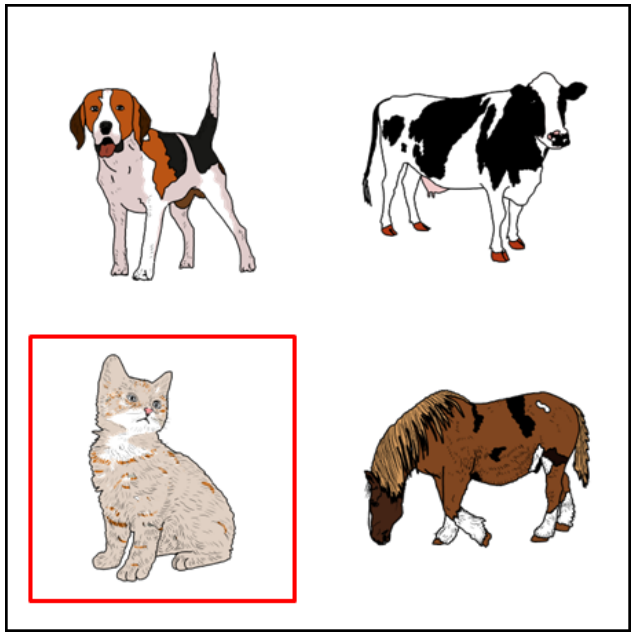

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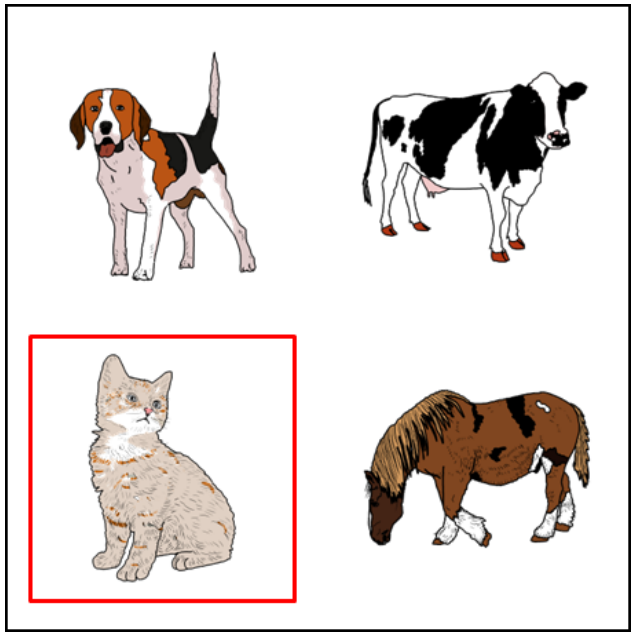

Categorically related

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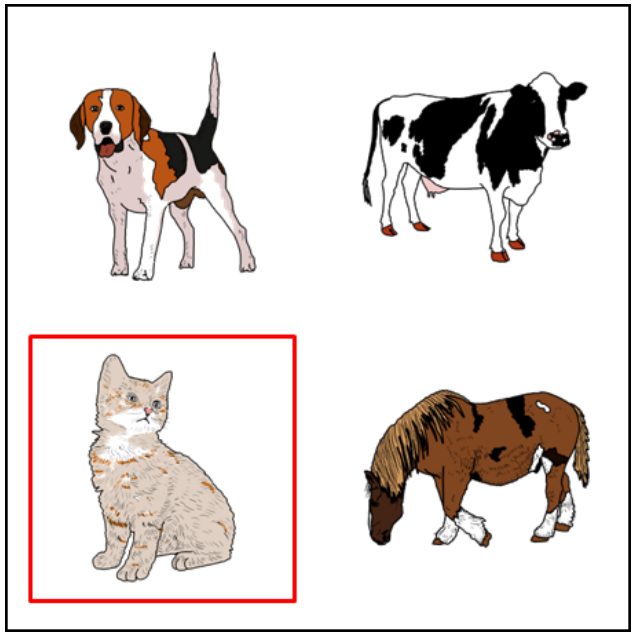

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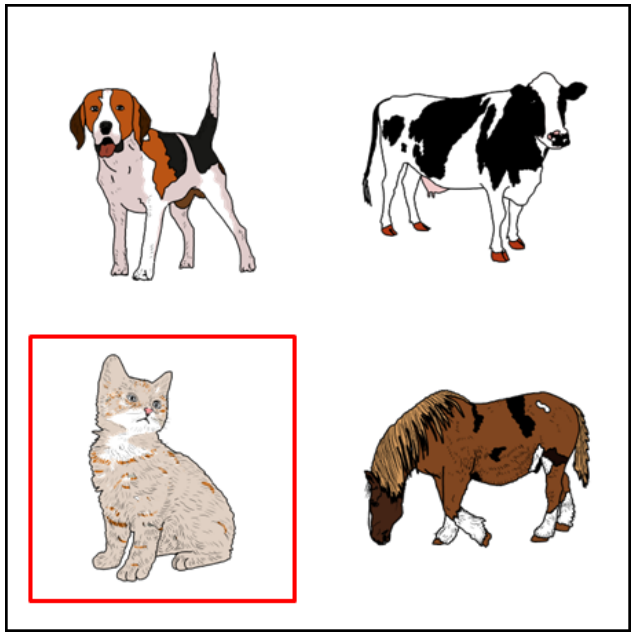

