



# Comprehension Priming Evidence for Elliptical Structures

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## The structure question for ellipsis resolution

'John played the violin, and Bill did \_\_ too.'

The structure question (Merchant, 2016): is unpronounced syntactic structure recovered at the ellipsis site?

➤ Yes: the meaning of the ellipsis site is derived from syntactic structure (Sag 1976; Chung, Ladusaw & McCloskey 1995; Merchant 2001).

➤ No: the meaning of the ellipsis site is derived purely anaphorically via a semantic mechanism (Hardt 1993; Culicover & Jackendoff 2005).

## Priming locally ambiguous structures

In the current study, we examine whether elliptical structures induce syntactic priming effects that modulate the argument-structure bias of the verb in a subsequently shown target sentence.

### Effects of sentential complement (SC) verb bias

When comparing a locally ambiguous sentence such as *the news reporter proclaimed the royal birth was official...* to its unambiguous control with *that*:

- there is less cost on the disambiguating predicate after the embedded NP (*was official*), compared to DO-biased verbs (Trueswell et al. 1993; Kennison 1996; Garnsey et al. 1997, a.o.).

### The current study

- If the ellipsis site is interpreted via syntactic structure, we expect a strong priming effect that shifts a DO-biased verb towards a more SC-bias (see example below).
- Such a priming effect should be strong for both elliptical and their parallel non-elliptical full-structure conditions; but it should be weaker in the anaphora and intransitive control conditions.

## Design and materials

**Exp. 1:** 40 8-condition items (see example below); subj. n = 96.

- Centered self-paced reading; targets chunked into subject, verb, embedded NP, aux.
- The ambiguous verbs are normed to be DO-biased (all verbs  $\geq 50\%$  DO completion from a norming study with subj. n=50).

**Exp. 2:** 32 8-condition items (see example below); subj. n = 31.

- Presentation was the same as in Exp. 1.
- DO-bias of verbs was  $>60\%$  (from the same norming study as Exp. 1).

## Experiment 1

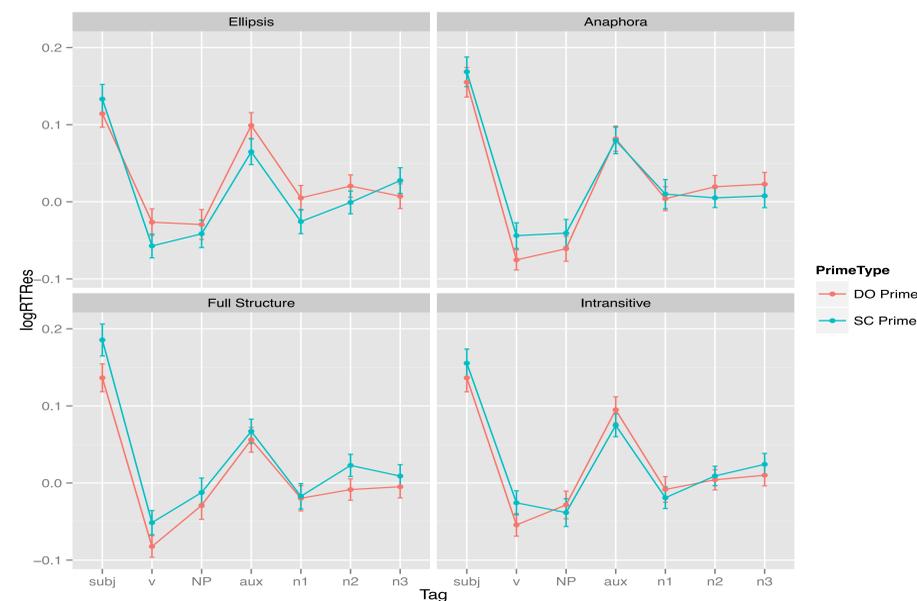
Linear mixed effects model with fixed effects for each Continuation condition:

- Prime type (SC vs. DO)
- Acceptability rating on the prime sentence
- Reading time from two previous regions before the region under analysis

### Results:

- SC-prime advantage at the word after the critical auxiliary in the ellipsis condition ( $p < 0.05$ ).
- No SC-prime advantage among the other conditions, including the full-structure conditions.

➤ We hypothesize that the lack of priming in the full-structure conditions is the result of an initial misparse of the embedded subjects of SC primes as DOs. But, the elliptical condition copies the correct structure from the antecedent.



