



University of Dundee

The lexical boost in priming of adjunct structures

Konradt, Alina; van Gompel, Roger; Kantola, Leila

Publication date:
2023

[Link to publication in Discovery Research Portal](#)

Citation for published version (APA):

Konradt, A., van Gompel, R., & Kantola, L. (2023). *The lexical boost in priming of adjunct structures: The repetition of any content word will do*. Poster session presented at Human Sentence Processing, Pittsburgh, Pennsylvania, United States.

General rights

Copyright and moral rights for the publications made accessible in Discovery Research Portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

Take down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.



University of Dundee

E·S·R·C
ECONOMIC
& SOCIAL
RESEARCH
COUNCIL

The representation of adjuncts: Findings from structural priming

Alina Konrad¹, Roger van Gompel² and Leila Kantola³

¹UCL, ²University of Dundee, ³Umeå University

¹a.konradt@ucl.ac.uk, ²r.p.g.vangompel@dundee.ac.uk, ³leila.kantola@umu.se

Introduction

- **Structural priming**

Speakers tend to reuse recently encountered syntactic structures (Mahowald et al., 2016; Pickering & Ferreira, 2008).

- **Lexical boost effect**

Repetition of content words from the prime enhances structural priming in the target (Pickering & Ferreira, 2008).

Introduction

- **Lexical boost effect** is larger when the verb that licenses the primed structure is repeated, but not when any content word in the sentence is repeated.
- Structures are lexically associated with their syntactic heads (e.g., the verb in a VP: Carminati et al., 2019; Van Gompel et al., 2023).
- This is consistent with *the residual activation model* (Pickering & Branigan, 1998).
 - It provides evidence against models that assume a lexical boost occurs with the repetition of any content word (Chang et al., 2006; Reitter et al., 2011).


Introduction

- Aim of the current project: to explore how adjunct phrases, which the verb does not subcategorize for, are represented.
- Research question: **Are adjuncts associated with any word in the sentence or is their representation lexically independent?**
- Key manipulations:
 - **Prime structure:**
 - Intransitive sentences with preverbal AdvP, e.g. *The driver carefully shaved.*
 - vs.
 - Intransitive sentences with postverbal AdvP, e.g. *The driver shaved carefully.*
 - **Word repetition** (different vs. the same): verb (Exp.1), adverb (Exp.2), subject noun (Exp.3)

Experiment 1 (Verb Repetition): Method

- In Experiment 1 we manipulated **the repetition of the verb**.
- Procedure: Participants read a prime sentence out loud, then described a depicted target event using an adverb provided (Fig.1)

Fig.1. Samples of experimental stimuli (Experiment 1).

PRIME SENTENCES	TARGET IMAGE + ADVERB
<p><i>The driver frequently shaved.</i> (preverbal AdvP, same verb) <i>The driver shaved frequently.</i> (postverbal AdvP, same verb) <i>The driver frequently stretched.</i> (preverbal AdvP, diff. verb) <i>The driver stretched frequently.</i> (postverbal AdvP, diff. verb)</p>	 <p>CAREFULLY</p>

Experiment 1 (Verb Repetition): Method

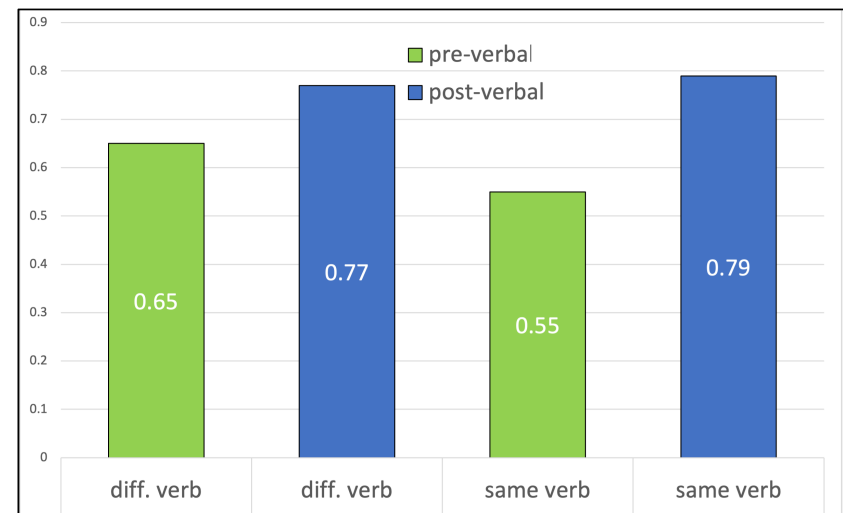
- Participants: 48 native English speakers
- Design:
 - 2 x 2 within-subject design
 - preverbal AdvP prime vs postverbal AdvP prime (IV1)
 - verb repeated between a prime and a target vs verb different in prime and target (IV2)
 - 40 prime-target pairs across 4 conditions

