

# Processing the Relative Ordering of Definite and Indefinite Noun Phrases

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## Introduction

Definite NPs are preferred to precede indefinite NPs. One particular case is the ditransitive construction. (1) is better than (2) (Bresnan et al., 2007):

- (1) The woman sent the author a letter about how much she enjoyed his latest book.
- (2) The woman sent an author the letter about how much she enjoyed his latest book.

Do these preferences affect comprehension? In particular:

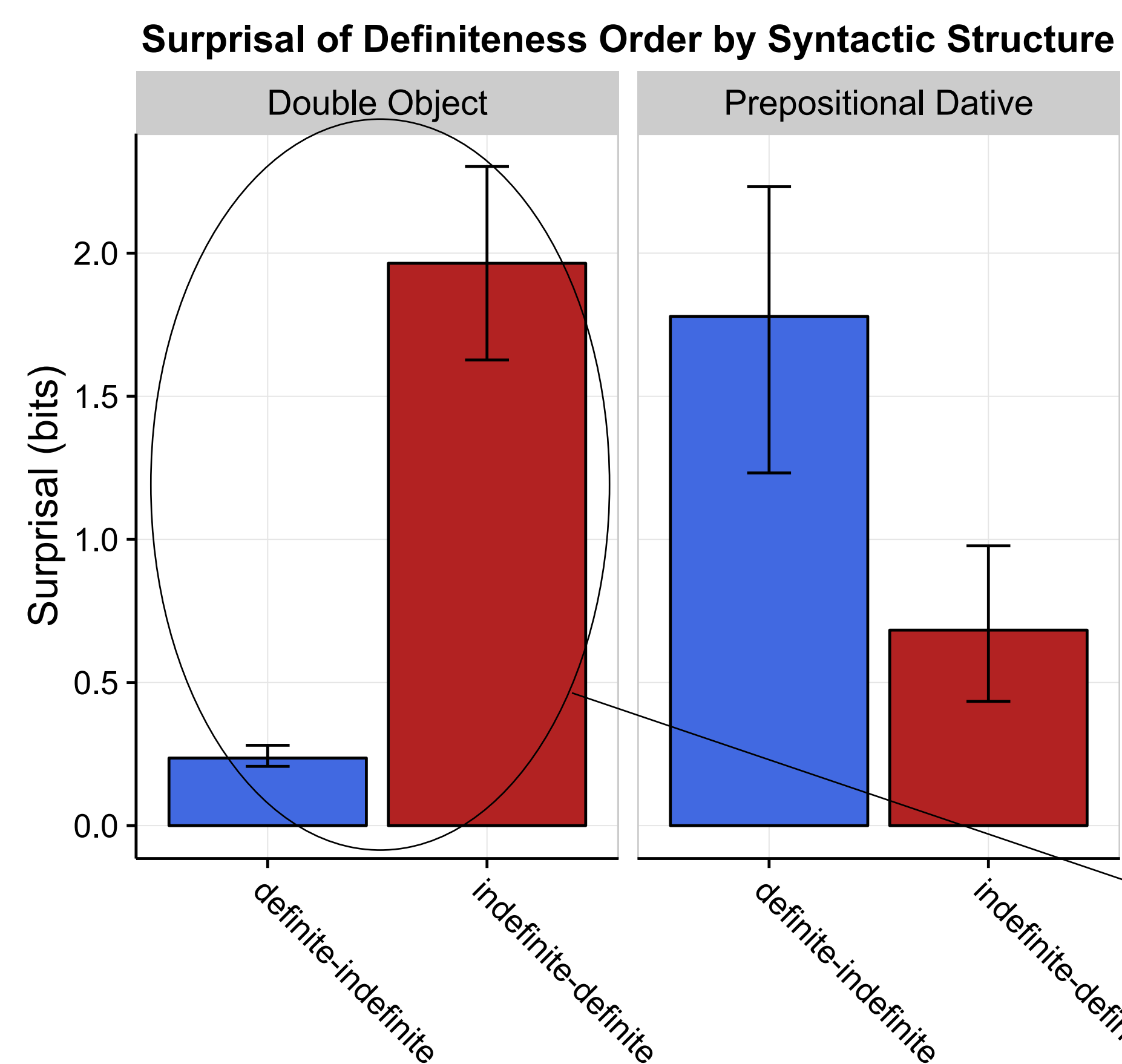
- Do comprehenders implicitly learn the statistical distribution of definites?
- How fine-grained is such implicit statistical knowledge? Is it conditioned on syntactic context?

