

Context lets you flop and flip binomials

John R. Starr (jrs673@cornell.edu) & Marten van Schijndel

Cornell University

Previous research suggests that incremental processing is sensitive to both local syntactic context [1, 2, 3] and global discursive context [4, 5, 6]. However, much research in this domain focuses on syntactic processing involving parsing or ambiguity. In this project, we examine whether context influences other kinds of processing by investigating English binomials (e.g. *salt and pepper*). Prior work on binomials has shown that binomials often display ordering preferences (*#pepper and salt*) that can be motivated by both frequency of experience [7, 8, 9] and abstract linguistic knowledge [7, 10] during processing, though these studies do not examine context. To determine how different layers of context modulate non-syntactic judgments, we conducted two self-paced reading studies that placed binomials of PREFERRED ORDER or DISPREFERRED ORDER (ORDER) into the subject position of a MATRIX or EMBEDDED clause in a sentence (FRAME) that occurs with NO CONTEXT or AFTER CONTEXT (CONTEXT); see Figure 1 for an item. **Experiment 1** (N=59) tested 18 irreversible binomials from prior work (>96% preferred order in forced-choice norming study [N=30]). Following [5], we fit linear mixed-effects models to predict subject-specific residualized reading times (RTs) of individual positions within the critical region and across the total critical region, with full interaction effects of ORDER, FRAME, and CONTEXT, and a random intercept for item; see Figures 2 and 4 for results. We find an effect of ORDER in the second spillover word in the MATRIX x NO CONTEXT condition; despite prior work and our norming study suggesting that these binomials are *irreversible* when presented in isolation, significant RT differences between orders do not surface for any position when the binomial is syntactically or discursively embedded, nor do they arise across the total critical region for any condition. **Experiment 2** (N=36) tested 24 nonce-word binomials (e.g. *blim and blam*, *pag and frappy*; >70% preferred order in forced-choice norming study [N=30]). Experimental protocol and statistical modeling were identical to Experiment 1; see Figures 3 and 4 for results. We find a significant effect of ORDER in the second word of the binomial, an effect driven by the MATRIX x NO CONTEXT condition. Again, despite prior work and our norming study reporting ordering preferences for nonce binomials that are read in isolation, we do not find any other significant positional RT differences between orders, nor any RT differences across the total critical region in any condition. **Discussion.** We show that binomial ordering preferences are sensitive to both local and global context: preferences arise only when binomials are not embedded syntactically or discursively. Broadly, our findings suggest that the processor's judgments for phenomena in isolation (or in single sentences) may not generalize. We argue that future research should test phenomena in multiple contexts to ensure their results are robust.

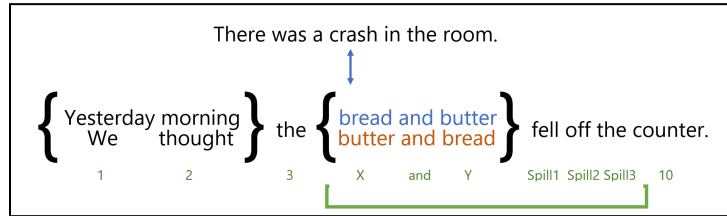


Figure 1: Sample item. Arrow denotes CONTEXT types. Leftmost brackets denote FRAMES.