Experiment 1 (Verb Repetition): Results

Logit mixed effect analyses revealed:

- main effect of prime ($p < .001$): more postverbal AdvP target responses after postverbal than after preverbal AdvP primes (78% vs. 60%);
- prime x repetition interaction ($p < .001$): stronger priming when the verb was repeated than when it was not (24% vs. 12%) → lexical boost.

Fig.2. Proportion of postverbal AdvP responses (Experiment 1).




→ The repetition of the verb lead to a lexical boost effect, although the verb does not immediately head AdvP and does not subcategorise for it.

Experiment 2 (Adverb Repetition): Method

- In Experiment 2 we manipulated **the repetition of the adverb**.
- Procedure and design as in Experiment 1
- 48 native English speakers; 40 items across 4 conditions

Fig.3. Samples of experimental stimuli (Experiment 2).

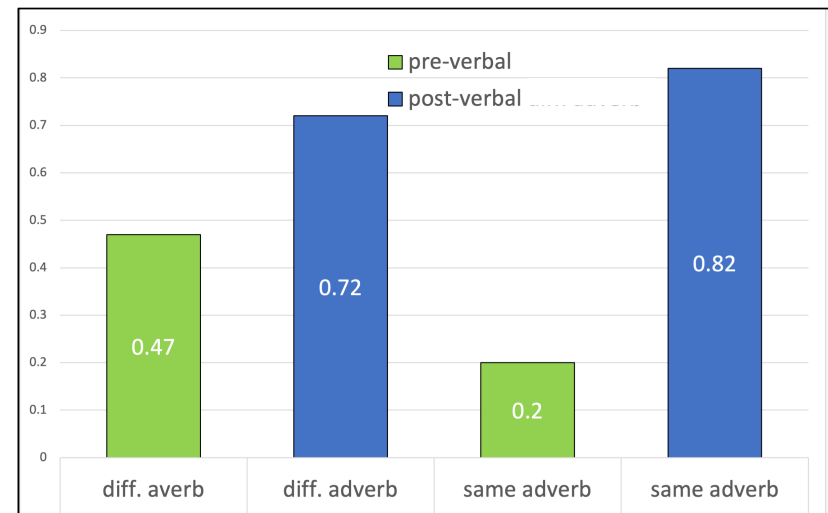
PRIME SENTENCES	TARGET IMAGE + ADVERB
<p><i>The driver carefully stretched.</i> (preverbal AdvP, same AdvP) <i>The driver stretched carefully.</i> (postverbal AdvP, same AdvP) <i>The driver frequently stretched.</i> (preverbal AdvP, diff. AdvP) <i>The driver stretched frequently.</i> (postverbal AdvP, diff. AdvP)</p>	 <p>CAREFULLY</p>

Experiment 2 (Adverb Repetition): Results

Logit mixed effect analyses revealed:

- main effect of prime ($p < .001$): more postverbal AdvP target responses after postverbal than after preverbal AdvP primes (77% vs. 34%);
- prime x repetition interaction ($p < .001$): stronger priming in the adverb-repetition than in the non-adverb-repetition conditions (62% vs. 25%) → lexical boost.

Fig.4. Proportion of postverbal AdvP responses (Experiment 2).




→ The repetition of the adverb, the head of AdvP, lead to a large lexical boost effect.

Experiment 3 (Noun Repetition): Method

- In Experiment 3 we manipulated **the repetition of the subject noun**.
- Procedure and design as in Experiment 1
- 48 native English speakers; 40 items across 4 conditions

Fig.5. Samples of experimental stimuli (Experiment 3).

