

Background

- Past psycholinguistic studies with older adults → mainly explicit tasks, e.g. paragraph comprehension. These are naturally tied closely to Working Memory capacity.
- Scarce results from implicit tasks suggest processing *itself* may not decline (Hardy et al., 2017, 2020; Van Bortel & Lawyer, 2022)
- Syntactic priming could be an efficient and implicit method to test comprehension of sentences and sensitivity to syntax.
- Working with ERPs further delves beyond behavioural restrictions

→ However, **no studies of syntactic priming in comprehension with filler manipulations**
→ And, **no ERP priming studies with older adults**

Questions & Hypotheses

1) Does syntactic comprehension priming decline with age?

2) What roles do WM and PS play in possible age-related syntactic priming declines?

3) Can syntactic priming and ERPs offer a sensitive method of investigating language ability in later age?

H1. Abstract priming likely to remain stable. Boost more likely to decline.

H2. WM not expected to affect priming. Unknown role of PS

H3. Priming can uncover sensitive implicit processing patterns in both age groups.

Method

- 90 trial sequences (see right)
- Older ($n = 18$, $M_{age} = 69.6$, $SD = 4.0$) and Younger group ($n = 20$, $M_{age} = 21.4$, $SD = 2.3$) took part at the University of Essex.

Syntactic Priming

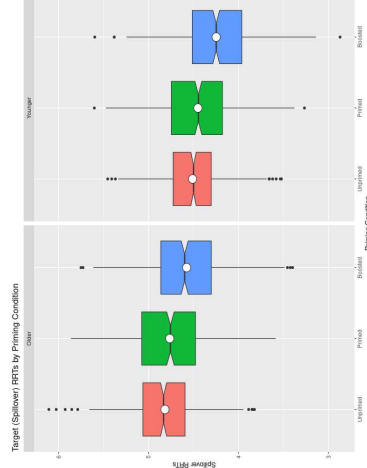


- Self-paced reading of Targets and Filler 2s, balanced with external pacing of Primes and Filler 1s, 3s, and 4s.
- Targeted structures: reduced relatives. For instance:
The man hounded [by the lawyer] [decided to] throw away his phone

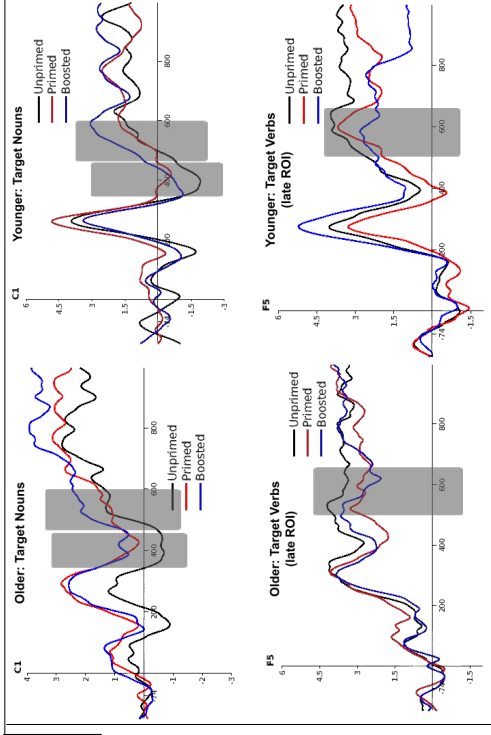
- Reading times for By-ROI [by the lawyer] and Spillover ROI [decided to] recorded.

- ERPs recorded at hounded (N4), by (P6) and at decided (N4/P6 expected)

Results



- Behavioural**
 - Significant priming in both groups. No age interactions (BFs < .03). Similar effect sizes ($d_v = -.542$, $d_o = -.603$)
 - Some weak interactions with PS and WM



- No evidence for age-related sentence processing declines – either behaviourally or on ERPs.
- Only weak evidence for impact of WM or PS on syntactic priming.
- Surprisingly long—lasting lexical boost effects. Contradicts explicit nature of effect.
 - Instead: Heyselaar et al.'s (2021) model works, or ties to *recognition* could be of interest.
- Suggests syntactic priming is a highly useful tool for uncovering implicit language behaviour!

References & Contact Details

- Hardy, S. M., Messenger, K., and Maylor, E. A. (2017). Aging and syntactic representations: Evidence of preserved syntactic priming in lexical bias. *Psychology of Aging*, 32(6)585.
- Hardy, S. M., Wheeldon, L., and Seggert, K. (2020). Structural priming is determined by global syntax rather than internal phrasal structure: Evidence from young and older adults. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 46(4)720.
- Heyselaar, E., Wheeldon, L., and Seggert, K. (2021). Structural priming is supported by different components of nondeclarative memory: Evidence from priming across the lifespan. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 47(5)820.
- Van Bortel, W.S., and Lawyer, L.A. (2022). Syntactic comprehension priming and lexical boost effects in older adults. *Language, Cognition, and Neuroscience*.



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