Categorically related

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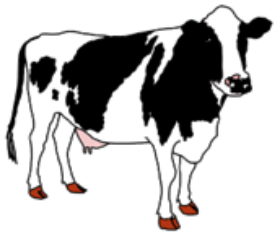
Semantic clustering



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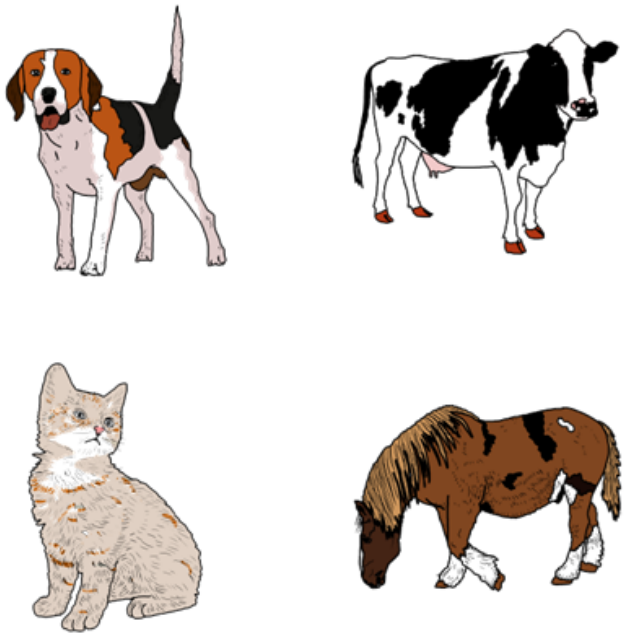
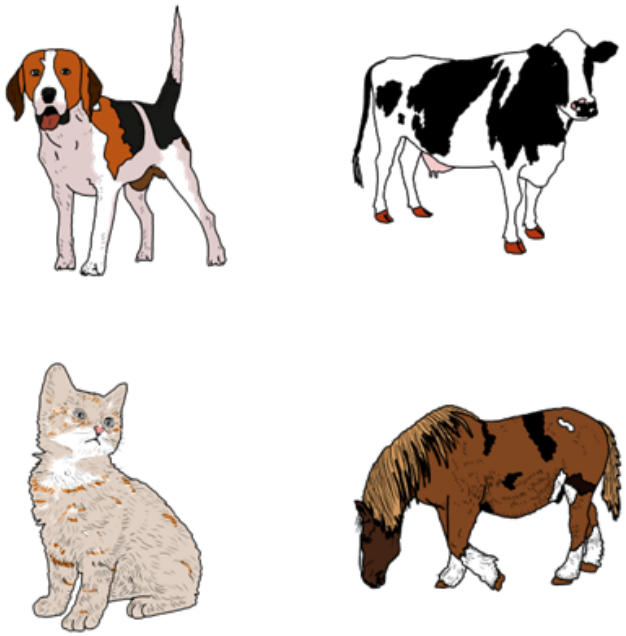


- The most common practice in second language teaching

Semantic clustering



- The most common practice in second language teaching
- Might have a detrimental effect on word learning [1–4]

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  - Semantic clustering → poorer retention
  - Clustering → *less* interference than learning of unrelated items
  - However, memory is better for information learned under conditions of high interference

Research questions

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2 sessions with 24h in between including sleep

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- Context presentation x 1
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Session 2

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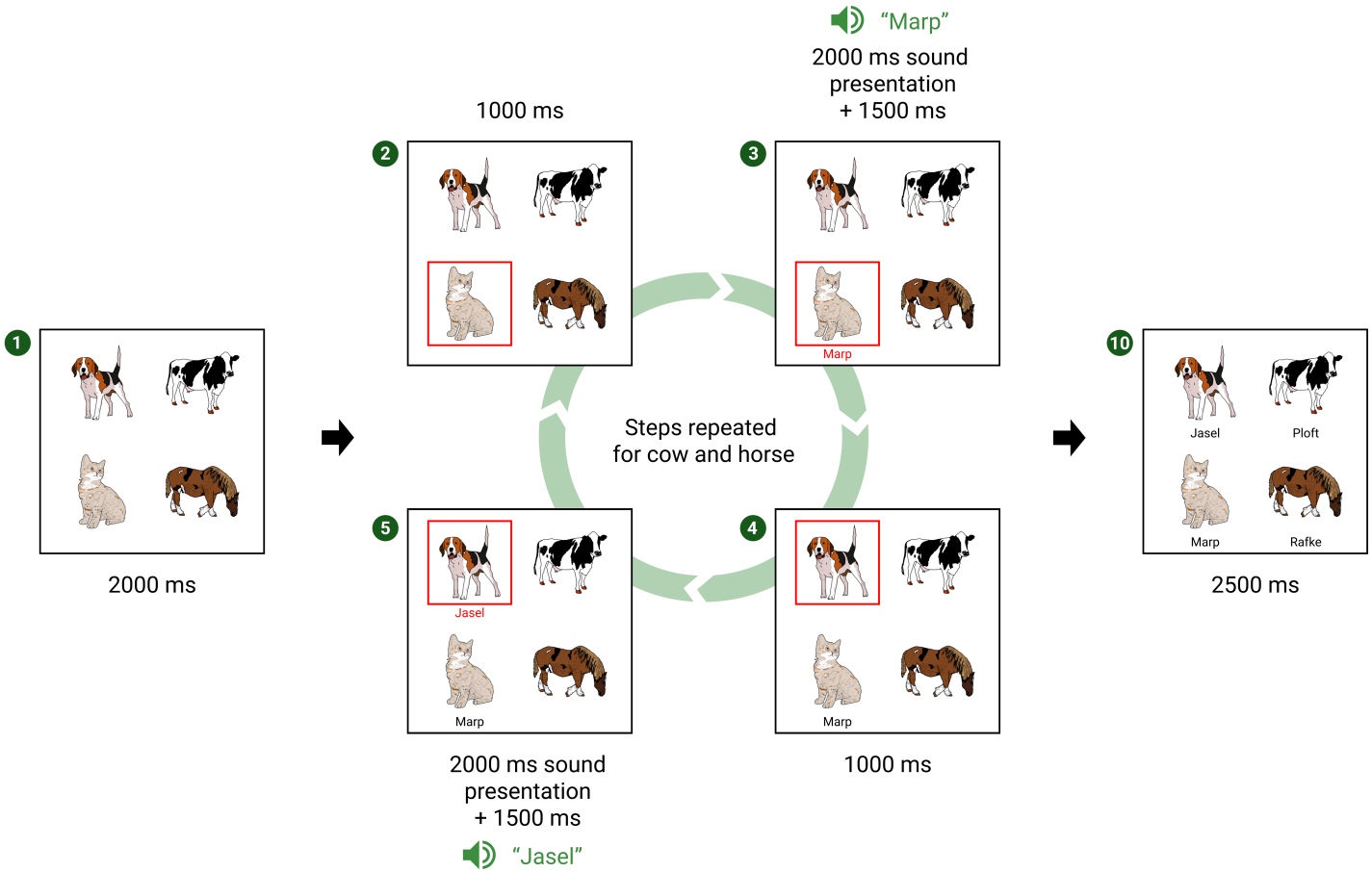
Test phase