## Experiment 2

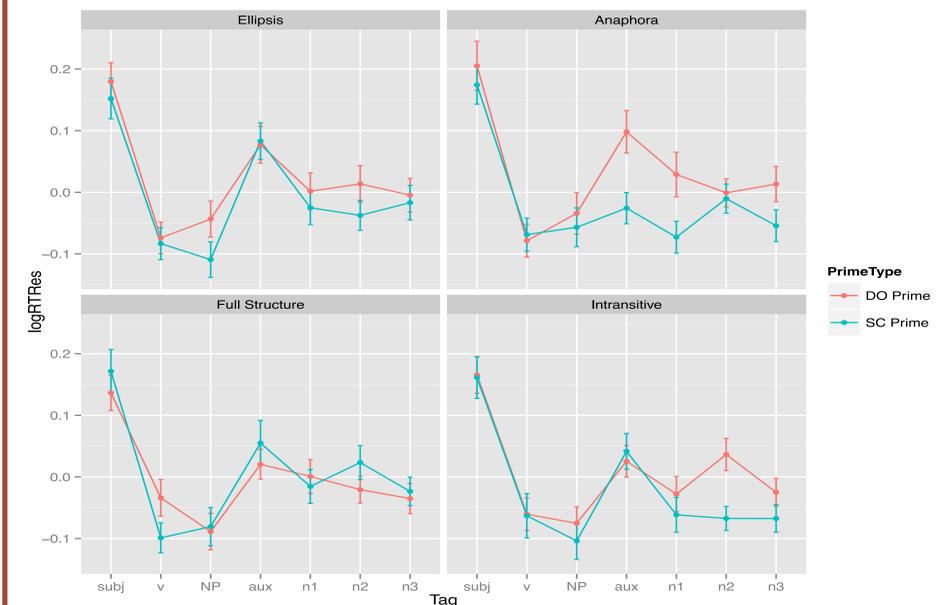
We added the complementizer 'that' to the prime sentences to eliminate the processing difficulty from reanalysis of the garden-pathed primes in Exp. 1.

### Results:

- SC-prime advantage at the auxiliary in the anaphora condition ( $p < 0.01$ ).
- No SC-prime advantage among the other conditions, including the full-structure and ellipsis conditions.

➤ The new primes caused an expectation of an overt complementizer in the target. As a result, the expectation for the SC continuation was reduced upon encountering the embedded subject, reversing the initial SC priming effect.

➤ The priming effect among the anaphora conditions is due to semantic priming from anaphora. The meaning of SCs is insensitive to the presence of a complementizer.



## Conclusions

- Taken together, the two experiments provide some evidence for syntactic structure in the ellipsis site.
  - In Expt 1, the Ellipsis conditions show priming, while the Full Structure conditions do not, due to the enhanced reanalysis difficulty in the latter.
  - In Expt 2, both the Ellipsis and the Full Structure conditions show sensitivity to the overt complementizer "that" in the prime sentence.
  - The Ellipsis conditions and the Anaphora conditions never pattern the same in either experiment.

➤ A new manipulation is needed to bias the SC primes to a SC reading without introducing additional processing complexities at the target.

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Exp.1	Prime Sentence 1	Prime Sentence 2		Exp.2	Prime Sentence 1	Prime Sentence 2	
SC	The contractor was expected to estimate the building cost would be rather high,	but in the end he didn't.	(Ellipsis)	SC	The contractor was expected to estimate <b>that</b> the building cost would be rather high,	but in the end he didn't.	(Ellipsis)
DO	The contractor was expected to estimate the building cost with little information,	but in the end he didn't do it.	(Anaphora)	DO	The contractor was expected to estimate the building cost with little information,	but in the end he didn't do it.	(Anaphora)
	<b>Target:</b> <i>The scientist estimated <u>the asteroid's arrival was going to be delayed.</u></i>	but after looking at the plan he estimated it would be quite reasonable./	(Full structure)	<b>Target:</b> <i>The scientist estimated <u>the asteroid's arrival was going to be delayed.</u></i>	but after looking at the plan he estimated <b>that</b> it would be quite reasonable./	but after looking at the plan he estimated it precisely.	(Full structure)
	subj v NP aux n1 n2 n3			subj v NP aux n1 n2 n3			
		but after looking at the plan he estimated it precisely.					
		but after looking at the plan he relaxed.	(Intransitive)			but after looking at the plan he relaxed.	(Intransitive)