## Approach

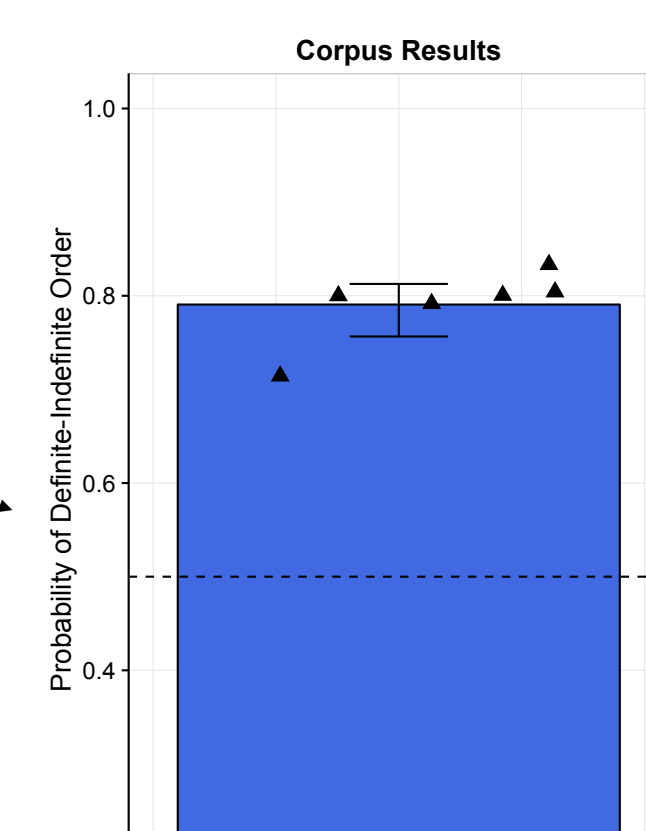
- Use corpus data to estimate the surprisal (in bits) associated with definites in their syntactic context
- Investigate whether this predicts processing difficulty.

## Corpus Study

- Annotated ditransitive corpus from Bresnan et al. (2007)
- Assess definiteness ordering preference for verbs we plan to use in reading experiment (*give, loan, mail, send, offer, bring*)



- Preference for the definite-indefinite order in double object (DO) syntax
- Significant over and above other factors (animacy, discourse givenness, weight)
- Consistent across verbs



