

# Revisiting empty-category processing by L2 learners with only classroom exposure

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## Introduction

### What factors influence native-like L2 processing?

1. L2 proficiency (e.g. Hopp, 2006)
2. Working memory capacity (e.g. Havik et al., 2009)
3. **Naturalistic exposure to the Target Language** (e.g. Dussias & Piñar, 2009)

### Pliatsikas and Marinis (2013; P&M)

- Self-paced reading task: Long-distance *wh*-dependencies
- 2 × 2 Latin square design: 4 conditions × 5 items

(1) **Extraction**: Extraction (E) vs. Non-extraction (N)

(2) **Phrase**: VP vs. NP

(a) E-VP	The manager who / the secretary claimed / <u>e<sub>i</sub> that</u> / the new salesman / <u>had pleased e<sub>i</sub></u> / will raise company salaries. /
(b) E-NP	The manager who / the secretary's claim / <u>about</u> / the new salesman / <u>had pleased e<sub>i</sub></u> / will raise company salaries. /
(c) N-VP	The manager thought / the secretary claimed / <u>that</u> / the new salesman / <u>had pleased</u> / the boss in the meeting. /
(d) N-NP	The manager thought / the secretary's claim / <u>about</u> / the new salesman / <u>had pleased</u> / the boss in the meeting. /

- Critical segments & 3 predictions for reading times (RTs)




Segment 3: intermediate gap

(1) RTs: Extraction (a, b) > Non-extraction (c, d)  
→ Evidence for **filler storage**

Segment 5: final gap

(2) RTs: Extraction (a, b) > Non-extraction (c, d)  
→ Evidence for **filler-gap integration**

(3) RTs: **E-VP (a) < E-NP (b)**  
→ Evidence for **facilitation with the intermediate gap**

- Results     
Native speakers      L2ers with naturalistic exposure      L2ers with classroom exposure only
- Conclusion: Native-like L2 syntactic processing may depend on substantial naturalistic exposure to the Target Language

### Current study: Hypothesis

- Exclusively-classroom L2ers** will be able to show native-like processing of such long-distance dependencies when the processing load is alleviated
- ➔ **Pronouns** (vis-à-vis lexical NPs) reduce processing load (e.g. Friedmann et al., 2009; Gibson, 1998; Van Dyke & Lewis, 2003; Warren & Gibson, 2002)



**RQ:** Can advanced **exclusively-classroom L2ers** evince native-like processing of the empty categories in long-distance *wh*-dependencies when the processing load is reduced by replacing the intervening lexical NPs with **pronouns**?

## Method

### Participants

- 28 advanced L1-Korean **exclusively-classroom L2ers** of English
- L2 proficiency (UCLES, 2001): 90.30%  
(cf. naturalistic-exposure L2ers in P&M: 87.77%)

### Stimuli

- 20 target sentences (and segmentation): Identical to those in P&M, **except for intervening lexical NPs** → **1sg or 2nd pronouns**

(a) E-VP	The manager who / <b>I</b> claimed / <u>e<sub>i</sub> that</u> / <b>you</b> / <u>had pleased e<sub>i</sub></u> / will raise company salaries. /
(b) E-NP	The manager who / <b>my</b> claim / <u>about</u> / <b>you</b> / <u>had pleased e<sub>i</sub></u> / will raise company salaries. /
(c) N-VP	The manager thought / <b>I</b> claimed / <u>that</u> / <b>you</b> / <u>had pleased</u> / the boss in the meeting. /
(d) N-NP	The manager thought / <b>my</b> claim / <u>about</u> / <b>you</b> / <u>had pleased</u> / the boss in the meeting. /

- Comprehension question followed each item (including 40 fillers)

### Procedure

1. L2 proficiency test
2. Language background questionnaire
3. Online self-paced reading task (Drummond, 2007)

### Data analysis

- Linear mixed-effects model  
Log-transformed RT ~ extraction\*phrase + (1|participant) + (1|item)
- Final models were chosen using the likelihood ratio test by removing random slopes stepwise and comparing each complex model to the simpler model (Baayen et al., 2008)

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## Results

### RQ: Yes!<sup>1</sup>

- Comprehension accuracy: 71%
- RT analysis
  - Main effect of **Extraction** at **Segment 3** ( $\beta = -0.05, p < .01$ )  
→ Evidence for **filler storage**
  - Main effect of **Extraction** at **Segment 5** ( $\beta = -0.04, p < .05$ )  
→ Evidence for **filler-gap integration**
  - Extraction** × **Phrase** interaction at **Segment 5** ( $\beta = -0.09, p < .05$ )
    - RTs: **E-VP** < **E-NP** ( $\beta = 0.06, p < .05$ )  
→ **Processing facilitation of the final gap (e<sub>i</sub>) when an intermediate gap (e<sub>i</sub>) is present**

