

“Under/overconnection” effects in thematic relations in center-embedding

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HSP 2023

Double center-embedding illusions

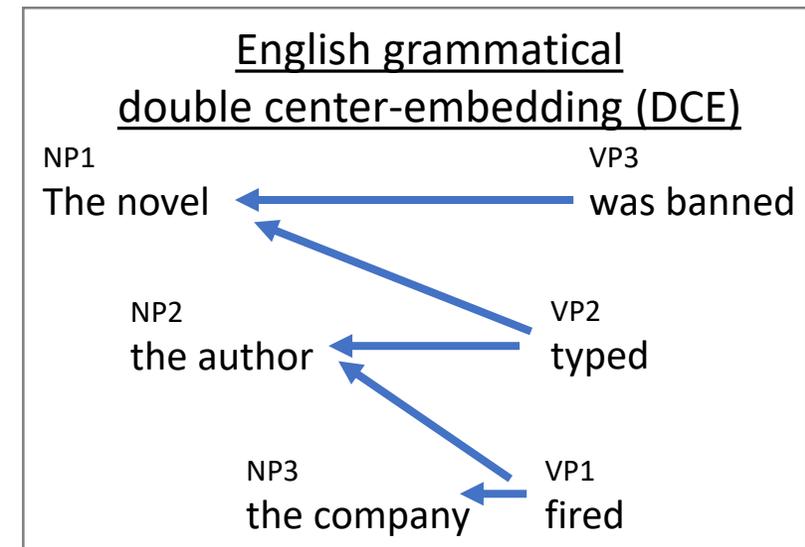
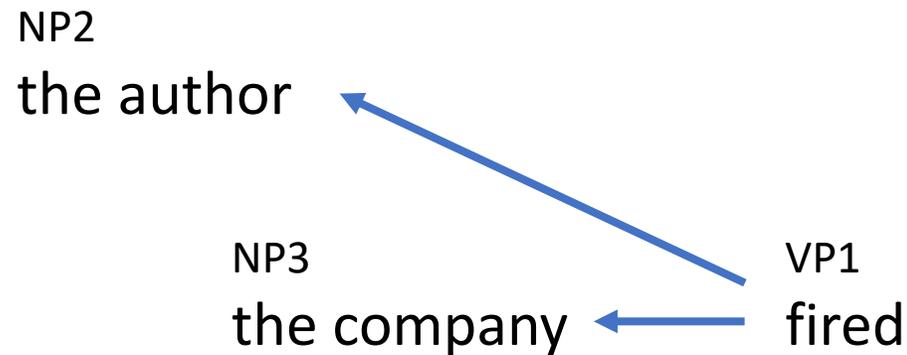
The novel the author the company fired was banned.

Key research questions:

1. What thematic relations are constructed in these “incomplete” illusory sentences?
2. How does the parser build these relations?

Huang & Phillips 2021, 2022 HSP; Frazier 1985 (citing Janet Fodor); see also Gibson & Thomas 1999; Vasishth et al. 2010 for related time-course predictions for English (and German)

