

# Associative vs. Error-Driven Accounts of Learning in Word-Meaning Priming

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## Introduction

Interpretation of ambiguous words (words with multiple meanings, e.g. ball) is biased towards the most frequent meaning (e.g. round toy).

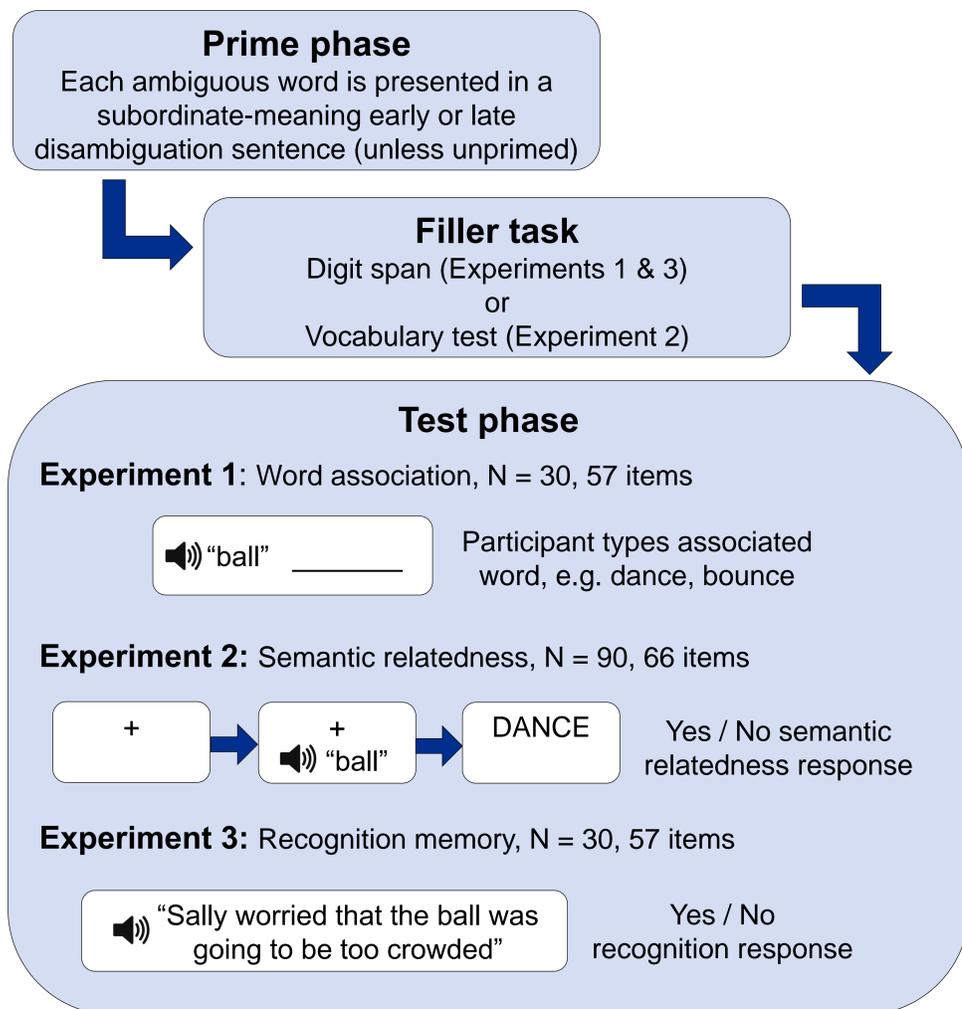
Word-meaning priming is the observation that encountering an ambiguous word in the context of its subordinate meaning (e.g. dancing party) can shift interpretation of the word presented in isolation around 20 minutes later (Rodd et al. 2013).

We tested whether word-meaning priming involves associative or error-driven learning by examining interpretations of ambiguous words that were previously heard in either early or late disambiguation subordinate-meaning sentences.

### Hypotheses

1. **Associative** learning predicts greater priming when **disambiguating context** is given *before* the **ambiguous word** (**early disambiguation**) due to co-activation of appropriate (subordinate) meaning and ambiguous word.  
e.g. "Sally worried about how **crowded** the **ball** would be."
2. **Error-driven** learning predicts greater priming when the **disambiguating context** is given *after* the **ambiguous word** (**late disambiguation**) due to the error signal that results from initially retrieving the dominant meaning.  
e.g. "Sally worried that the **ball** was going to be too **crowded**."
3. If effects of disambiguation type are due to differences in explicit memory for priming sentences, then this difference should be reflected in a recognition memory test.