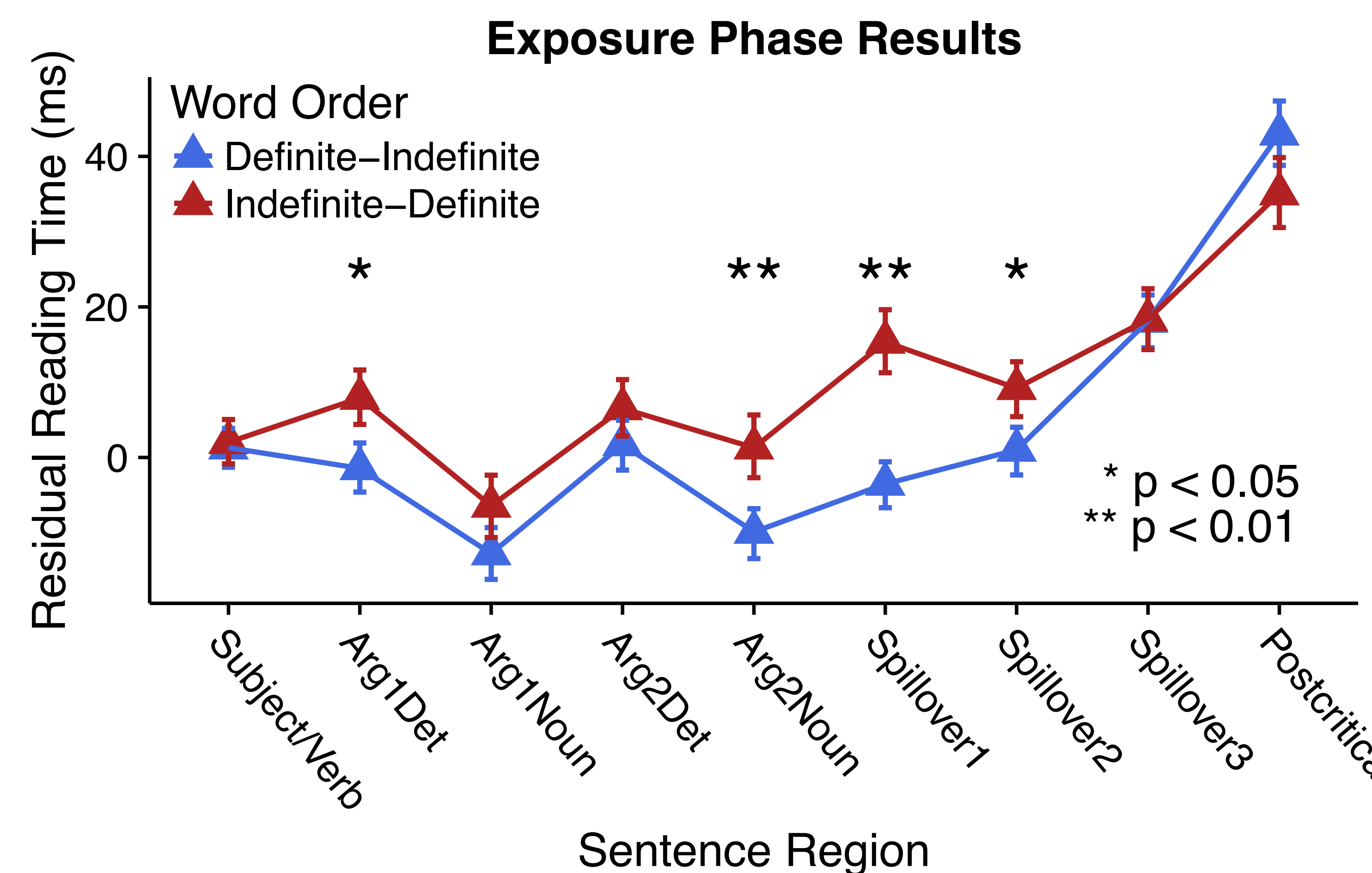
## Reading Experiment

Word-by-word self-paced reading  
 2 phases:

- Exposure Phase: 24 critical sentences; all the same order within a participant
- Test Phase: 12 critical sentences; half in definite-indefinite order, half in indefinite-definite order within a participant