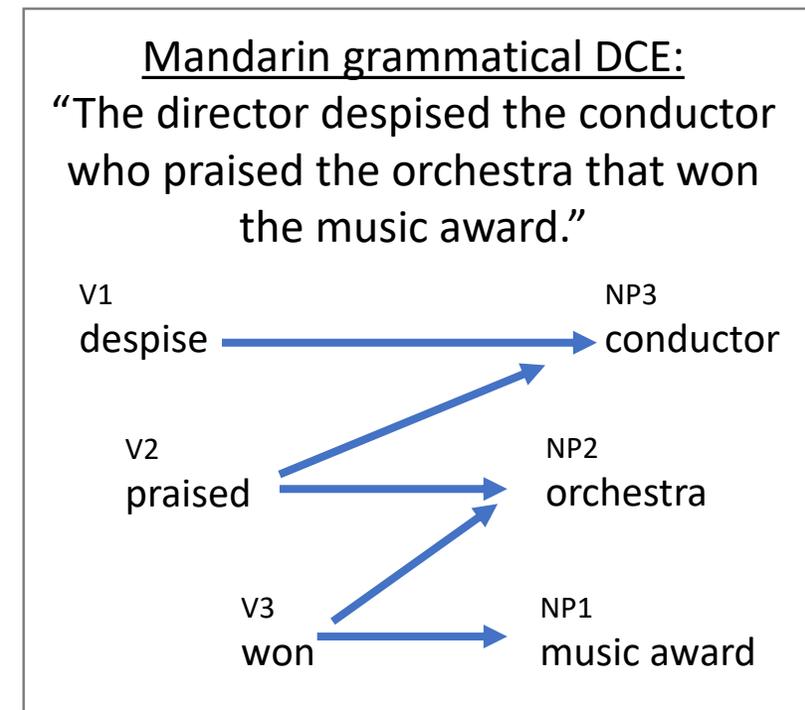
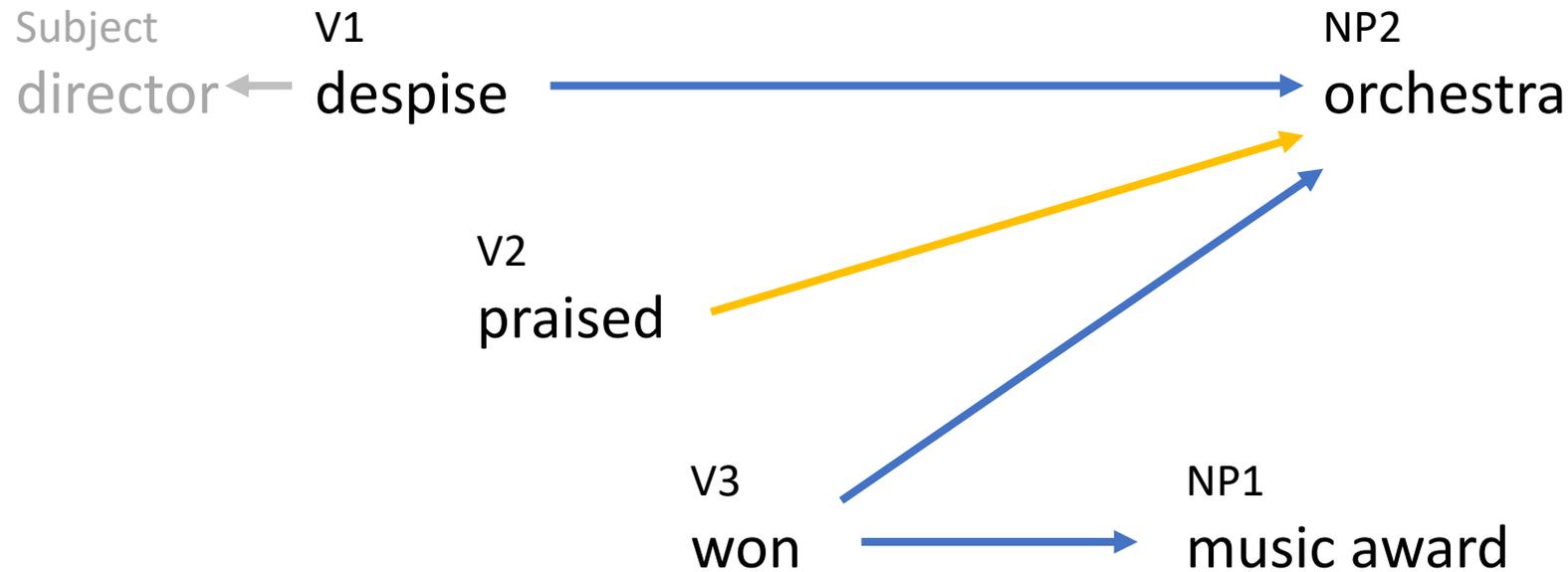
Previous work: thematic relations are “underconnected” in English...



...but thematic relations are “overconnected” in Mandarin Chinese

Illusory Mandarin sentence, missing a NP:

“The director despised ___ who praised
the orchestra that won the music award.”