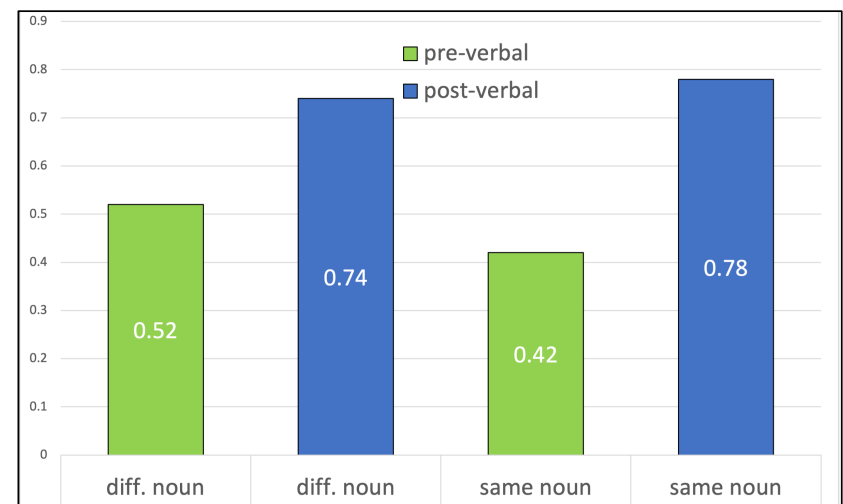
PRIME SENTENCES	TARGET IMAGE + ADVERB
<i>The sailor frequently stretched.</i> (preverbal AdvP, same subj. noun)	
<i>The sailor stretched frequently.</i> (postverbal AdvP, same subj. noun)	
<i>The driver frequently stretched.</i> (preverbal AdvP, diff. subj. noun)	
<i>The driver stretched frequently.</i> (postverbal AdvP, diff. subj. noun)	
	CAREFULLY

Experiment 3 (Noun Repetition): Results

Logit mixed effect analyses revealed:

- main effect of prime ($p < .001$): more postverbal AdvP target responses after postverbal than after preverbal AdvP primes (76% vs. 47%);
- prime x repetition interaction ($p < .001$): stronger priming in the noun-repetition than in the non-noun-repetition conditions (36% vs. 22%) → lexical boost.

Fig.6. Proportion of postverbal AdvP responses (Experiment 3).



→ The repetition of the subject noun lead to a lexical boost effect, although it has no syntactic relation to the AdvP and its position.

Conclusions

- Experiment 1: The representation of AdvP position may be associated with the verb, despite the AdvP being an adjunct and thus not subcategorised for by the verb.
- Experiment 2: The representation of AdvP position may be associated with the adverb itself.
- Experiment 3: The representation of AdvP position may be associated with the subject noun.

Conclusions

- In priming of *structures containing adjuncts*, the repetition of *any* content word triggers lexical boost effects.
- This contrasts with evidence from structures containing arguments which showed lexical boost effects only when the structure-licencing head was repeated (Carminati et al., 2019; Van Gompel et al., 2022),
- Together, this indicates that structures containing arguments are associated with their head only, whereas adjuncts may be associated with all content words in the clause.
- These findings are also consistent with models that claim that the repetition of any content word should result in a lexical boost. However, such models are not supported by evidence that only the syntactic head repetition causes a boost in structures containing its arguments (Carminati et al., 2019; Van Gompel et al., 2023).

THANK YOU!

References

- Carminati, M. N., van Gompel, R. P., & Wakeford, L. J. (2019). An investigation into the lexical boost with nonhead nouns. *Journal of Memory and Language*, *108*, 104031.
- Chang, F., Dell, G. S., & Bock, K. (2006). Becoming syntactic. *Psychological review*, *113*(2), 234.
- Mahowald, K., James, A., Futrell, R., & Gibson, E. (2016). A meta-analysis of syntactic priming in language production. *Journal of Memory and Language*, *91*, 5-27.
- Pickering, M. J., & Branigan, H. P. (1998). The representation of verbs: Evidence from syntactic priming in language production. *Journal of Memory and language*, *39*(4), 633-651.
- Pickering, M. J., & Ferreira, V. S. (2008). Structural priming: a critical review. *Psychological bulletin*, *134*(3), 427.
- Reitter, D., Keller, F., & Moore, J. D. (2011). A computational cognitive model of syntactic priming. *Cognitive Science*, *35*, 587–637.
- Van Gompel, R. P., Wakeford, L. J., & Kantola, L. (2023). No looking back: The effects of visual cues on the lexical boost in structural priming. *Language, Cognition and Neuroscience*, *37*(1) 1-10.