## Methods

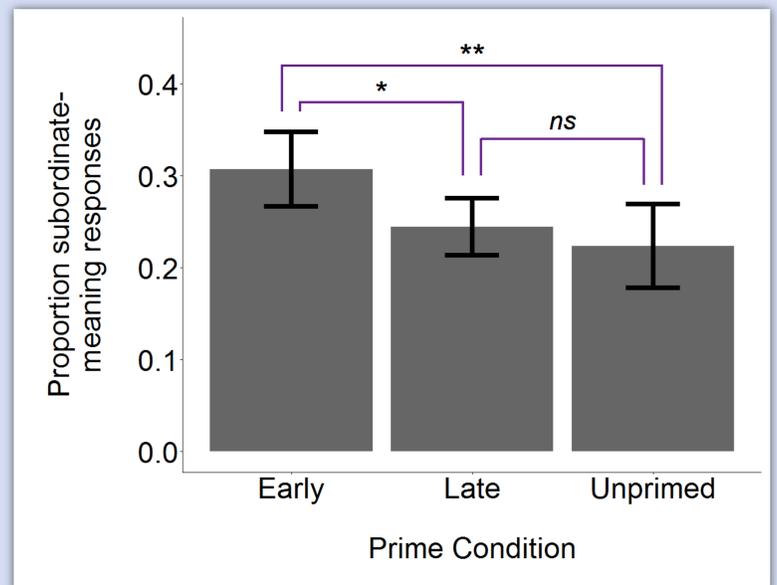


## Discussion

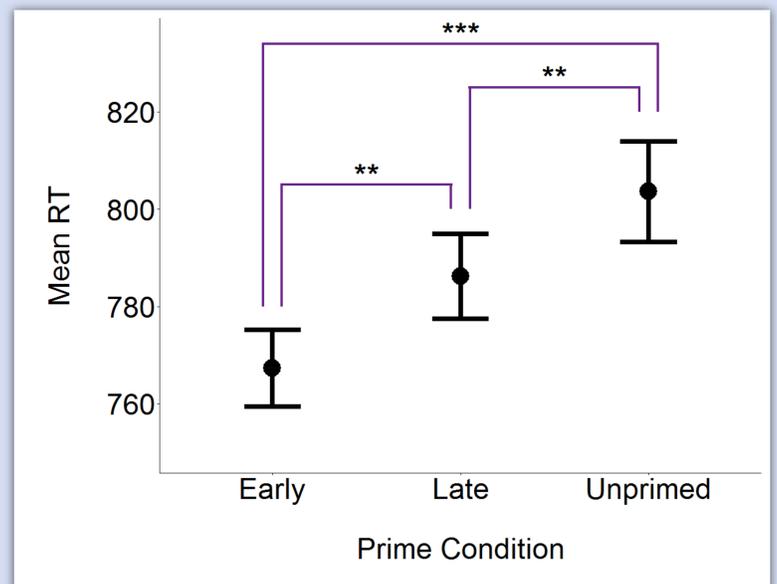
- Greater priming for early than late disambiguation sentences using word association (Expt.1) and speeded semantic relatedness (Expt. 2).
- No significant difference in recognition memory between early- and late-disambiguation sentences (Expt. 3).
- Word-meaning priming appears to be driven more by *associative* than *error-driven* learning, and not by *explicit memory* for priming sentences.
- Results are consistent with previous finding that word-meaning priming is not speaker-specific (Rodd et al. 2013), thus this effect likely reflects changes to abstract lexical-semantic representations.

## Results

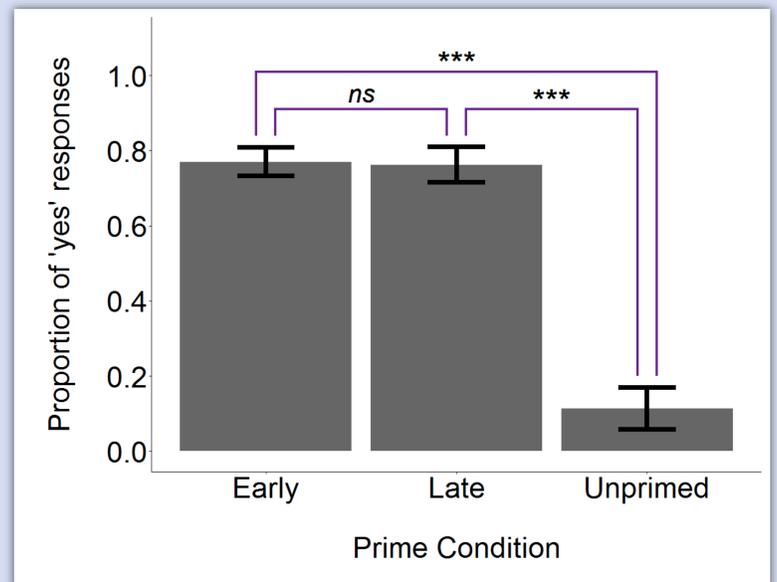
Data analysed with mixed effects models using the full by-item and by-subject random effects structures (Barr et al., 2013). Plots show subject means and 95% within-subject CIs, \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .



Experiment 1: Proportions of word association responses that were consistent with subordinate meaning in priming sentence. Ambiguous words were unprimed or primed with an early or late disambiguation sentence.



Experiment 2: RTs for correct semantic relatedness decisions. Ambiguous targets were unprimed or primed with an early or late disambiguation sentence. Probe words were related to subordinate meanings.



Experiment 3: Proportions of 'yes' responses in a recognition memory test for early and late disambiguation priming sentences and unprimed sentences.

## References

- Barr, D.J., Levy, R., Scheepers, C., & Tily, H.J. (2013). Random effects structure for confirmatory hypothesis testing: Keep it maximal. *Journal of Memory and Language*, 68(3), 255-278.
- Rodd, J.M., Cutrin, B.L., Kirsch, H., Millar, A., & Davis, M.H. (2013). Long-term priming of the meanings of ambiguous words. *Journal of Memory and Language*, 68(2), 180-198.