Sensitivity of online scalar inferencing to context and to processing load

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## Scalar inferences and processing load

- Previous studies suggest that people are less likely to assign an upper-bounded interpretation to *some* under processing load *(De Neys & Shaeken, 2007; Dieussaert et al., 2011; Marty et al., 2013; Marty & Chemla, 2013)*

  - Making scalar inferences may require extra processing resources

- These studies, however, measured explicit judgments, making it difficult to separate the costs of realizing an inference from the costs of verifying upper-bounded meanings *(but see Marty & Chemla, 2013)* or to probe the time course at which effects arise online

- Present study: investigate the role of processing load on *implicit* inferencing in self-paced reading *(see Breheny et al., 2006; Bergen & Grodner, 2012; Politzer-Ahles & Fiorentino, 2013; Hartshorne & Snedeker, submitted)*

  - Manipulated the presence and nature of concurrent distractors during the reading task

Materials

- *Materials*: 48 target vignettes, contrasting Context (upper-bound vs. lower-bound) and Explicitness (*some* vs. *only some*):

  - *Some* vignette: **Mary was preparing to throw a party for John's relatives. / She asked John whether (*all of them/any of them*) were staying in his apartment. / John said that / some of them / were. / He added / that / the rest / would be / staying / in a hotel.**

  - *Only some* vignette: **Mary was preparing to throw a party for John's relatives. / She asked John whether (*all of them/any of them*) were staying in his apartment. / John said that / only some of them / were. / He added / that / the rest / would be / staying / in a hotel.**

    - **Faster reading times at *the rest* in upper-bound than lower-bound contexts** indicate that a scalar inference was realized in the former but not the latter

