Doing a production task encourages prediction:

Evidence from interleaved object naming and sentence reading

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Introduction

Prominent theories of predictive language processing assume that comprehenders use their language production system to anticipate upcoming linguistic input (prediction-by-production; Dell & Chang, 2014; Pickering & Garrod, 2013).

Research question

Here were looked at the converse case: Does a task set including production in addition to comprehension encourage prediction, compared to a task only including comprehension?

The same **predictable** (n = 40) and **non-predictable** (n = 40) sentences were used in three experiments (mean cloze probability for the targets = .39, range: .06-.8).

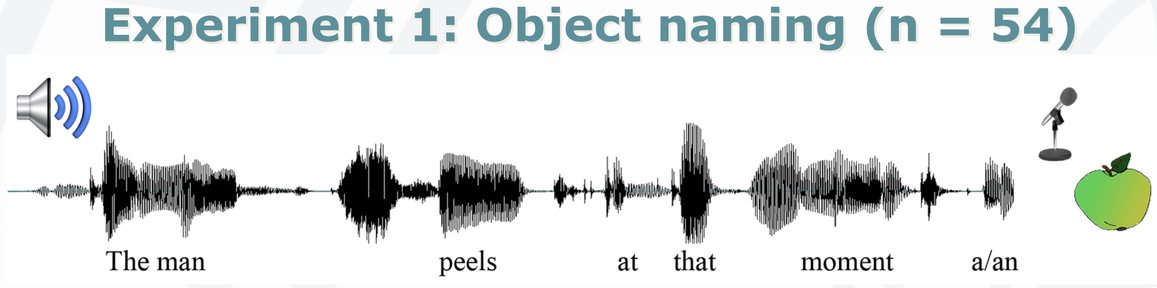
Dutch example: **"De man *schilt/tekent* op dit moment een *appel*"** (The man *peels/draws* at that moment an *apple)*

Hypothesis

Targets embedded in predictable sentences are named and read faster relative to the same targets embedded in non-predictable sentences.

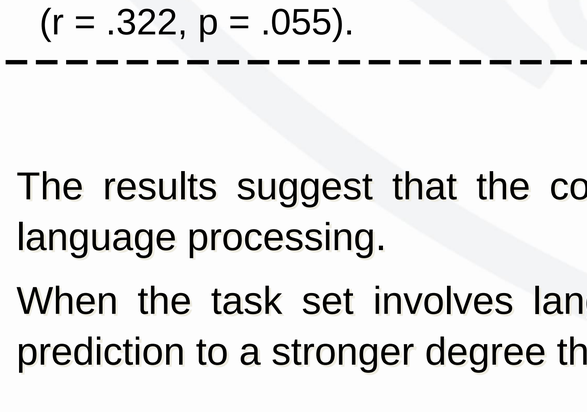
- **Experiment 1:** Naming latencies in a cross-modal naming experiment including an object naming task
- **Experiment 2:** Reading times in a self-paced reading experiment that did not include overt production
- **Experiment 3:** 50% naming and 50% reading trials randomly interleaved

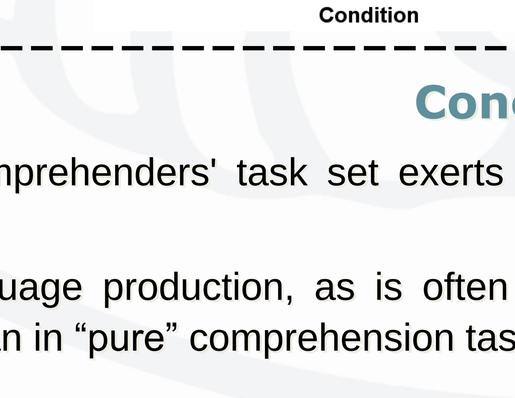
Experiment 1: Object naming (n = 54)



Results

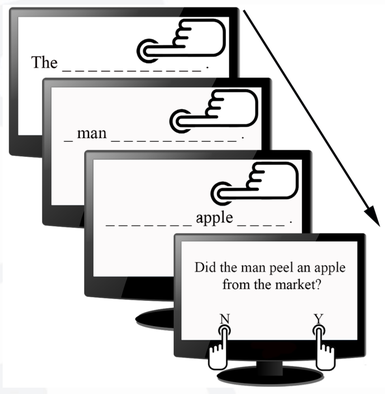
- Naming latencies were 106 ms faster when targets were preceded by predictable lead-in sentences (cf. Griffin & Bock, 1998).
- The naming advantage for the objects was predicted by their cloze probability (r = .411, p = .016).