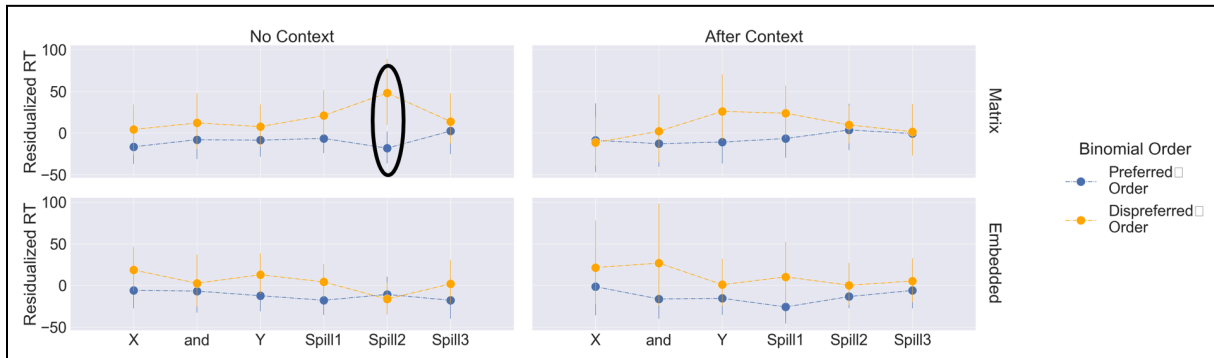


Figure 2: Experiment 1 results. Ordering preferences are circled.

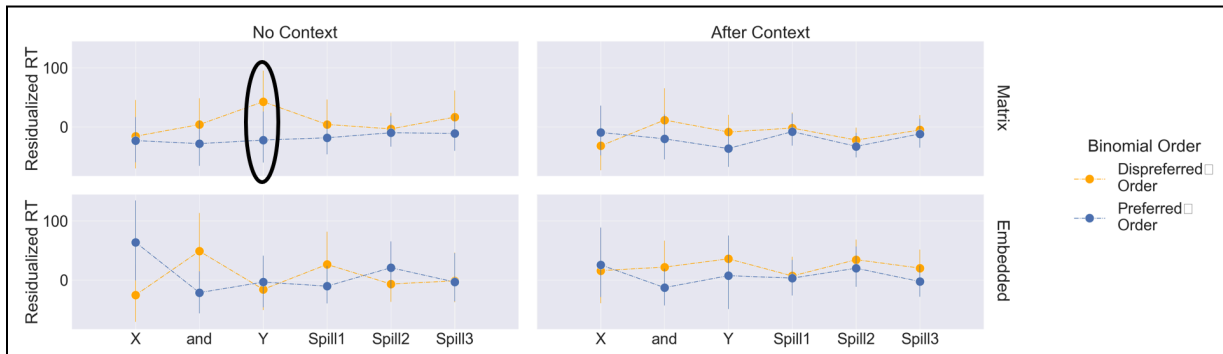


Figure 3: Experiment 2 results. Ordering preferences are circled.

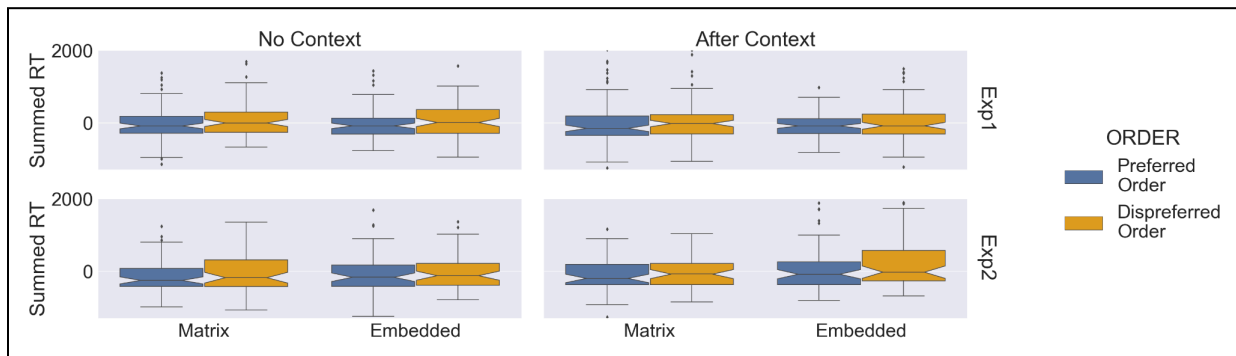


Figure 4: Residualized RTs across critical region for experiments. Notches indicate 95% CIs.

- [1] Gibson (1998). [2] Shetreet et al. (2009). [3] Bader & Meng (1999) [4] Crain & Steedman (1985). [5] Warner & Glass (1987). [6] Carter & Hoffman (2024). [7] Morgan & Levy (2016). [8] Siyanova-Chanturia et al. (2011). [9] Chantavarin et al. (2022). [10] Green & Birdsong (2018).