  - Fillers: 48 as above but without "the rest"; 48 with "all of" in the critical quantifier position (and without "the rest"); 48 with other quantifiers in the critical quantifier position
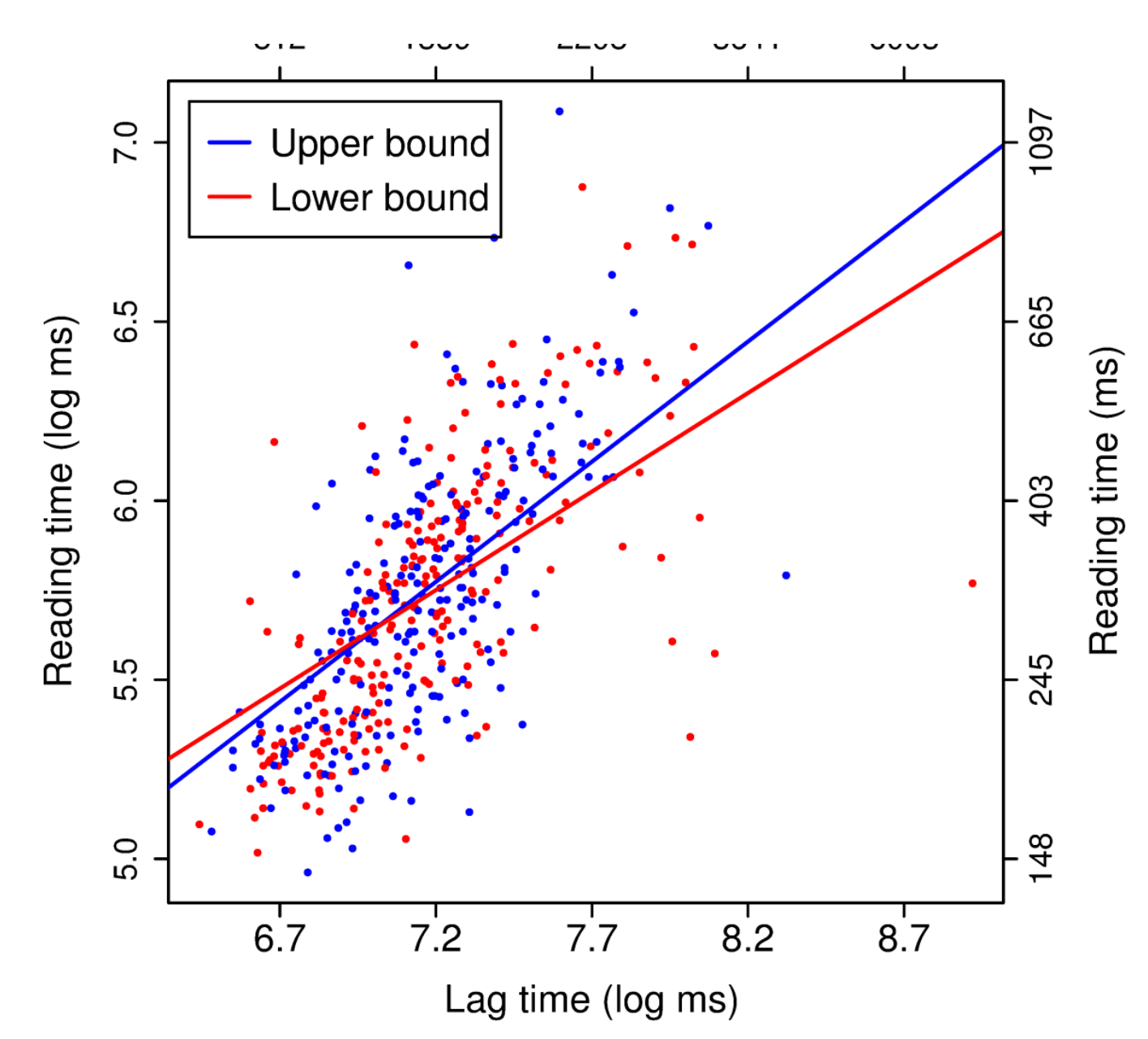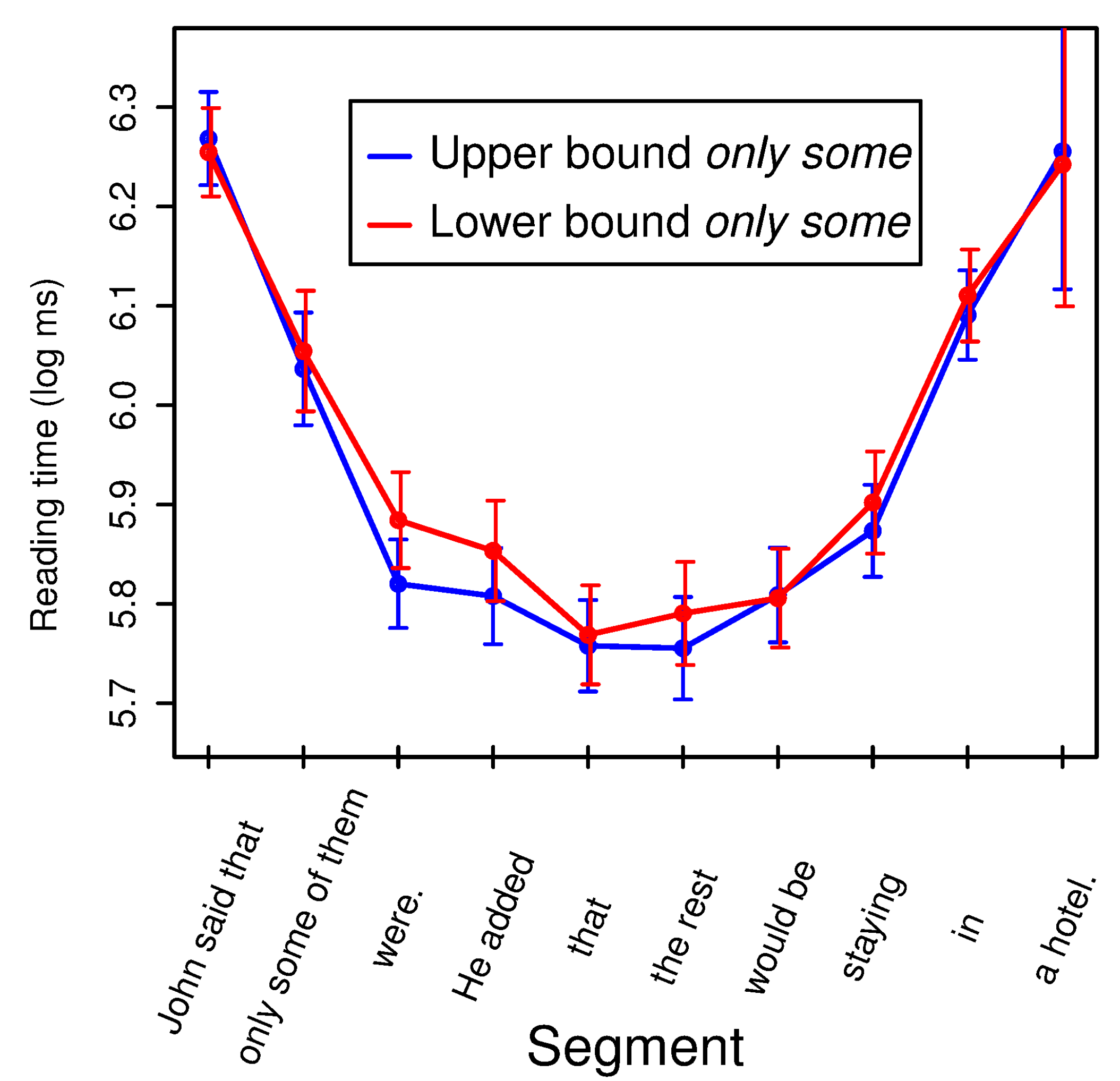