- Picture naming task
- Translation task
- Picture-word interference task

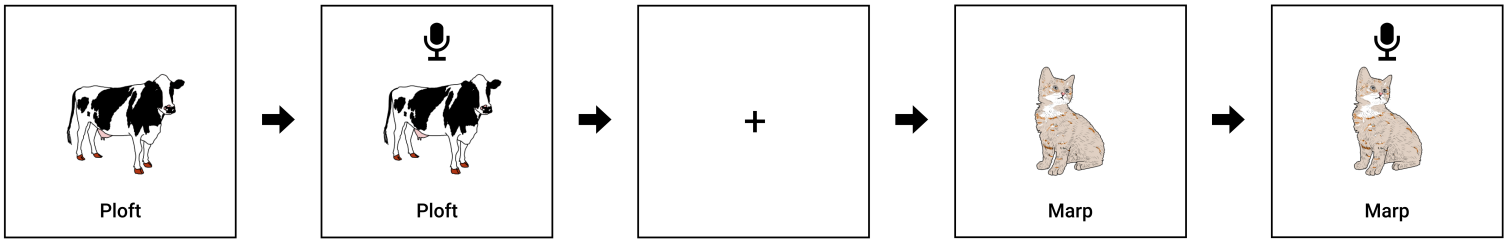
Learning phase

Context presentation — once at the start of Session 1



Learning phase

Word repetition — twice in Session 1



2000 ms sound presentation

"Ploft"

2200 ms

1000 ms

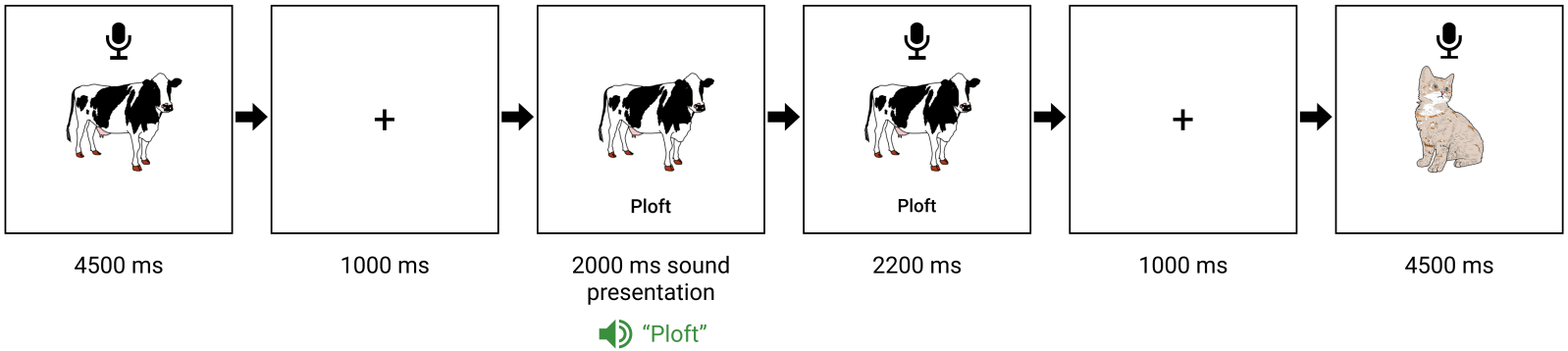
2000 ms sound presentation

"Marp"

2200 ms

Learning phase

Picture naming & word repetition — 8x in Session 1, 4x in Session 2



Test phase

Picture-word interference task (in German)

