

# Time-course of activation of dominant and subordinate homograph meanings in dual-context sentences

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## Introduction

Lexical ambiguity is the phenomenon in which words of the same form— sound or spelling— have different meanings. Words that sound the same are homophones, and words that are spelled the same are homographs. In most discourse, the ambiguous word is only intended to have a single meaning and it can be “resolved” to that meaning with support from context. Studying this process of resolution provides insight into the nature of lexical access, how we activate and select word meanings (Twilley et al. 1994).

Lexical ambiguity is often used in puns. However, in puns, the homograph is not meant to be resolved. Rather, both meanings are supported by the context. This experiment asks the question of how the meanings of words are accessed in such discourse. Do the patterns resemble that of when there is no support for either meaning, when there is also equal support for the meanings, or does something different occur? Are both meanings facilitated, or does the dual support cause the meanings to compete, lessening activation?

To answer this, a cross modal priming experiment will be employed that crucially compares the time course of lexical access when there is contextual support for both meanings of the homograph to that of when there is no contextual support. Experiment 1 will be a pretest to check our methodology, to ensure that the effects we expect to see arise from the ambiguities and not their contexts. The actual hypothesis will be tested in Experiment 2.

## Methods

### Materials

- Experimental stimuli to be used in Experiment 2 were created by putting a **HOMOGRAPH** in contexts supporting one, both, or neither of its meanings.
- All homographs used were biased, meaning that one meaning has a higher frequency than the other (Twilley et al. 1994).
- Visual probes related to the homograph’s **dominant** or **subordinate** meaning, or **unrelated** to either were selected based on a list of homograph meanings (Twilley et al. 1994)
- Control stimuli to be used in Experiment 1 were created by replacing the homograph with a **control** target.

Sentences fall into 4 categories:

#### **Dominant: Biased towards the more frequent homograph meaning**

The chemistry whiz who wanted to be a **pilot** loved reading books about **PLANES/cats**.

#### **Subordinate: Biased towards the less frequent homograph meaning**

The **geometry** whiz who wanted to be a professor loved reading books about **PLANES/cats**.

#### **Neutral: Biased towards neither homograph meaning**

The physics whiz who wanted to be a professor loved reading books about **PLANES/cats**.

#### **Dual: Consistent with both homograph meanings**

The **geometry** whiz who wanted to be a **pilot** loved reading books about **PLANES/cats**.

Possible probes: **jet** / **flat** / **leg**

## Methods (cont’d)

### Procedure

Both experiments will use a cross modal lexical decision paradigm:

1. Subjects hear a sentence ending in a **target**.
2. At a certain point after the target’s presentation, a visual probe is presented.
3. Subjects must decide if the probe is a word, and reaction time is recorded.

The cross-modal priming methodology is based on the theory that the amount of time to make this “lexical decision” should be shorter for a word related to an activated meaning than for an unrelated word or for the same word unprimed.

Thus, when the **dominant** homograph meaning is accessed, it should take less time to make a lexical decision on a word related to the **dominant** meaning.

Example:

1. “The **geometry** whiz who wanted to be a **pilot** loved reading books about **PLANES**.”
2. Probe: **jet** @ 0, 300, or 700 ms after the beginning of the **target**
3. **WORD** vs. **NONWORD**

### Experiment 1: Pretest

18 subjects will perform the task using 16 test sets with the **control target**.

- 3 contexts (dual, dominant, subordinate)
- 2 probes (dominant, subordinate)
- 1 stimulus onset asynchrony (SOA; 0 ms)

### Experiment 2: Context Comparison

48 subjects will perform the task using 12 sets with the **HOMOGRAPH target**

- 4 contexts (dual, dominant, subordinate, neutral)
- 2 probes (dominant, subordinate)
- 3 SOAs (0, 300, 700 ms)

12 stimuli lists will be created. 2 subjects will see each list at each SOA.