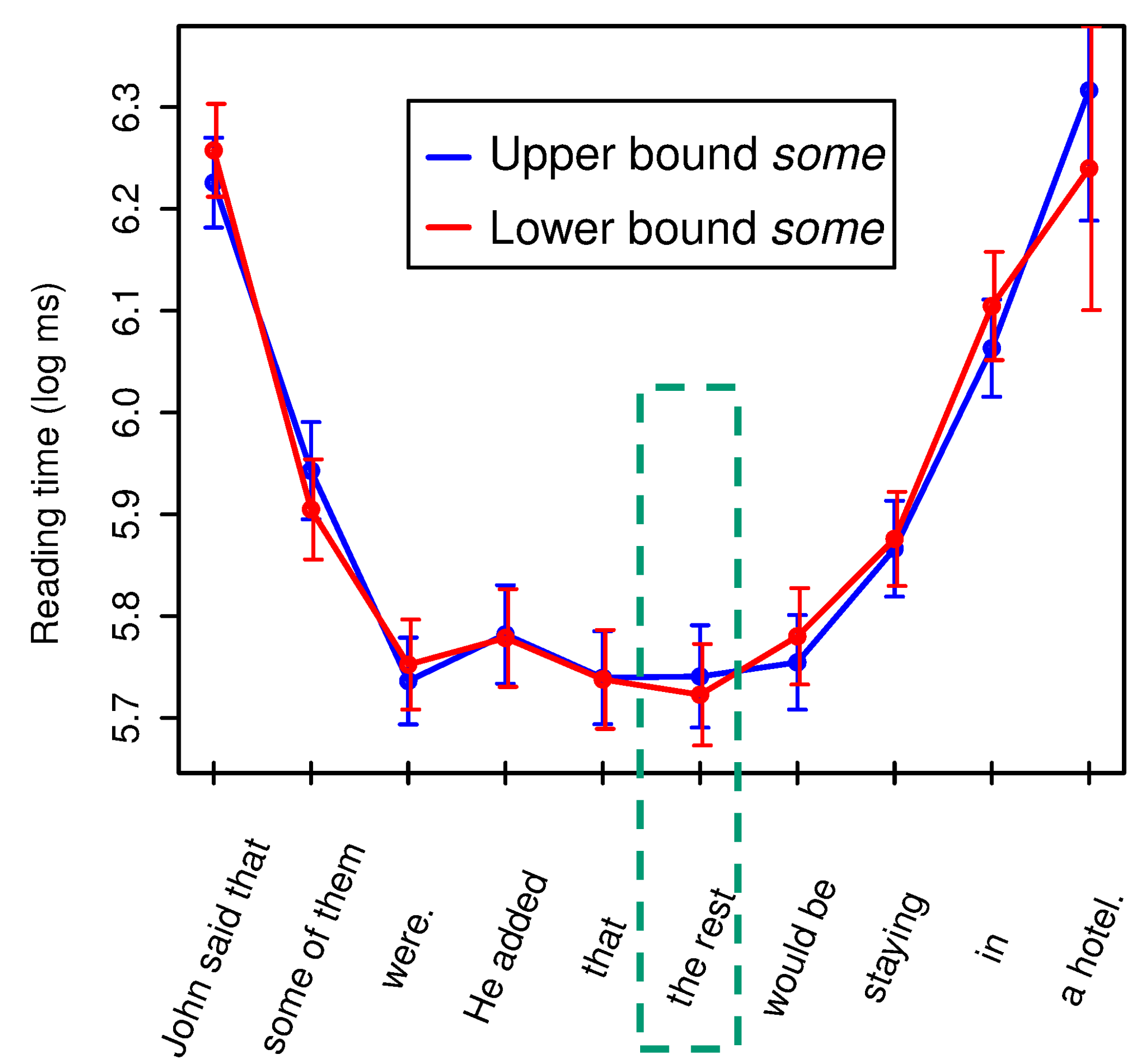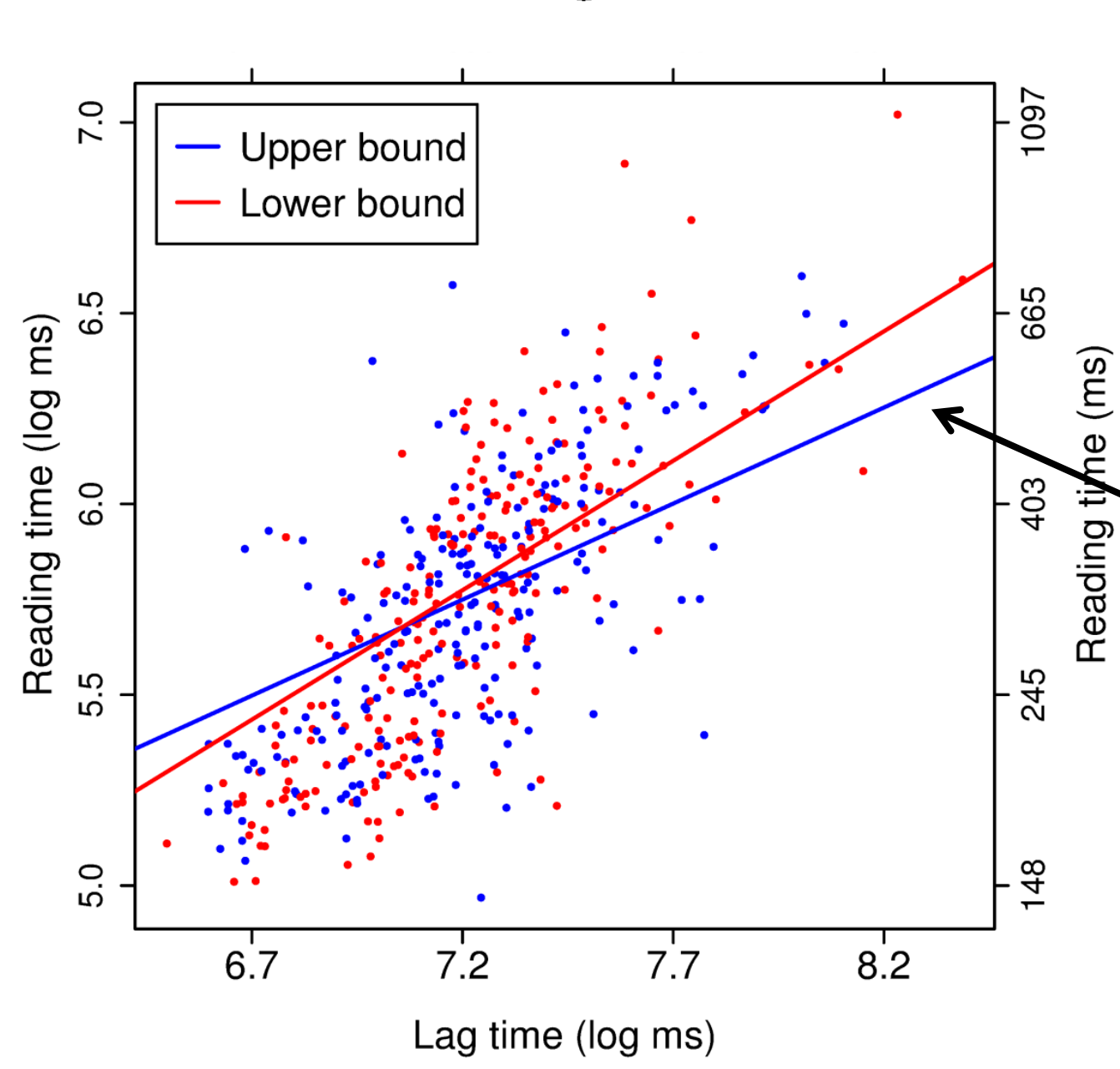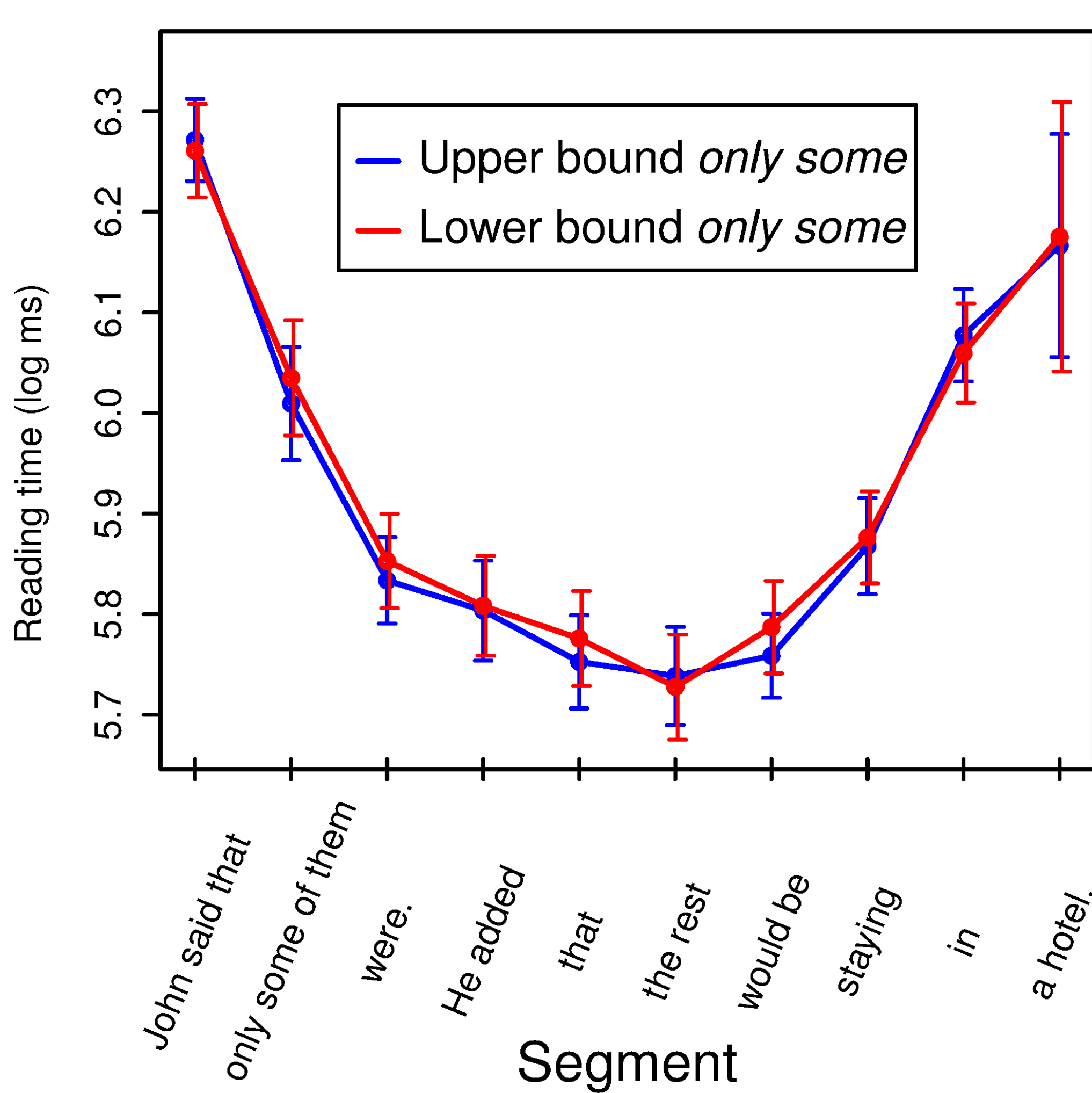