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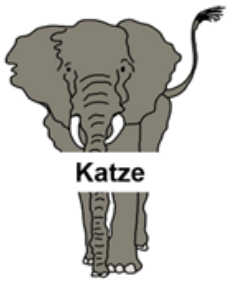
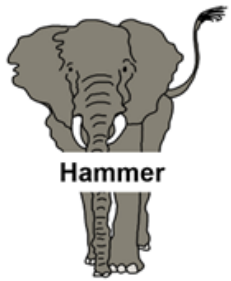
  - German related or unrelated to the target (1 & 2)



(1)



(2)

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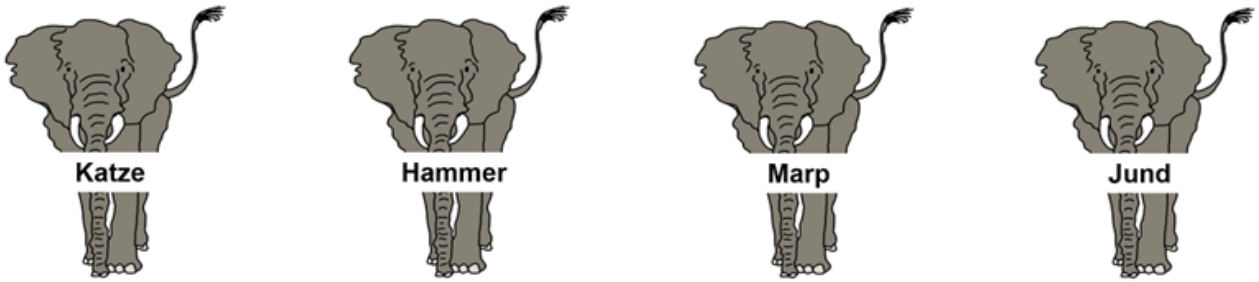

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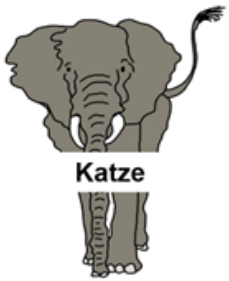
  - Novel untrained (5)



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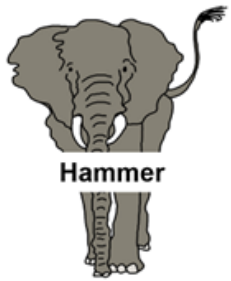

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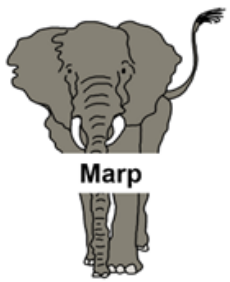

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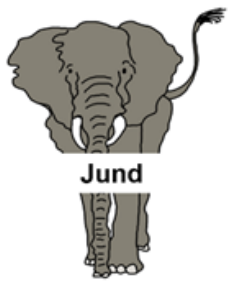

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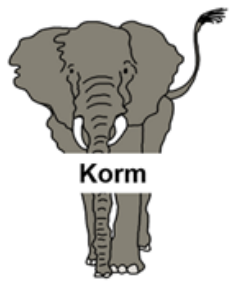

(5)

Results

Speed of acquisition

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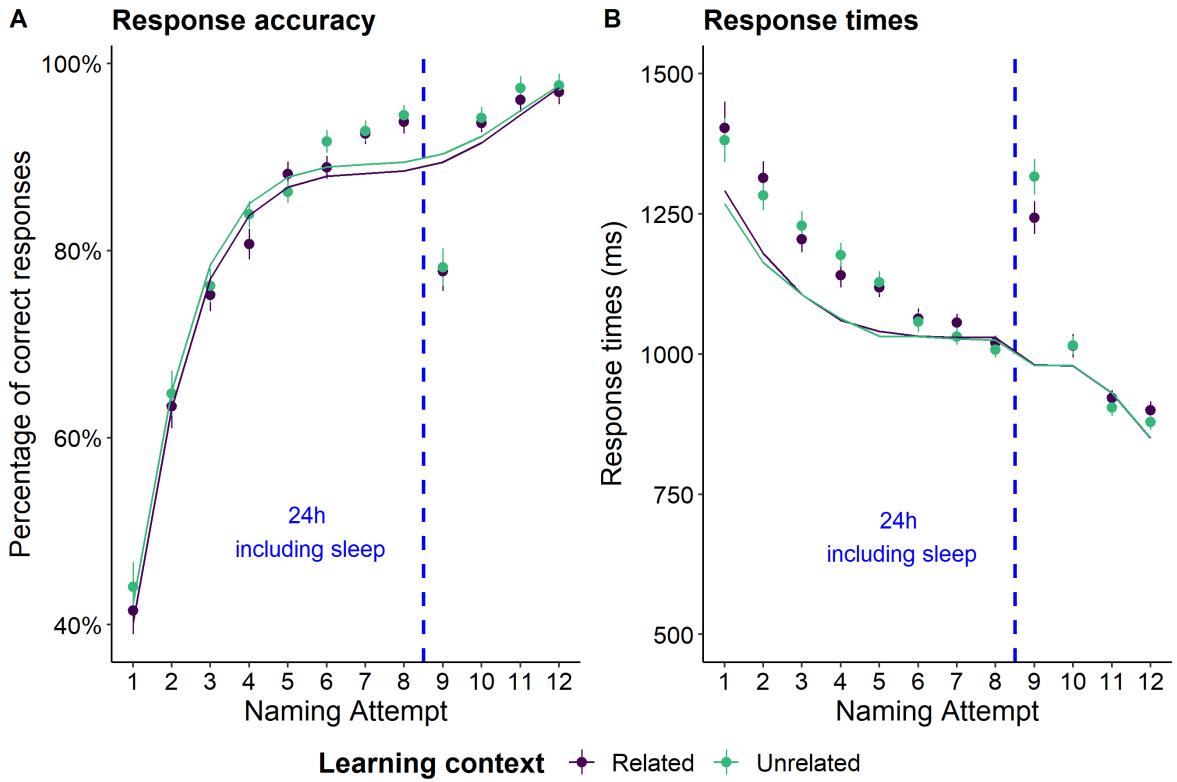