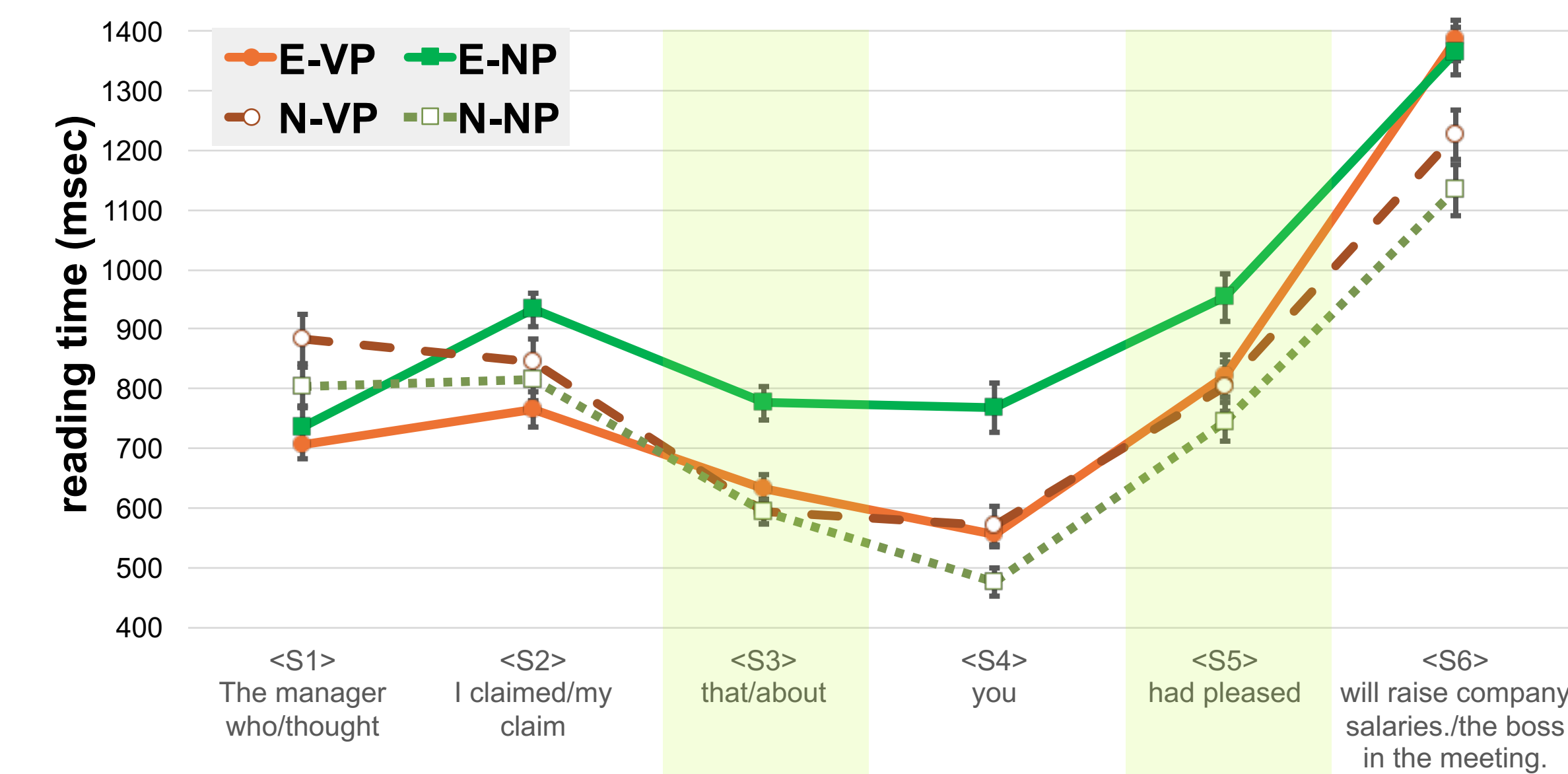


Figure 1. Mean raw RTs per segment (S) and condition

<sup>1</sup> Similar main effects at Segments 3 and 5 as well as a significant interaction at Segment 5 were found using, as in P&M, a 2 × 2 repeated-measures ANOVA on raw RTs

## Conclusion & Direction

- Exclusively-classroom L2ers** were able to employ syntactic information in the processing of long-distance *wh*-dependencies when the processing load was alleviated with the aid of (intervening) **pronouns**
- This provides evidence, *contra* P&M, that even when their learning experiences are restricted to classroom instruction, advanced L2ers can represent and process empty categories in a target-like way

**Data collection in progress:** Testing (1) comparable L1-Korean **exclusively-classroom L2ers** of English **and** native English speakers; (2) for both intervening lexical NPs (as in P&M) and intervening pronouns

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