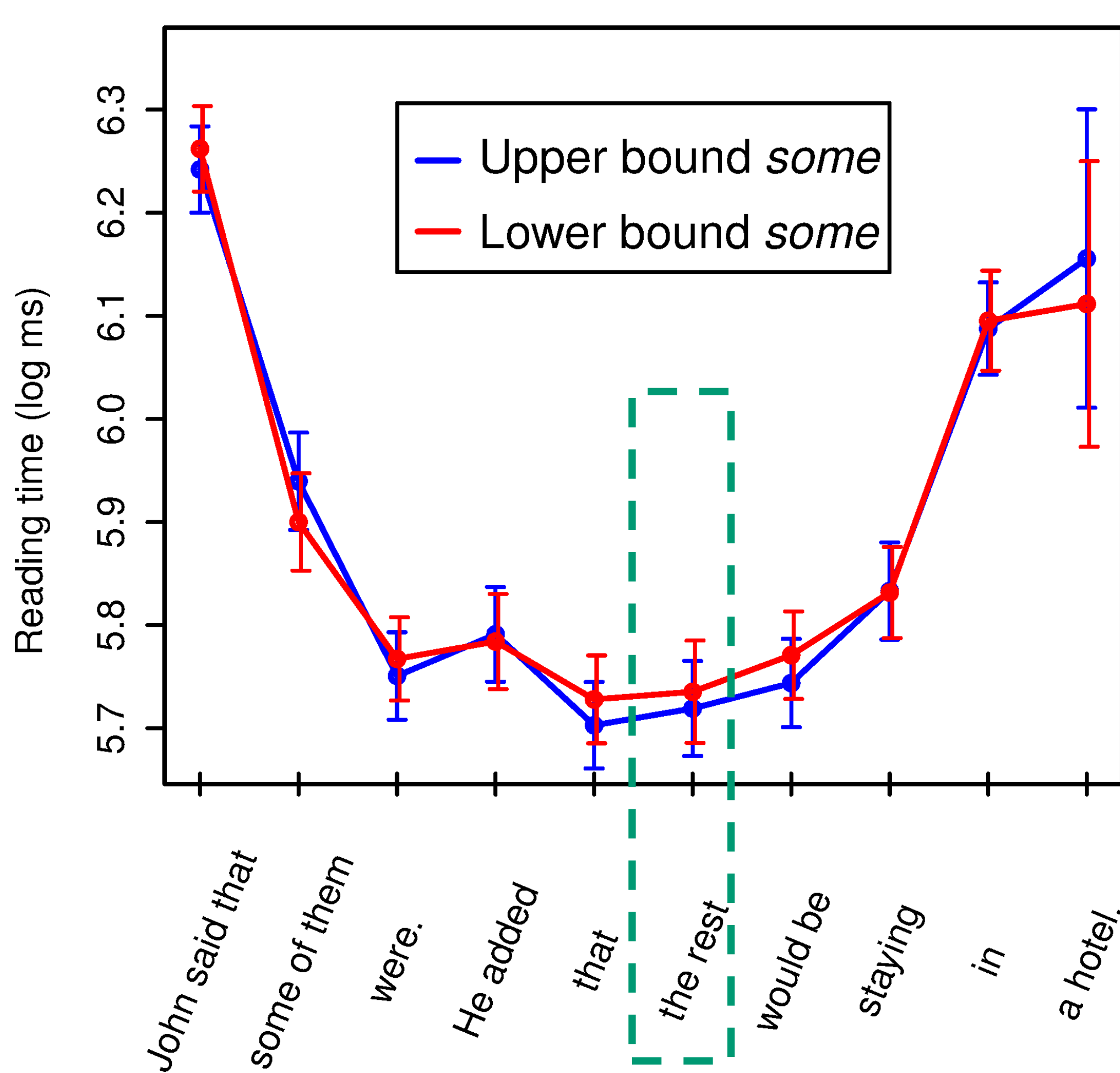
Experiment 1 (no concurrent distractor) results