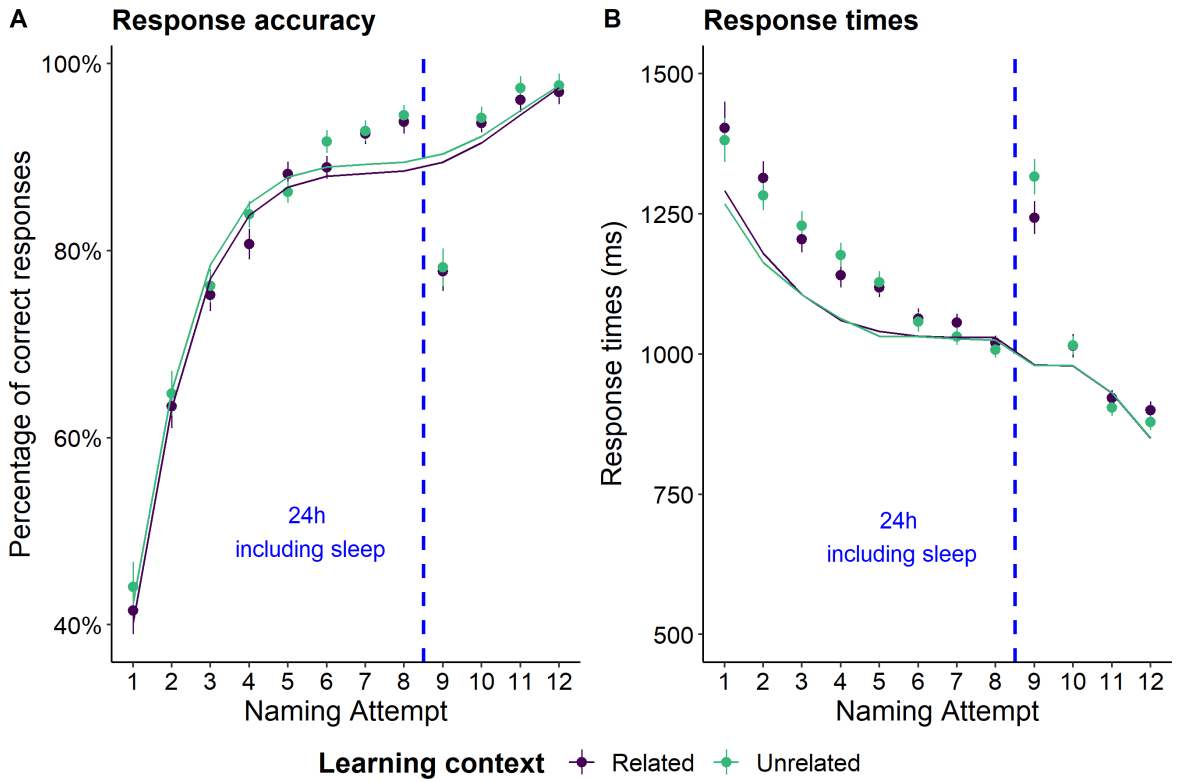

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