

## Contrastive focus constructions hurt memory for sentence meaning

Listeners frequently encounter imperfect speech. Speakers start and stop, and restart only to correct themselves. To accommodate this imperfect input, listeners may use a greedy (“good-enough”) strategy to incrementally build up sentence parses and discourse representations (Ferreira, Bailey, & Ferraro, 2002; Ferreira, 2003). A good-enough parsing strategy will occasionally lead to comprehension errors, which are especially notable in temporarily ambiguous sentences like “While Anna dressed the baby...spit up on the bed.” Here we ask whether there are longer-term consequences for memory beyond the initial (mis)-interpretation of a sentence. Specifically, we ask whether certain grammatical constructions that are known to influence comprehension errors also influence memory. Good-enough processing theories potentially predict *worse* memory for sentences containing focus constructions, while attention-based theories (e.g. Fraundorf, Watson, & Benjamin, 2010) would predict better memory. We were specifically interested in testing this with two different focus constructions (e.g. “not X but Y” and “Y, not X”), the word orders might affect memory differently due to primacy effects.

**Methods.** 90 individuals participated for course credit. In this experiment, on each trial participants read preambles like “At the back of the closet he found a...” one word at a time. The stimuli were taken from Karimi, Brothers, & Ferreira (under review). Words were presented at the center of the screen for a minimum of 325 milliseconds (ms), plus 100ms for each character in the word. Between trials there was a pause of 300ms before the next sentence began. We manipulated whether the material following the preamble contained one of two **focus constructions** (“not a robe/safe but a safe/robe” or “a robe/safe, not a safe/robe”) with **single NPs** (“robe” [NP1] or “safe” [NP2]). Each block was composed of 14 trials (containing 7 critical sentences and 7 filler sentences on average), with 6 blocks in total (=42 critical and filler trials). At the end of each block, participants performed a two-alternative forced-choice recognition memory task (2AFC) in which they provided button responses to questions such as, “What did we take a picture of?”, selecting between two answers (“sheep” or “fence”). We predicted that false memory would be greater for the focus constructions than fillers due to good-enough processing. We also predicted that “Y, not X” (FNP1) would lead to better memory than “not X, but Y” (FNP2) because initial information tends to be better remembered (primacy effects).

**Analyses.** We built logit mixed effects models in lmerTest to analyze the odds of selecting the correct response (e.g. “sheep”) for each sentence during the memory test, with maximal random intercepts and slopes by item and random intercepts only by participant, testing for the effect of condition (Focus Construction versus Single NP) relative to memory for Filler sentences. **Both types of focus constructions showed significantly worse memory** (all  $z < -3.00$ , all  $p < .001$ ) with no significant difference between the focus constructions ( $z = -1.55$ ,  $p > .1$ ). Single NP sentences (NP1 and NP2) were remembered as well as Fillers. Results are visualized in Figure 1.

**Conclusions and future directions.** The presence of syntactic focus constructions appears to have detrimental impacts on memory for language. Future work will need to compare focus constructions (“found not an X but a Y”) to syntactic structures containing both referents (“found an X and then a Y”) to test whether poorer memory arises from competition at test. It will also be important to test whether greater discourse context modulates this effect. The present work also highlights the role of language processing on memory, showing that readers do not necessarily build completely veridical representations of propositions that prevent memory errors.

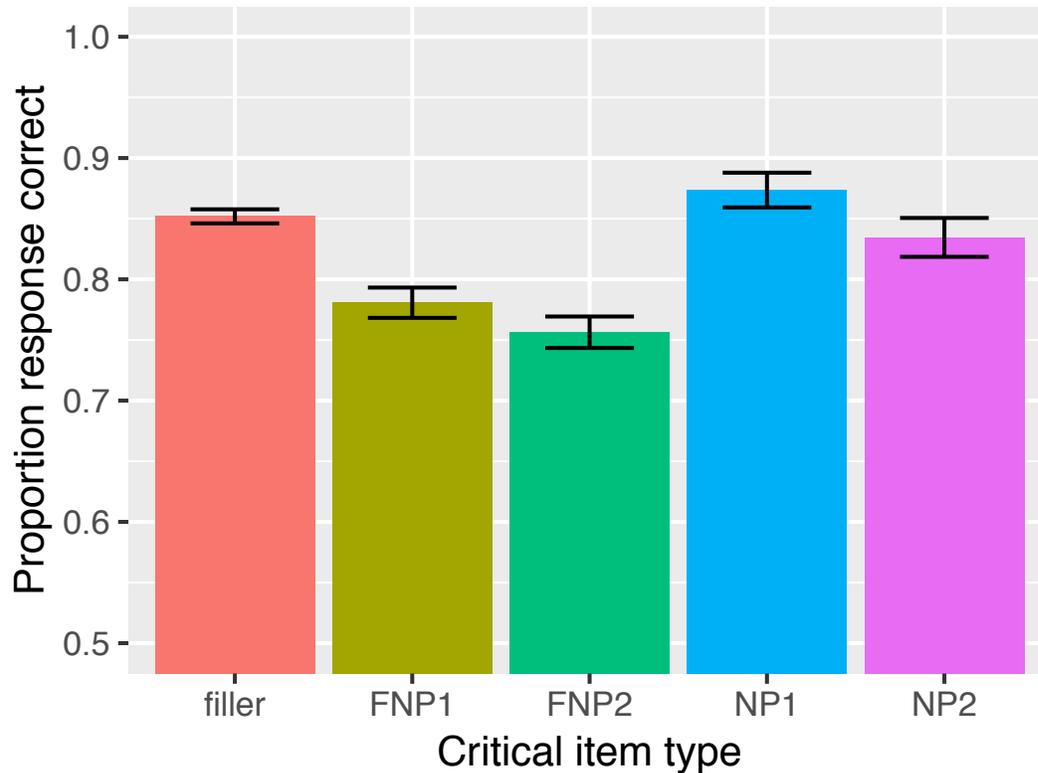


Table 1: Proportion of correct answers by sentence condition, by-item standard errors. FNP1 = “a safe, not a robe”. FNP2= “not a robe, but a safe”. NP1 = “a safe”. NP2 = “a robe”.

### References:

- [1] Ferreira, F., Bailey, K. G., & Ferraro, V. (2002). Good-enough representations in language comprehension. *Current Directions in Psychological Science*, 11, 11-15.
- [2] Ferreira, F. (2003). The misinterpretation of noncanonical sentences. *Cognitive Psychology*, 47, 164-203.
- [3] Fraundorf, S. H., Watson, D. G., & Benjamin, A. S. (2010). Recognition memory reveals just how CONTRASTIVE contrastive accenting really is. *Journal of Memory and Language*, 63, 367-386.
- [4] Karimi, H., Brothers, T., & Ferreira, F. (under review). Phonological versus semantic prediction in focus and repair constructions: No evidence for differential predictions.