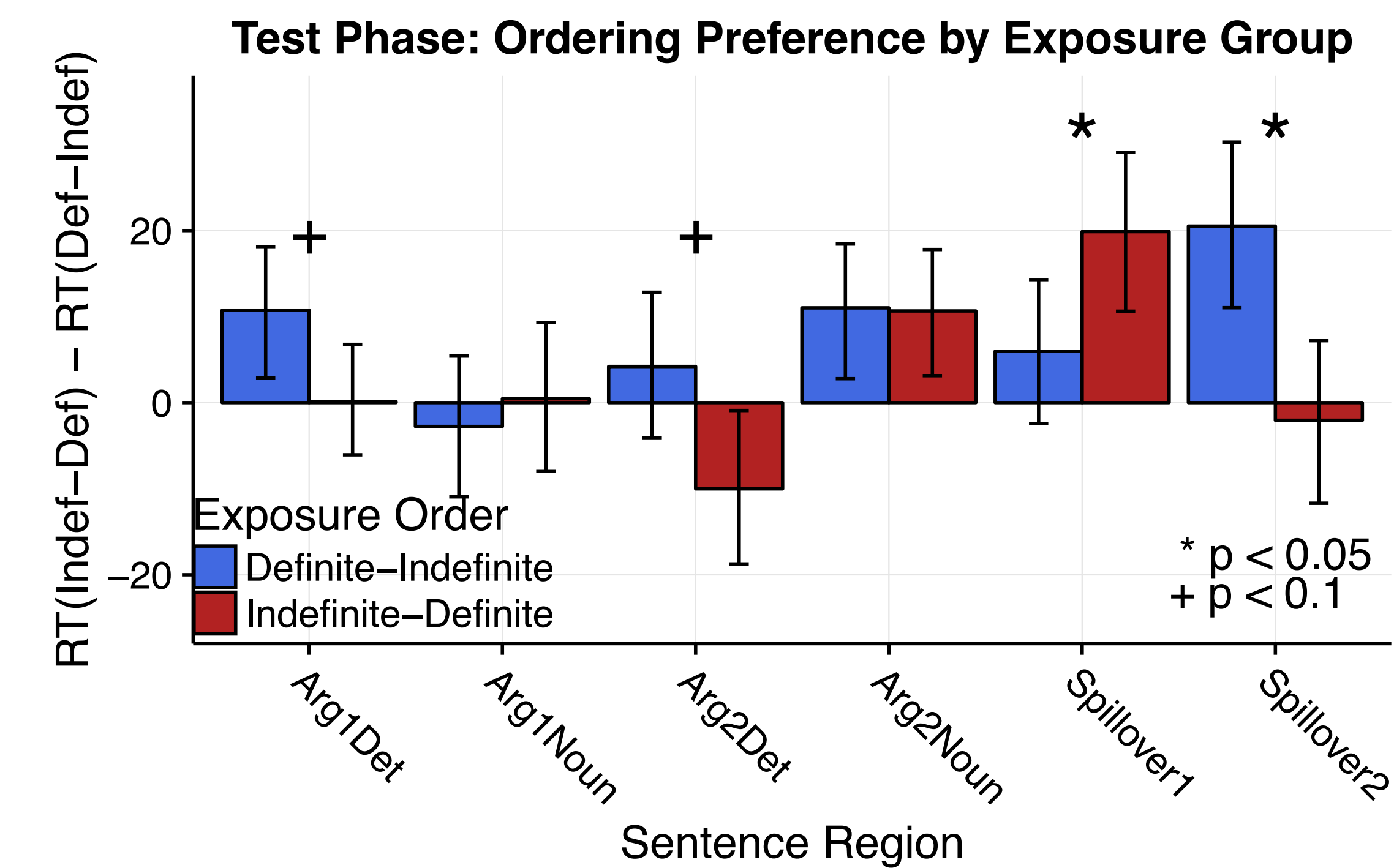
Exposure Order	Test Order	Exposure Phase	Test Phase
Definite-Indefinite	Definite-Indefinite	... the ... a ... [x 24]	... the ... a ... [x 6]
	Indefinite-Definite	... a ... the ... [x 24]	... a ... the ... [x 6]
Indefinite-Definite	Definite-Indefinite	... a ... the ... [x 24]	... the ... a ... [x 6]
	Indefinite-Definite	... a ... the ... [x 24]	... a ... the ... [x 6]

## Results: Exposure Phase



- Reading time preference for definite-indefinite order across critical sentence regions
- Consistent across verbs (not shown here)

## Results: Test Phase



- Exposure to the unexpected order causes reduced RT preference for expected order

## Conclusion

- Production preference is reflected in comprehension
- Preferences not just based on linear order, but sensitive to syntactic context
- This preference is malleable (see also Fine et al., 2013)

## References

- Bresnan, J., Cueni, A., Nikitina, T., Baayen, R. H., et al. (2007). Predicting the dative alternation. *Cognitive foundations of interpretation*, 69–94.
- Fine, A. B., Jaeger, T. F., Farmer, T. A., & Qian, T. (2013). Rapid expectation adaptation during syntactic comprehension. *PLoS One*, 8(10), 1-18.

## Acknowledgements

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