- 8 practice stimuli
- 12 experimental stimuli balanced across context and probe type
- 48 fillers, 18 with word and 30 with pseudoword probes

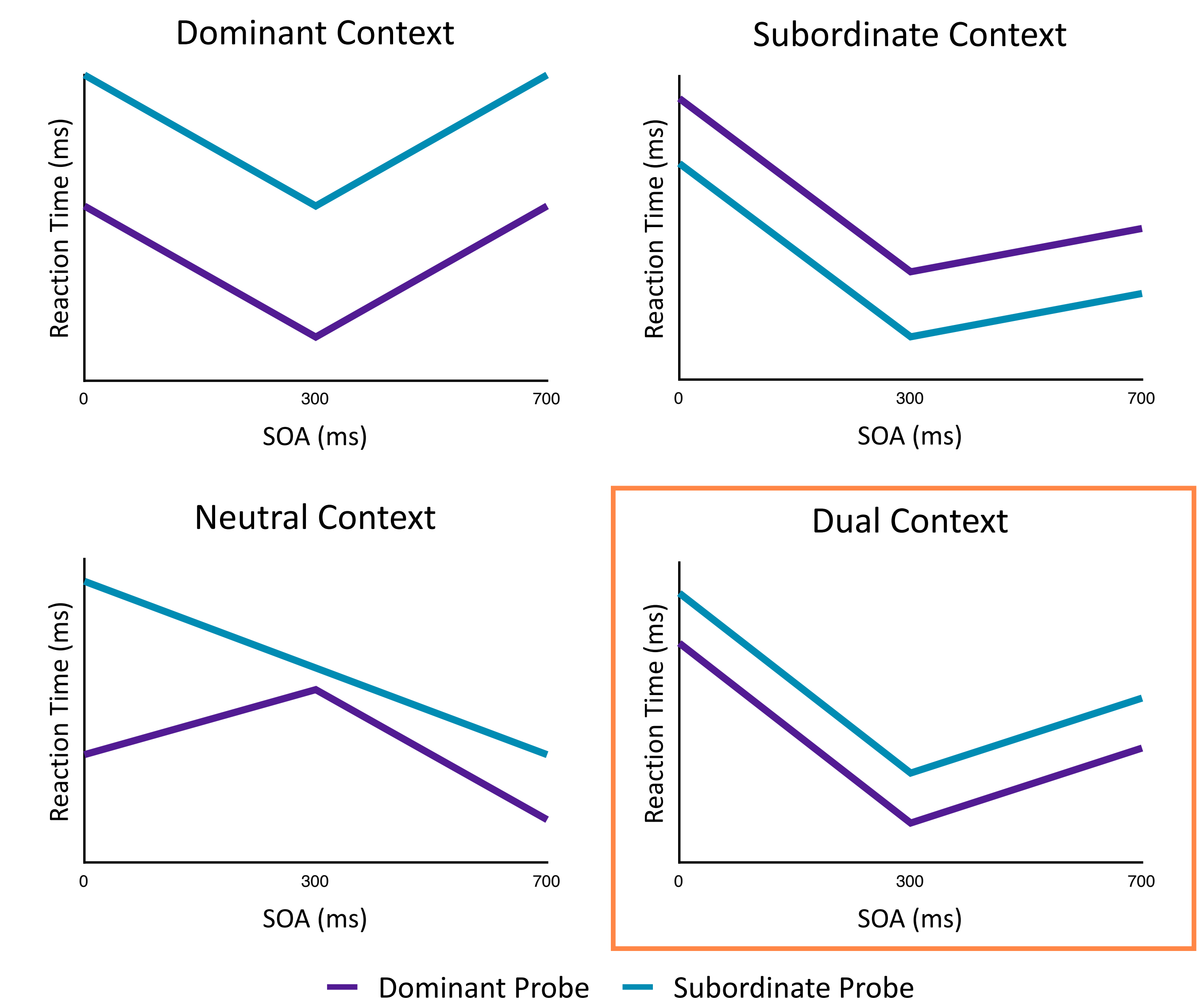
For both experiments, both context and probe type will vary within subjects. SOA will vary between subjects.

## Predictions

- According to the widely accepted reordered access model of lexical ambiguity resolution (Duffy et al. 1988), the order of meaning access is determined by both meaning frequency and contextual salience.
- We expect to replicate results seen in past lexical ambiguity experiments for the dominant, subordinate, and neutral contexts (Simpson & Kreuger, 1991).
- The novel predictions involve the **dual context**. More explicitly, it is predicted that both meanings will experience facilitation from the contextual support.

## Predictions (cont’d)

• All this considered, the following predictions can be made over the 4 contexts:



## Conclusion

If results are as predicted and the dual context condition does not mimic the dominant or neutral context conditions, it will be further support for the reordered access model (Duffy et al. 1988), because it would be clear that both context and meaning frequency affect access. In addition, these results will provide insight into the nature of the simultaneous access of meanings.

This experiment will also pave the way for future experiments that will further compare the processing of puns to other discourse containing lexical ambiguity and investigate whether these differences contribute to the humorousness of puns.

## References and Acknowledgments

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