

How the type of task shapes reading: Evidence from self-paced experiments

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Background: Self-paced reading has been widely used to study sentence processing, yet relatively little is known about how post-reading tasks influence reading-time measures. Although some evidence suggests that task type can affect reading behavior[1–5], systematic investigations specifically are still lacking.

Method: The current study addresses this gap by comparing three moving-window experiments using identical stimuli but different post-reading tasks. Exp1 used yes/no comprehension questions (N=248), Exp2 employed open-ended recall questions (N=258), and Exp3 asked participants for naturalness judgments on a 7-point Likert scale (N=257). We included six experimental types, each with 16 items: (i) Garden-path sentences: garden-path vs. controls; (ii) Plausibility: plausible vs. implausible items; (iii) Ungrammaticality (agreement violations): grammatical vs. ungrammatical; (iv) Gender interference: matched (interfering) gender vs. non-matched (non-interfering) gender; (v) Generic masculine ambiguity: sentences referring to gender-mixed vs. masculine-only referents; (vi) Focus: focused adjuncts vs. unfocused adjuncts. All stimuli were in Czech and adapted from prior research. See our OSF entry: <https://shorturl.at/nlzkH>.

Results: See Figure 1 for reading times (RTs) in the critical and spillover regions for the individual experiment types sorted by task. RTs were analyzed using Bayesian shifted log-normal mixed-effects models with fixed effects Condition × Task and maximal random structures for participants and items. We omit the posterior estimates and other values obtained from our Bayesian models for the sake of brevity in this abstract, but they are present in an analysis html file in the OSF repository (see the link above). In general, across all experimental types, RTs were the fastest in the judgment experiment, slower in yes/no experiment, and the slowest in recall experiment. Task interacted with Condition in selected experimental types. In the ungrammaticality condition (iii), in contrast to the recall and judgments experiments, we documented a reduced slowdown for yes/no questions experiment, likely because this task does not require explicit reflection on grammaticality, unlike the other two tasks. In the interference condition (iv), gender-based interference caused greater slowdowns in the recall and yes/no experiments, in contrast to the judgment experiment, arguably because the latter leads to greater focus on grammaticality over lexical content. We also analyzed how the type of task influences sentence wrap-up effects. Here, the relative ordering of reading speed flipped between tasks. While the recall experiment was still the slowest, the judgment experiment became either slower than or equal to the yes/no experiment.

Discussion: These findings indicate that the depth of sentence processing during self-paced reading is modulated by the nature of the task participants undertake after each sentence. Moreover, the sensitivity to linguistic phenomena varies depending on task demands. This study contributes methodologically to sentence processing research by demonstrating that established effects in self-paced reading can vary as a function of the secondary task, underscoring the importance of task selection in experimental design.

References

1. Swets, B. *et al.* Underspecification of syntactic ambiguities: Evidence from self-paced reading. *Memory & Cognition* **36**, 201–216 (2008).
2. Bader, M. & Meng, M. The misinterpretation of noncanonical sentences revisited. *Journal of Experimental Psychology: Learning, Memory, and Cognition* **44**, 1286–1311 (2018).
3. Chromý, J. & Tomaschek, F. Learning or Boredom? Task Adaptation Effects in Sentence Processing Experiments. *Open Mind* **8**, 1447–1468 (Dec. 2024).
4. Laurinavichyte, A. & von der Malsburg, T. Agreement attraction in grammatical sentences and the role of the task. *Journal of Memory and Language* **137**, 104525 (2024).
5. Berzak, Y. *et al.* OneStop: A 360-Participant English Eye Tracking Dataset with Different Reading Regimes. *Scientific Data* **12**, 1995 (Dec. 2025).

Figures and Tables



Figure 1: Mean and SEs of RTs per experimental type. Yes-no questions (Exp1) are in green, open-ended ones (Exp2) in blue and naturalness judgments (Exp3) in red.