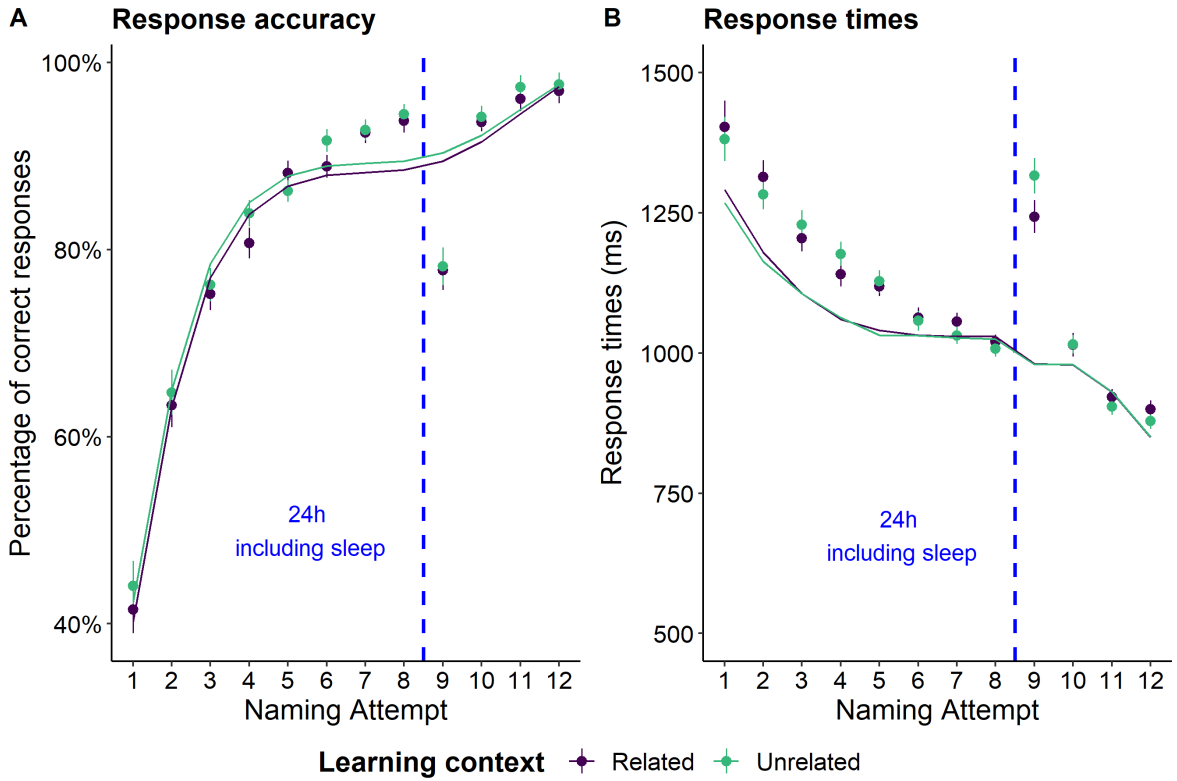
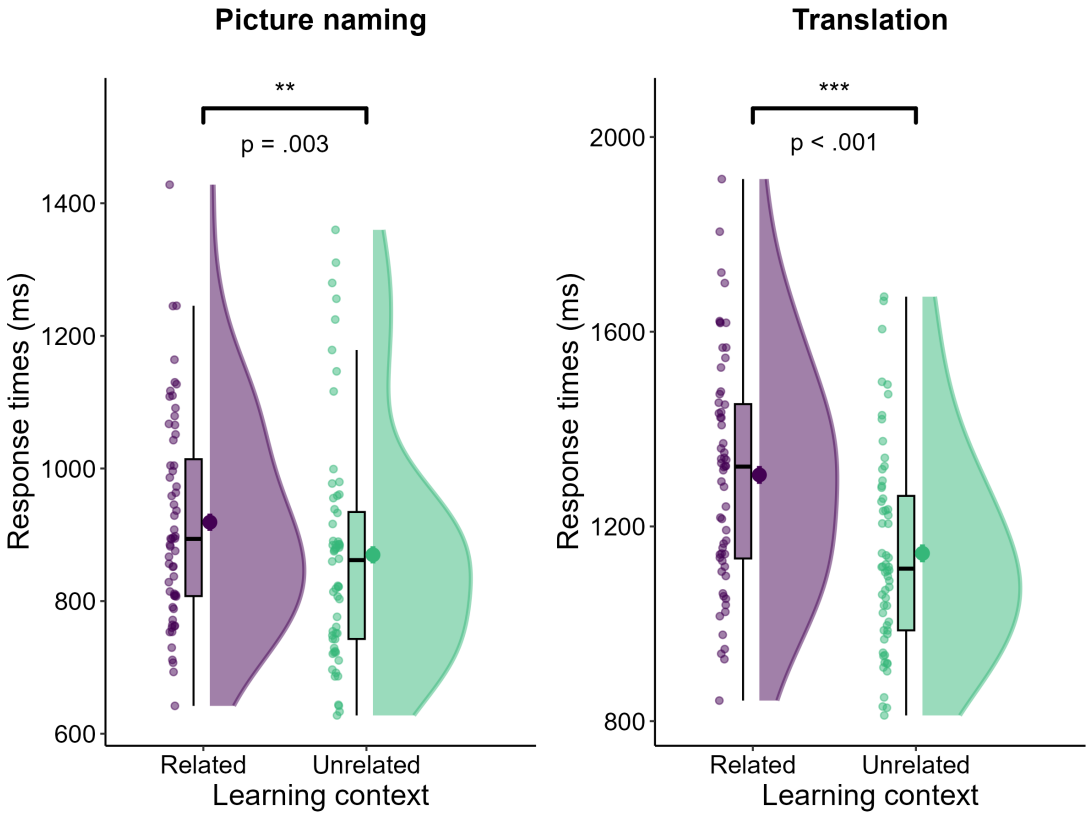
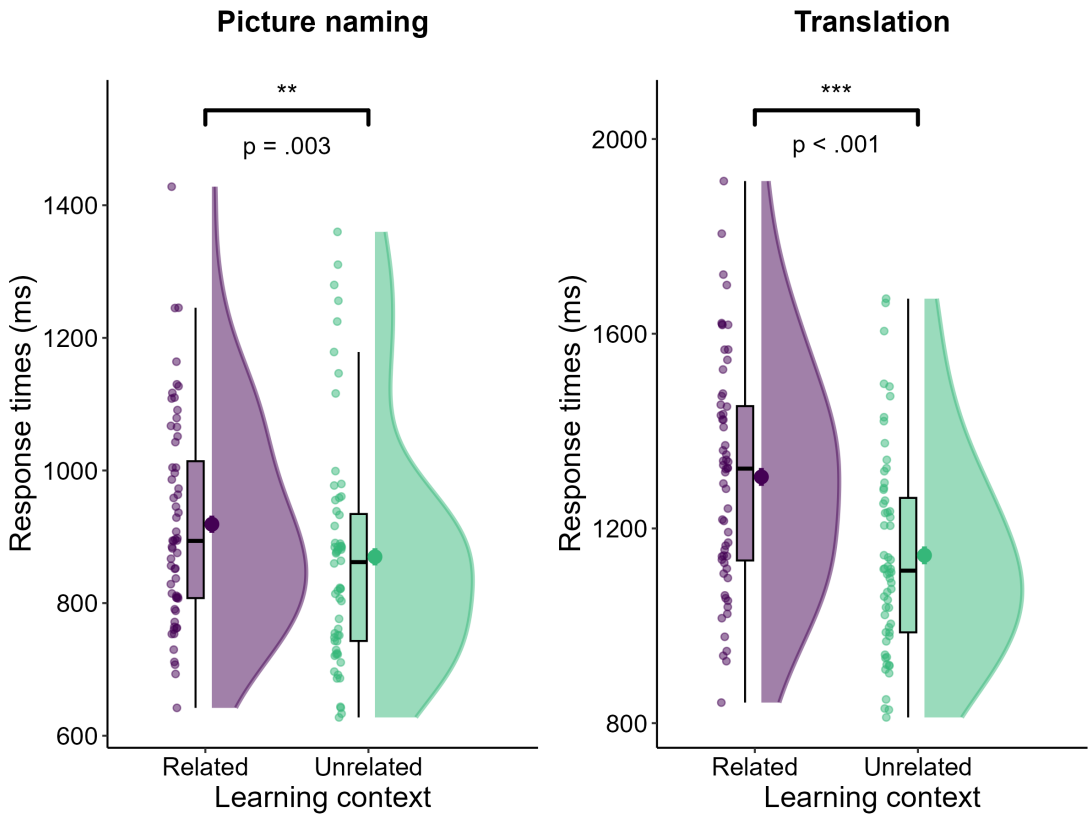