- No concurrent processing load
- N=29
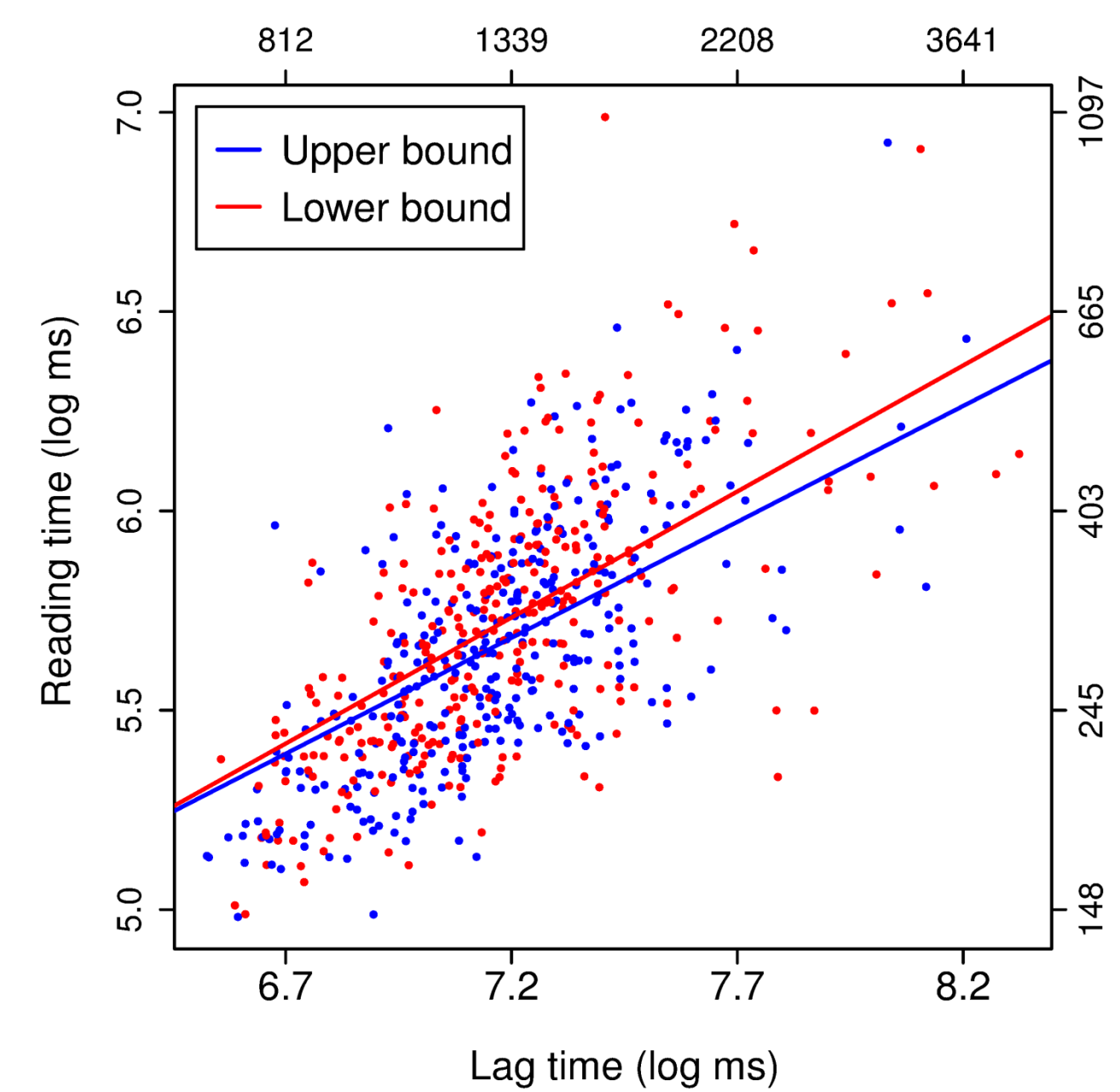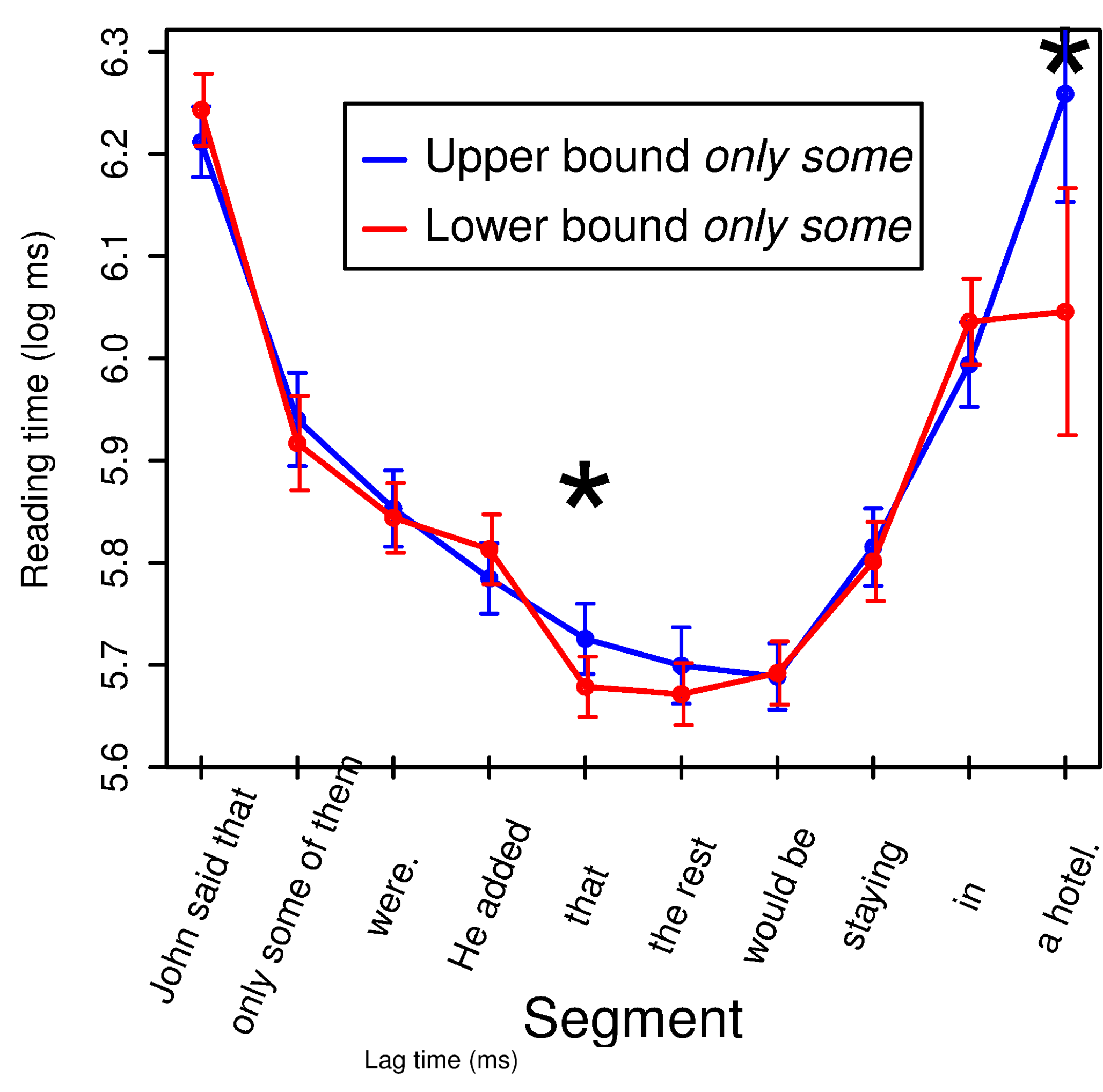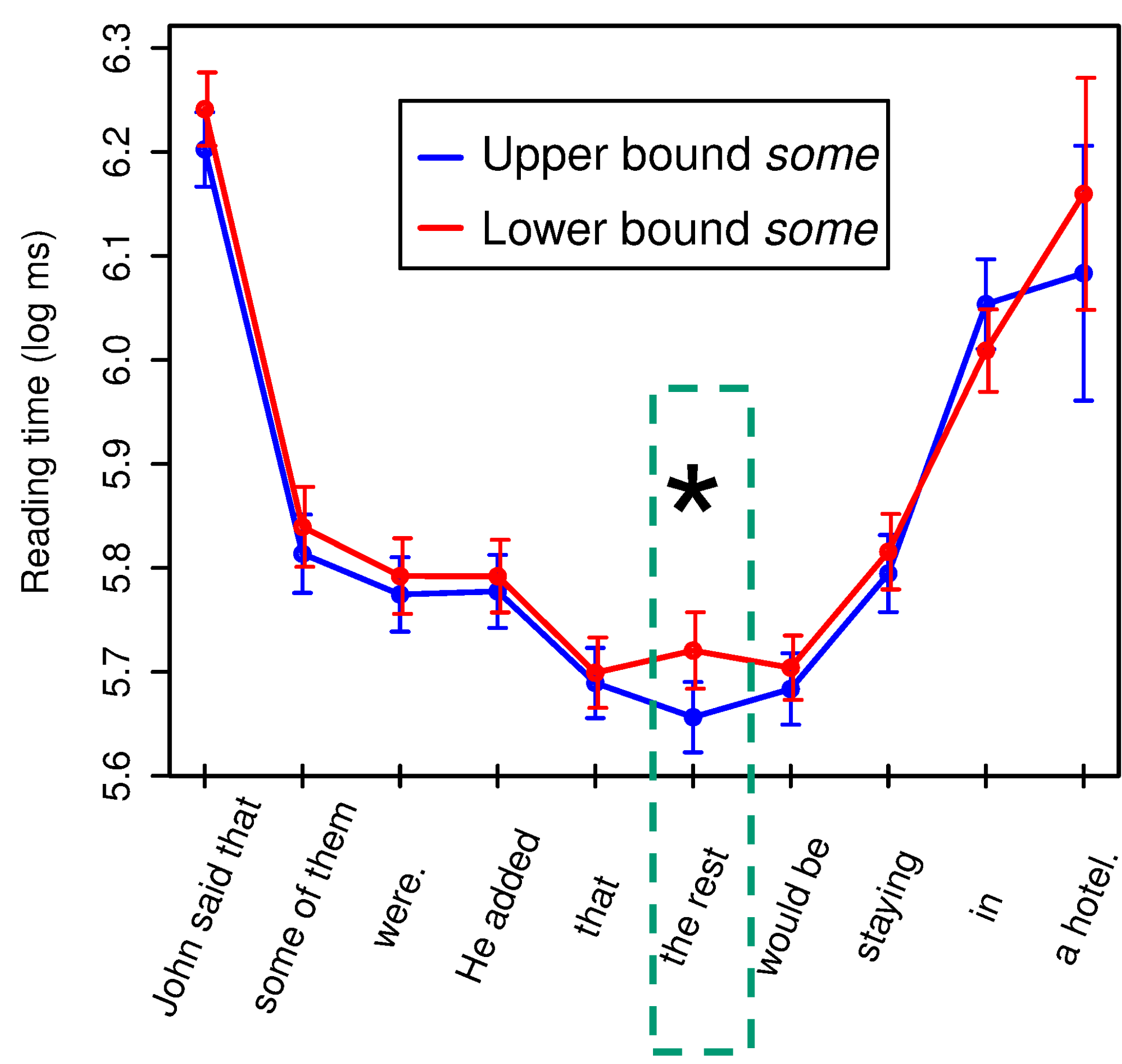
Experiment 2 (concurrent distractor) results

- Distracting background speech *(Martin et al., 1988)* consisting of either a string of nonwords (easier to ignore) or real words (harder to ignore)
- N=40

- Trend towards context effect at longer latencies, only with novel-word backgrounds

Discussion

- **Experiment 1 (no concurrent distractor)**
  - Inference was context-sensitive (as evidenced by context effect at *the rest*)
    - *some* was implicitly assigned an enriched interpretation in upper-bound but not lower-bound contexts

- **Experiment 2 (concurrent distractor)**
  - Context effect at *the rest* disappeared, suggesting that the context-sensitivity of inferencing in Experiment 1 depended on the availability of processing resources

- Exploratory analyses suggest that context effect emerged in novel-word background speech condition only when there was a long lag (slow reading time) between *some of them* and *the rest*.

- Difficult to determine on the basis of the present data alone whether it was inference *realization* or inference *cancellation* that required extra processing resources

- Future work:
  - Replicating the background vs. no-background manipulation within participants
  - Dot memory task
  - Manipulating epistemic state *(Bergen & Grodner, 2012)* rather than information-structural boundedness

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