Huang & Phillips (2021): interference + repair

Time course prediction

English

NP1 The novel ← **Premature pairing** → VP2 was banned

NP2 the author

NP3 the company ← **VP1** fired

Chinese

V1 despise → **Premature pairing** → NP2 orchestra

V2 praised

V3 won → **NP1** music award

Manipulate plausibility of verbs and NP2

Repair = semantic implausibility detected later

Conditions: NP2 is a(n) ...

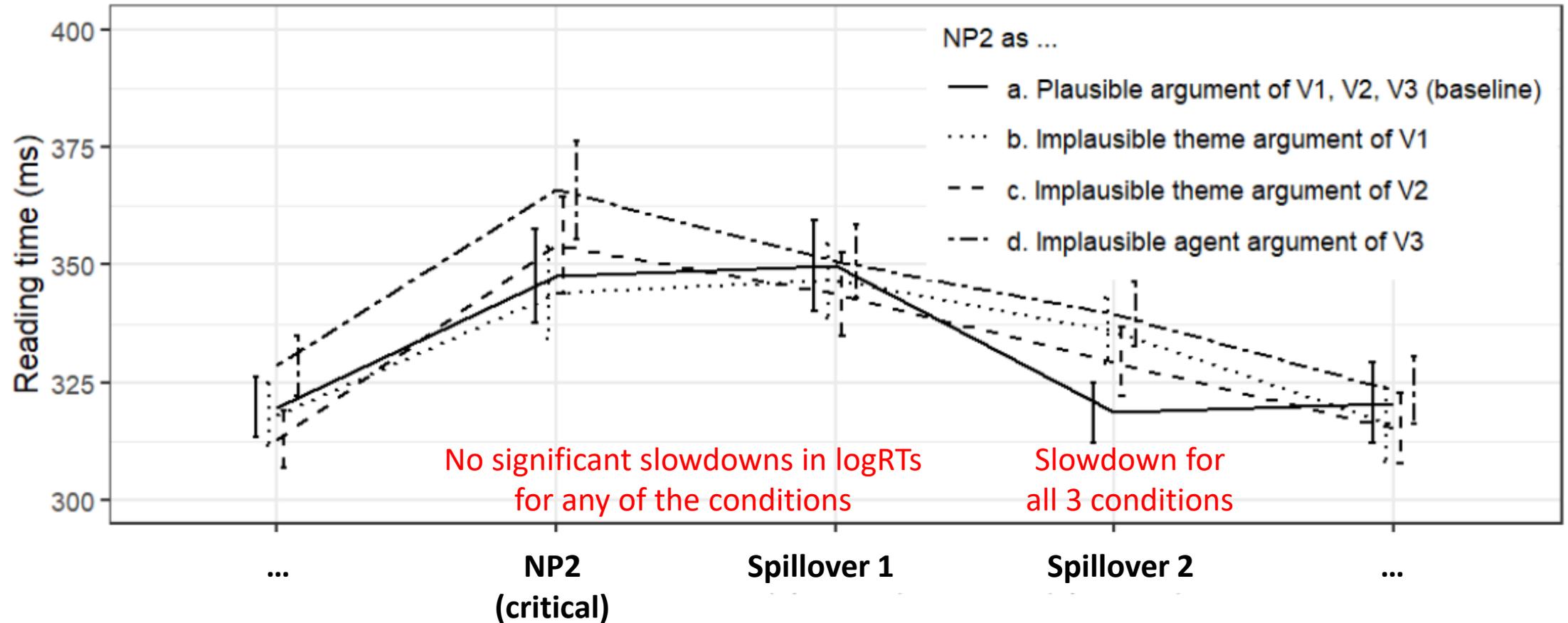
- a. plausible argument of all verbs (baseline)
despise... praised... won award ... orchestra
- b. implausible theme argument of V1 (linked **prematurely**)
in love with... *praised... won award ... orchestra*
- c. implausible theme argument of V2 (linked **by repair**)
*despise... *in love with...* won award ... orchestra*
- d. implausible theme argument of V3 (parsed normally)
*despise... praised... *researched* disease... orchestra*