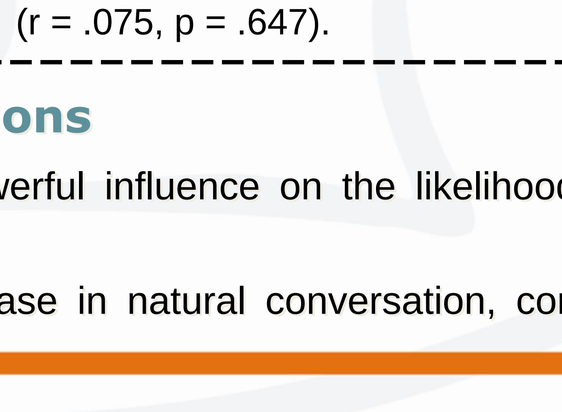
Experiment 2: Self-paced reading (n = 54)

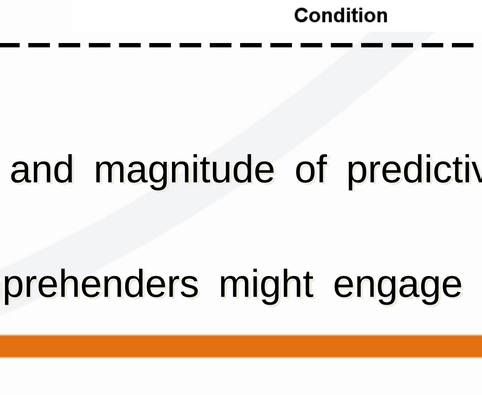
- Neutral prepositional phrases were added to account for potential spill-over effects.
- 30% of the trials were followed by a comprehension question.



Results

- Target and post-target reading times revealed numerical advantages of 6 ms and 8 ms, which were statistically not robust.
- Response accuracy to comprehension questions was 93%.

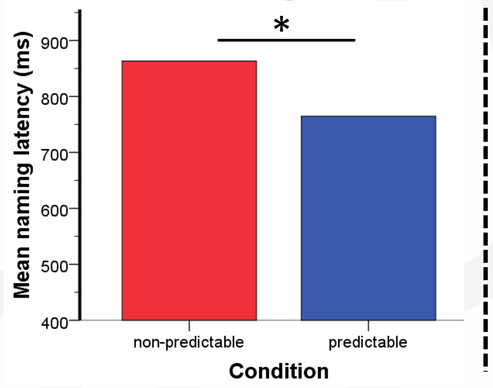




Experiment 3: Interleaved object naming and self-paced reading (n = 54)

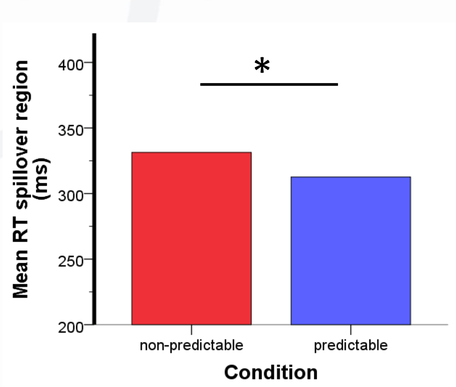
Naming results

- Significant naming advantage of 99 ms for targets following predictable lead-in sentences.
- Naming advantages were predicted by the target words' cloze probability (r = .322, p = .055).



Reading results

- Post-target reading times were significantly faster (19 ms) on predictable relative to non-predictable trials.
- The target words' cloze probability did not predict the reading advantage (r = .075, p = .647).



Conclusions

The results suggest that the comprehenders' task set exerts a powerful influence on the likelihood and magnitude of predictive language processing.

When the task set involves language production, as is often the case in natural conversation, comprehenders might engage in prediction to a stronger degree than in "pure" comprehension tasks.