- Lower accuracy in Related ($\beta = 0.07$, $SE = 0.03$, $p = .007$)
- Could not reject null for RTs

Results

Explicit recall


Picture naming
**
p = .003
Response times (ms)
1400
1200
1000
800
600
Related
Unrelated
Learning context
Translation
***
p < .001
Response times (ms)
2000
1600
1200
800
Related
Unrelated
Learning context



Shorter RTs for words taught in Unrelated in both tasks

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Semantic interference

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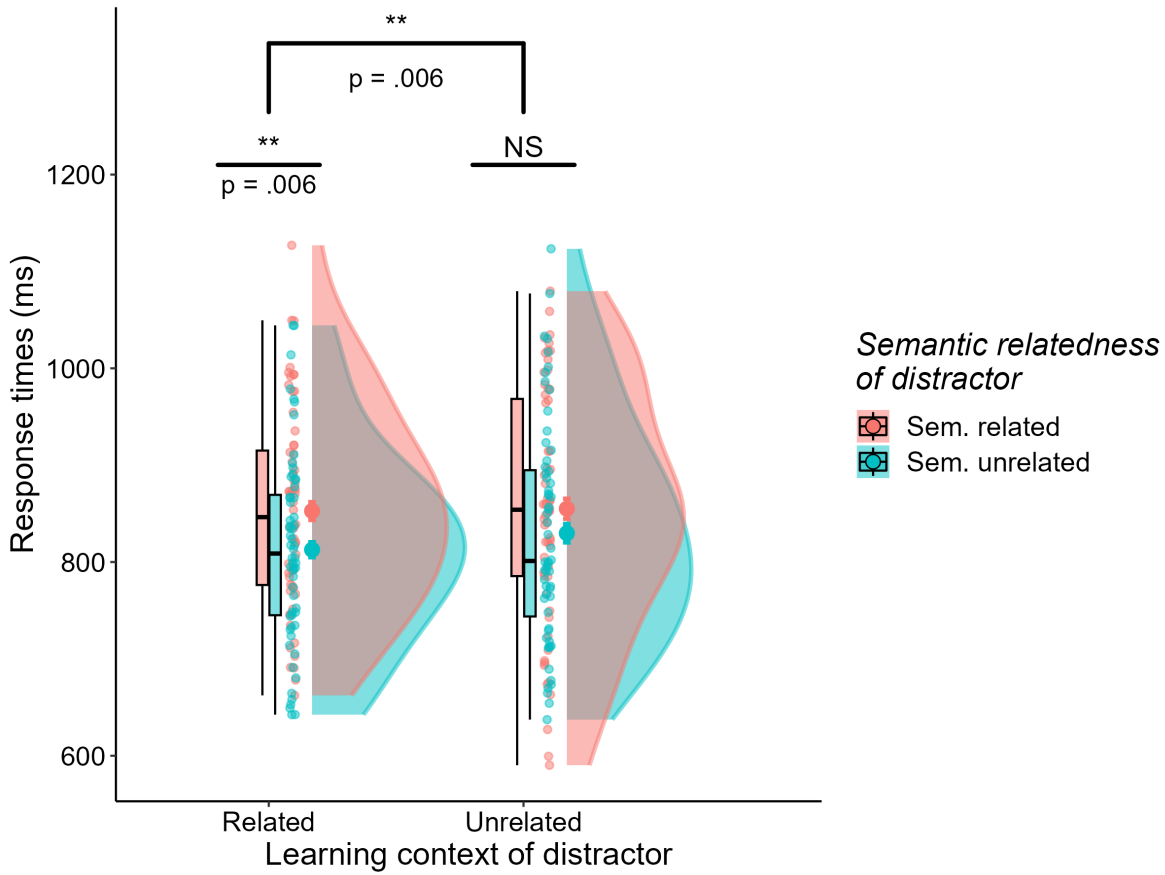

