

# Syntactic Probability Influences Duration

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## Overview

Speakers use larger prosodic boundaries to buy time for planning upcoming long/complex structure (Watson and Gibson, 2004).

I present experimental evidence that speakers also buy time for *low-probability* structures.

Implicit learning occurs, making high-probability structures easier

## Background

Gahl and Garnsey (2004) et. seq.: The duration of words was reduced in complement structures which have a low probability given the subcategorization bias of the verb:

### Clausal complement verb bias:

- (1) **Matching:** The weary traveler claimed the luggage had been stolen in Rome.
- (2) **Mismatching:** The weary traveler claimed the luggage at the counter in Prague.

'The luggage' was longer in the bias-mismatching structure than in the bias-matching structure.

- (1) Do speakers use the implementation of prosodic boundaries to 'buy time' for planning low-probability structures?
- (2) Over what domain is this probability calculated?

## Methods

**Items:** Object- and subject-extraction cleft sentences.

### (3) Subject-extraction (SE):

(Did John scam Melvin out of some money?)

It was Edward |<sub>CP/φP</sub> who (t) scammed Melvin out of some money.

### Object-extraction (OE):

(Did Melvin scam John out of some money?)

It was Edward |<sub>CP/φP</sub> who Melvin scammed (t) out of some money.

$P(SE) > P(OE)$  in a corpus (Roland et al., 2007).

**Procedure:** Participants read the item in context silently to themselves until they understood it, then read it aloud.

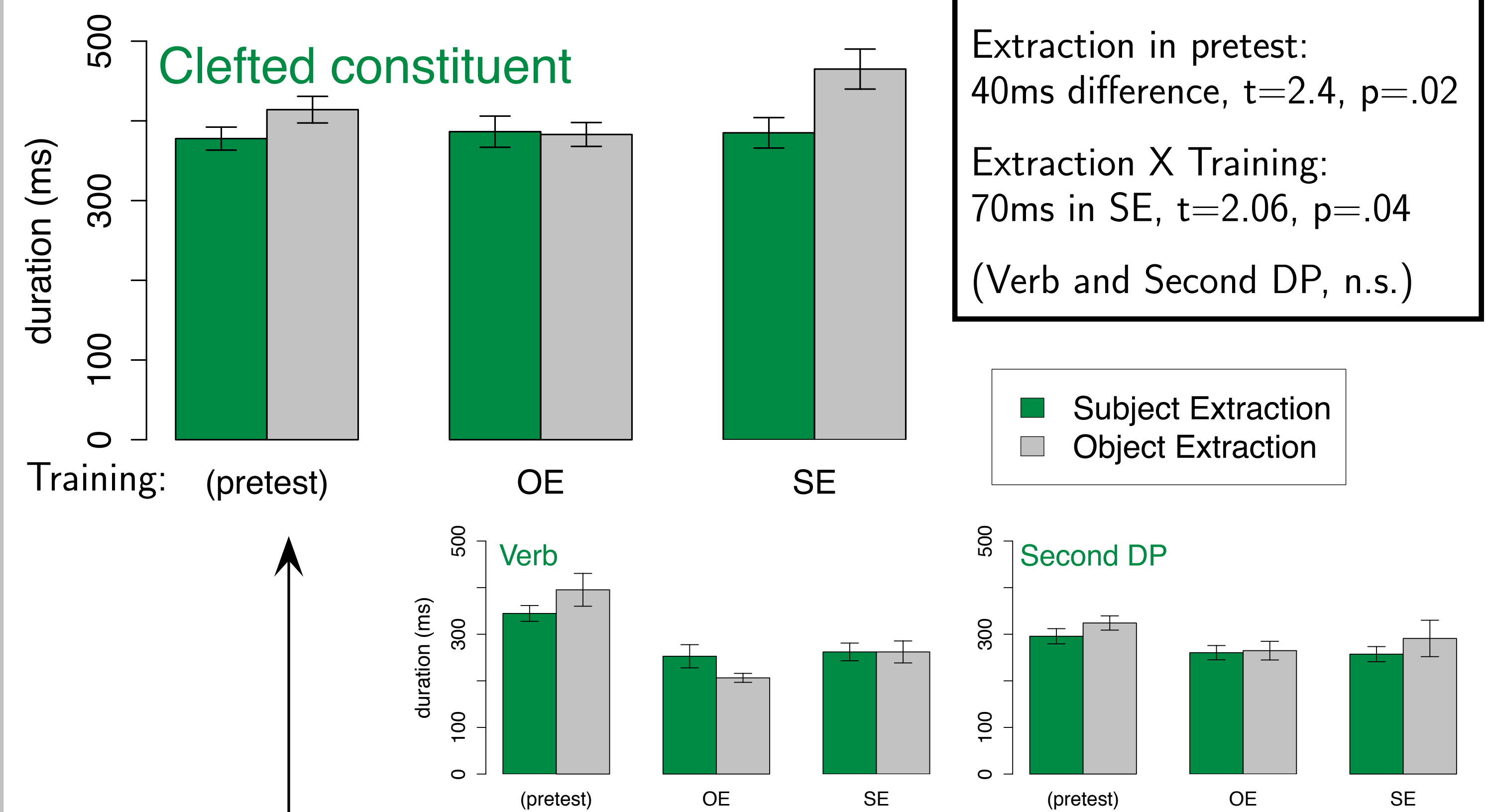
Pretest	Training	Post-test
items 1-4 two of each	items 5-12 Group 1: all SE Group 2: all OE	items 13-16 two of each

Participants were randomly assigned to training groups. Order of items within each block was randomized, and items were counterbalanced across subjects for the pretest and post-test. Recordings were made using Matlab.

**Measurement:** Words were segmented using the Prosodylab-Aligner (Gorman et al., forthcoming), and hand-checked. Measurements were made in Praat.

## Results

### Duration:



It was **Edward** who **scammed** **Melvin** out of some money.

The verb's duration suggests an effect of training, but the second DP's duration is not affected.

**Errors:** On object-extraction sentences, many more errors were made after SE training ( $\chi^2=8.3$ ,  $p<.01$ ).

	Disfluency	SE instead of OE	(out of)
SE training:	7	9	24
OE training:	0	3	20

## Discussion

(1) Speakers lengthen before upcoming low-probability structure, at prosodic boundaries and not elsewhere.

(2) The relevant probability is based on a small amount of recent experience (8 sentences).

- The correlation of speech errors to longer durations suggests a production effect

- Implicit learning (Chang et al., 2006) might occur, giving speakers practice with some structures over others.

## References

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