Implausibility
effect /
slowdown
around NP2

**Late
implausibility
effects**

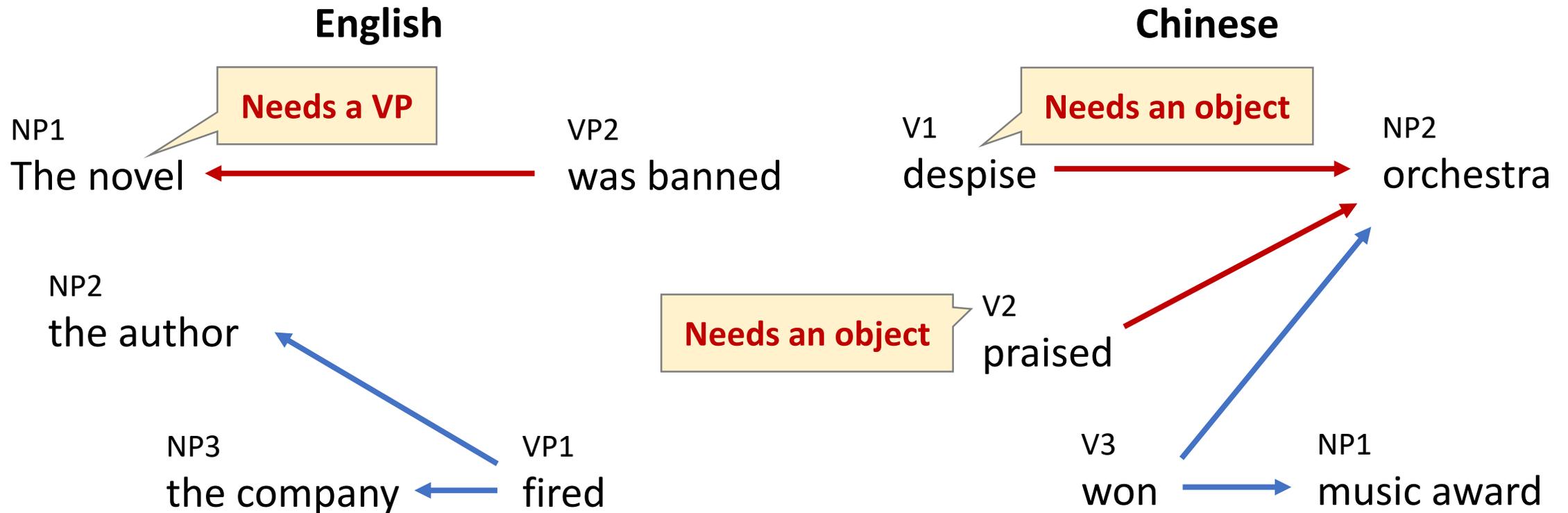
Implausibility
effect /
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Self-paced reading experiment: no evidence for repair in Mandarin



60 Mandarin speakers on Prolific; 30 target sentences; mixed effects modeling of log-transformed reading times at Spillover 2: V1 condition ($b=0.025$, $p<.01$), V2 ($b=0.028$, $p=.04$), and V3 ($b=0.018$, $p<.01$)

Parser pairs nouns and verbs (probabilistically) to minimally satisfy thematic needs?



Discussion

Caveat: our suggestion was based on the lack of evidence for a slowdown.

But if this result is robust:

- No premature pairing nor repair: parser doesn't form certain pairings first and other pairings later.

→ Parsing decisions are largely guided by thematic requirements, rather than interference.

contra Huang & Phillips 2021, Bader 2016, Bader & Haeussler 2015

- This is not to completely deny a role for interference, which can explain why center-embedding illusions are weaker in German.

Bader 2016, Huang & Phillips 2021

Thanks to...

- Koh Rui En for research assistance
- Start-up grant from the National University of Singapore
- HSP reviewers

Feedback most welcome: znhuang@nus.edu.sg