Aging, Parapoeval Preview, and Semantic Integration in Sentence Processing: Testing the Cognitive Workload of Wrap-up

Brennan R. Payne and Elizabeth A.L. Stine-Morrow

University of Illinois at Urbana-Champaign

Rationale

- Age deficits are most pronounced in aspects of language comprehension that are highly effortful (e.g., retaining message-level semantics).
- However, the mechanisms underlying these effects are not well understood.
- Wrap-up has been proposed as a mechanism associated with online integrative semantic processing during reading. Reflected in relative increases in processing at clause and sentence boundaries (Rayner et al., 1989, 2000).

Methods

- **Measures**
  - Younger Adults (N = 24)
  - Older Adults (N = 22)
- **Age**
  - Younger Adults: 20.87 (5.7)
  - Older Adults: 68.36 (1.28)
- **Education**
  - Younger Adults: 15 (31)
  - Older Adults: 16 (31)
- **Vocabulary**
  - Younger Adults: 53 (10)
  - Older Adults: 55 (22)
- **Reading Span**
  - Younger Adults: 4.39 (3.9)
  - Older Adults: 3.49 (1.7)

- **Apparatus and Paradigm**
  - 19-in. ViewSonic P225f monitor set to a resolution of 1,280 x 768
  - Refresh rate: 120 Hz
  - Head-mounted eye-tracking system (SR Research Eye-Link II). Monitored right eye (500 Hz)
  - Three letters subtended 1° visual angle
  - Gaze-contingent boundary-change paradigm (Rayner, 1978)

- **Materials, Design, and Analysis**
  - 36 experimental items.
  - 3 (Word Position: SI, CF, SF) x 2 (Parapoeval Preview; valid, non-word) x 2 (Age: young, old) design.
  - Generalized Linear Mixed Effect Models (GLMM) with participants and items as crossed random effects.

Results: Word N+1

- **Early Effects of Wrap-up on the Preview Benefit**
  - Clause Wrap-up X Preview: FPD (p = .02).
  - Sentence Wrap-up X Preview: FDO (p = .14).

- **Late Effects of Wrap-up on the Preview Benefit**
  - Sentence Wrap-up X Preview: FPD (p = .08).

Conclusions

The findings from the current study suggest that this wrap-up effect is resource demanding and that semantic integration at sentence boundaries may be less efficient with age, thus, resulting in a greater cognitive-processing load.

We are grateful for support from the National Institute on Aging (Grant R01 AG013355). Contact Information: email: payne12@illinois.edu or eagls@illinois.edu

References


