The time-course of word-meaning priming and semantic priming

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Introduction

- Many English words have multiple meanings
- Word-Meaning Priming: Exposure to subordinate meanings can bias listeners to that meaning in future (Rodd et. al. 2013, 2016)
- Rodd et. al. (2013): Word-meaning priming (after 20 minutes) is driven by the specific ambiguous word, not by more general semantic priming
- **Aim of Current Experiment:** Replicate Rodd et. al. (2013; Experiment 3; N=42)
- **Hypotheses**
  1. Significant word-meaning priming at short (3 minutes) and long (20 minutes) delays
  2. Significant semantic priming at short delay but not after a long delay
  3. Significantly greater word-meaning priming than semantic priming after long delay

For example: "ruler"

dominant meaning

subordinate meaning

Methods

- Same design and stimuli used by Rodd et. al., (2013; Experiment 3)
- **Participants**: N=180 (based on power simulations using previous data; 80%). Native English speakers. Recruited online
- **3x2 design**: 3 Priming conditions (word-meaning, semantic & unprimed); 2 Delay conditions (short & long)
- **Stimuli**: 54 ambiguous words and 54 low-ambiguous words
  27 sentences in each semantic relatedness task
  27 ambiguous words tested in each word association task

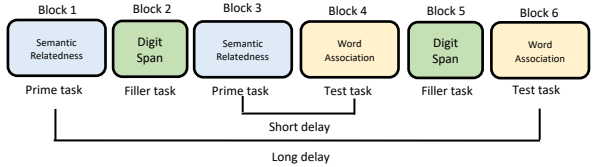

Figure 1. Structure of the experiment

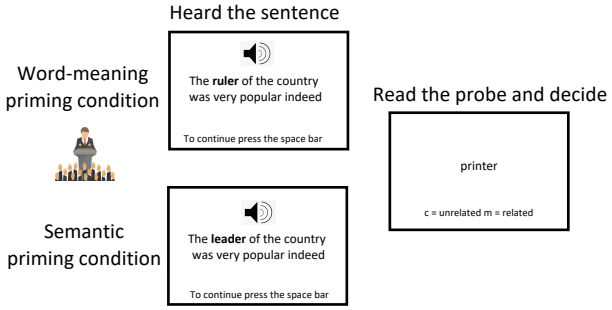

Figure 2. Semantic relatedness (Prime task)

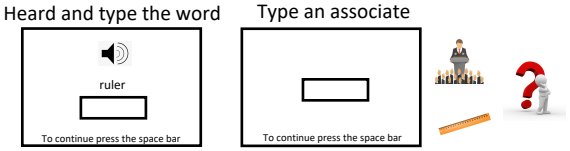

Figure 3. Word Association (Test task)

Associates related to the subordinate meaning (consistent associates) and those to any other meaning (inconsistent associates) of ambiguous words were analysed. Other responses were excluded from the analysis

Results

Word Association Task

Descriptives

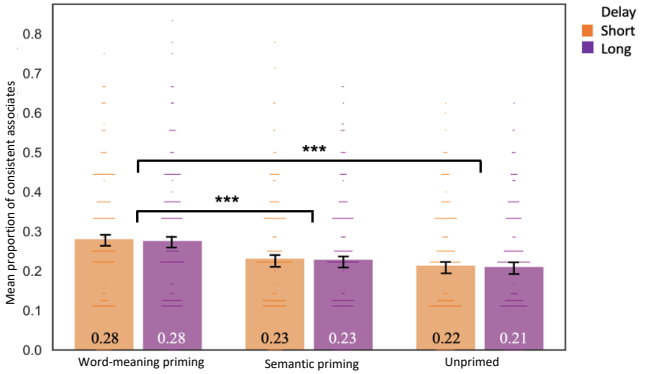

Figure 4. Mean proportion of consistent associates for each condition. Dots show the mean proportion of consistent associates for each subject in each condition

Linear Mixed-Effects Models

3 Subsets analysis

1.Word-meaning Priming vs Unprimed
Significant main effect of word-meaning priming, $p < 0.001$
Non-significant main effect of Delay, $p = 0.725$
Non-significant interaction (Priming x Delay), $p = 0.949$
- **Replicated word-meaning priming effect at both delays**

2.Semantic Priming vs Unprimed
Non-significant main effect of semantic priming, $p = 0.061$
Non-significant main effect of Delay, $p = 0.803$
Non-significant interaction (Priming x Delay), $p = 0.961$
- **No evidence of semantic priming at either delay**

3.Word-meaning Priming vs Semantic Priming
Significant main effect of word-meaning priming, $p < 0.001$
Non-significant main effect of Delay, $p = 0.663$
Non-significant interaction (Prime-type x Delay), $p = 0.999$
- **Word-meaning priming effect larger than semantic priming effect**

Conclusions

Take home messages:
- Word-meaning priming is driven by the specific ambiguous word
- Consistent with current theoretical accounts of word-meaning priming:
  1. Immediate alteration account (Rodd et. al. 2013): Direct modification of the stored lexical-semantic knowledge
  2. Episodic context account (Gaskell et. al. 2019): A temporary episodic trace of sentence meaning acts as additional source of information alongside permanent lexical knowledge

References

Rodd, J. M., Lopez Cutrin, B., 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. https://doi.org/10.1016/j.jml.2012.08.002
Rodd, J. M., Cai, Z. G., Betts, H. N., Hanby, B., Hutchinson, C., & Adler, A. (2016). The impact of recent and long-term experience on access to word meanings: Evidence from large-scale internet-based experiments. *Journal of Memory and Language*, *87*, 16–37. https://doi.org/10.1016/j.jml.2015.10.006
Gaskell, M. G., Cairney, S. A., & Rodd, J. M. (2019). Contextual priming of word meanings is stabilized over sleep. Cognition, 182, 109–126. https://doi.org/10.1016/ j.cognition.2018.09.007