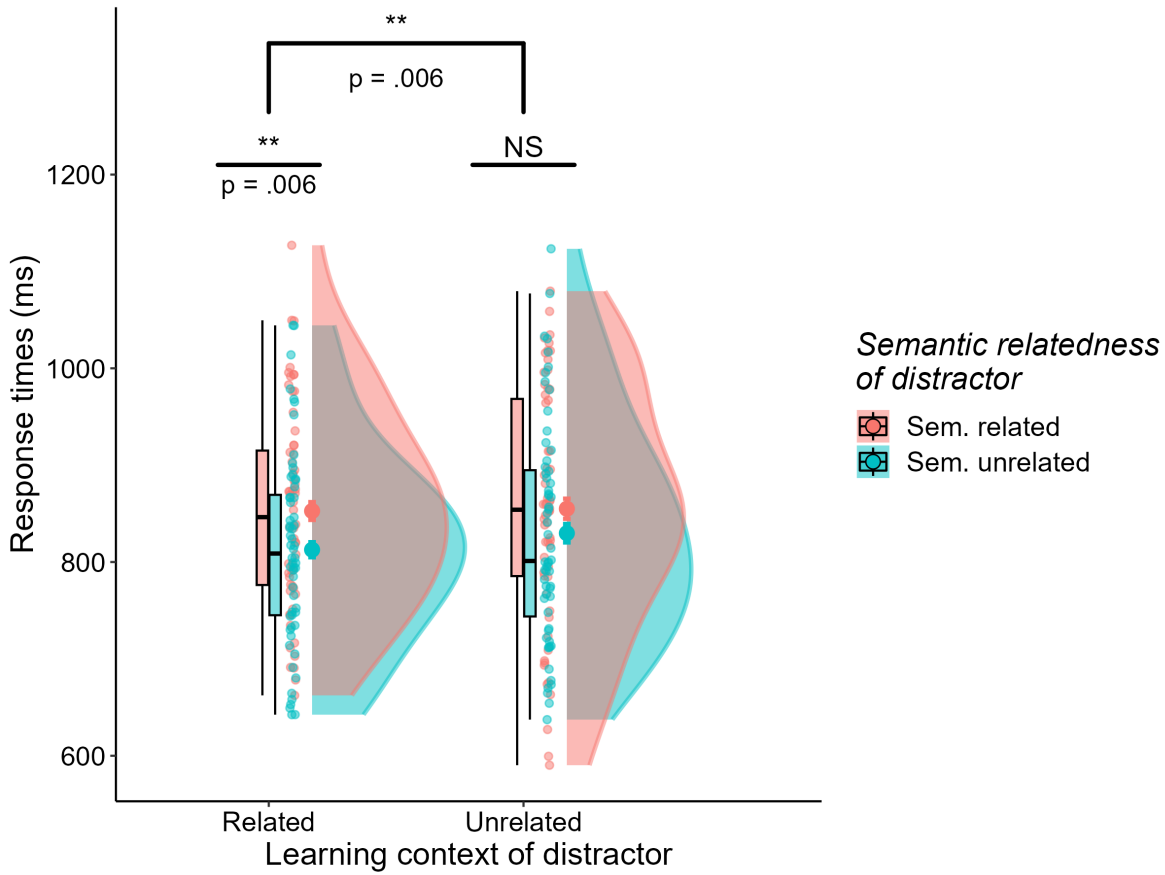

Semantic interference only for distractors taught in Related

Discussion

Acquisition & explicit recall

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- Lower accuracy during learning → less efficient encoding process
- Longer RTs in picture naming & translation tasks → slower lexical access at test
  - Conceptual replication of some previous studies [1–4]
  - In line with the Interference theory [5] & the Distinctiveness hypothesis [6], & extends their scope

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Semantic integration

In contrast to previous studies on markers of integration in word production [9]...

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→ We think not...

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Effects due to how episodic memory contributes to task performance?

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Data & analysis code: https://osf.io/g7ftz/

Thank you!

References I

[1] M. Finkbeiner and J. Nicol, "Semantic category effects in second language word learning," *Appl. Psycholinguist.*, vol. 24, pp. 369–383, 2003.

[2] T. Tinkham, "The effect of semantic clustering on the learning of second language vocabulary," *System*, vol. 21, no. 3, pp. 371–380, 1993.

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[6] R. Hunt and D. Mitchell, "Independent effects of semantic and nonsemantic distinctiveness," *J. Exp. Psychol. Learn. Mem. Cogn.*, vol. 8, no. 1, pp. 81–87, 1982.

[7] W. Battig, "Intratask interference as a source of facilitation in transfer and retention," in *Topics in learning and performance*, R. Thompson and J. Voss, Eds., New York: Academic Press, 1972, pp. 131–159.

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[9] F. Clay, J. Bowers, C. Davis, and D. Hanley, "Teaching adults new words: The role of practice and consolidation," *J. Exp. Psychol. Learn. Mem. Cogn.*, vol. 33, no. 5, pp. 970–976, 2007.