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COMP-trace effects in German: the role of processing

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Introduction

- Self-paced reading + comprehension task investigating long-distance (LD) subject and object questions in German.
- LD subject questions incur a COMP-trace violations in German -> how are such questions comprehended and processed?
- How can differences in sensitivity to COMP-trace violations between English and German be explained?

Comp-trace: German vs. English

1. Which author do you think (that) the publisher appreciated?
2. Which author do you think *(that) appreciated the publisher?

3. Welch-en Schrifsteller denkst du, dass der Verleger geschätzt hat?
   which-ACC author think you that the.NOM publisher appreciated has
4. Welch-er Schriftsteller denkst du, dass den Verleger geschätzt hat?
   which-NOM author think you that the.ACC publisher appreciated has

Opposing views w.r.t. COMP-trace in German:

- no subject/object asymmetry (Müller & Sabel 1989; Haider, 2010).
- asymmetry does exist -> experimental judgement data confirms this (Featherston 2005; Kiziak 2010).

- Comp-trace (subject/object asymmetry) also present in German, but LD subject movement is not ruled out altogether.

1. [Wer wohl meint er [dass __ ihm seine Arbeit hier bezahlen werde]]?
   'Who did he perhaps assume would pay for his work here?'
2. Alles [was ich dachte [dass __ mich aufheitern würde]]
   'Everything that I thought would cheer me up'

(Examples from Paul 1919: 321, cited in Haider 2010)

- English and German differ in the severity of COMP-trace violations:
  → What causes this?
  → Which implications does this have for the analysis of the COMP-trace effect?

Comp-trace

Currently, 2 main types of syntactic analyses:

1. **Freezing acccounts:** subjects move to a criterial position (SubjP) and can't easily be moved out of their own clause (Rizzi & Shlonsky 2007).
2. LD subject movement over complementizer incurs **anti-locality** violation (see Douglas 2017, for a recent overview)

Previous explanations on the difference between German and English

- German circumvents COMP-trace violations because subjects are extracted from a low, VP-internal position (Haider 2010).

→ If so, why doesn't the subject/object asymmetry disappear altogether?

- Bayer (2005): objects can be scrambled over subject: another potential work-around

→ Conceivable that COMP-trace violations are sometimes "repaired" this way.

Processing related explanation

- Kiziak (2010): lower sensitivity of German to COMP-trace due to processing factors related to word order and case-marking.

1. Welch-en Schrifsteller denkst du, dass der Verleger geschätzt hat? → DP V
   which-ACC author think you that the.NOM publisher appreciated has
2. Welch-er Schriftsteller denkst du, dass den Verleger geschätzt hat? → DP V
   which-NOM author think you that the.ACC publisher appreciated has
   ... Case-marking, not word order differentiates subject from object questions.

3. Which author do you think [the publisher appreciated ___?] → DP V
4. Which author do you think [___ appreciated the publisher?] → V DP
   …… word order differentiates between subject and object extraction

Role of case-marking

Kiziak: asymmetry becomes smaller with case-ambiguous embedded DPs:

1. Welch-en Schrifsteller denkst du, dass die Verleger-in geschätzt hat?
   which-ACC author think you that the.? publisher-FEM appreciated has
2. Welch-er Schriftsteller denkst du, dass die Verleger-in geschätzt hat?
   Which-NOM author think you that the.? publisher-FEM appreciated has

Explanation: Good enough processing (Ferreira & Patson 2007) – embedded DP (*die Verlegerin*) is interpreted as the subject.

-> in (2), leads to an (incorrect) object wh-reading.

Good-enough processing

- Comprehenders use simple heuristics, rather than complete and accurate semantic and syntactic representations when interpreting sentences.
- They sometimes construct local interpretations that interfere with global ones.
- This explains why comprehenders sometimes pursue object readings for subject questions.

Intermediate summary

- German has COMP-trace effect, but a violation is more difficult to detect.
- Word order in German does not distinguish between subject and object gaps.
- Comprehenders have to rely on morphosyntactic cues (case-marking, agreement).
- (Partial) absence of such cues makes it more difficult to signal embedded subject gaps and thus a COMP-trace violation.

Research questions

- RQ1: Is there online processing evidence for the problematic status of embedded subject gaps?

  → can we find behavioral evidence for COMP-trace in German?
- RQ2: is there 'good enough' processing in LD questions?

  → are LD subject questions misinterpreted as object questions?

Method

- Self-paced reading followed by comprehension questions
- Sentence was followed by a comprehension statement corresponding to either a subject or an object reading of the wh-phrase
- Participants had to select the correct reading by pressing a button.

Examples

Unambiguous subject

Welch**er** Schriftsteller denkst du, dass **den** Verleger geschätzt hat?
which-NOM author think you that the.ACC publisher appreciated has

Unambiguous object

Welch-**en** Schrifsteller denkst du, dass **der** Verleger geschätzt hat?
which-ACC author think you that the.NOM publisher appreciated has

DP ambiguous subject

Welch-**er** Schriftsteller denkst du, dass **die** Verleger-in geschätzt hat?
which-NOM author think you that the.? publisher-FEM appreciated has

DP ambiguous object

Welch-**en** Schriftsteller denkst du, dass **die** Verleger-in geschätzt hat?
which-ACC author think you that the.? publisher-FEM appreciated has

Design

- 2 factors: **DP ambiguity (unambiguous vs. ambiguous**) and **argument (subject vs. object),** resulting in 4 conditions (+ 2 conditions not discussed here).
- Ambiguity was manipulated by contrasting case-unambiguous masculine DPs to case-ambiguous feminine DPs (*Verleger* vs *Verlegerin*).
- 48 filler items (LD wh-questions without *dass*).

Example

Question

Welcher	Schriftsteller	denkst	du	dass	**die**	Verlegerin	geschätzt	hat?
which-nom	author	think	you	that	the.?	publisher-fem	appreciated	has

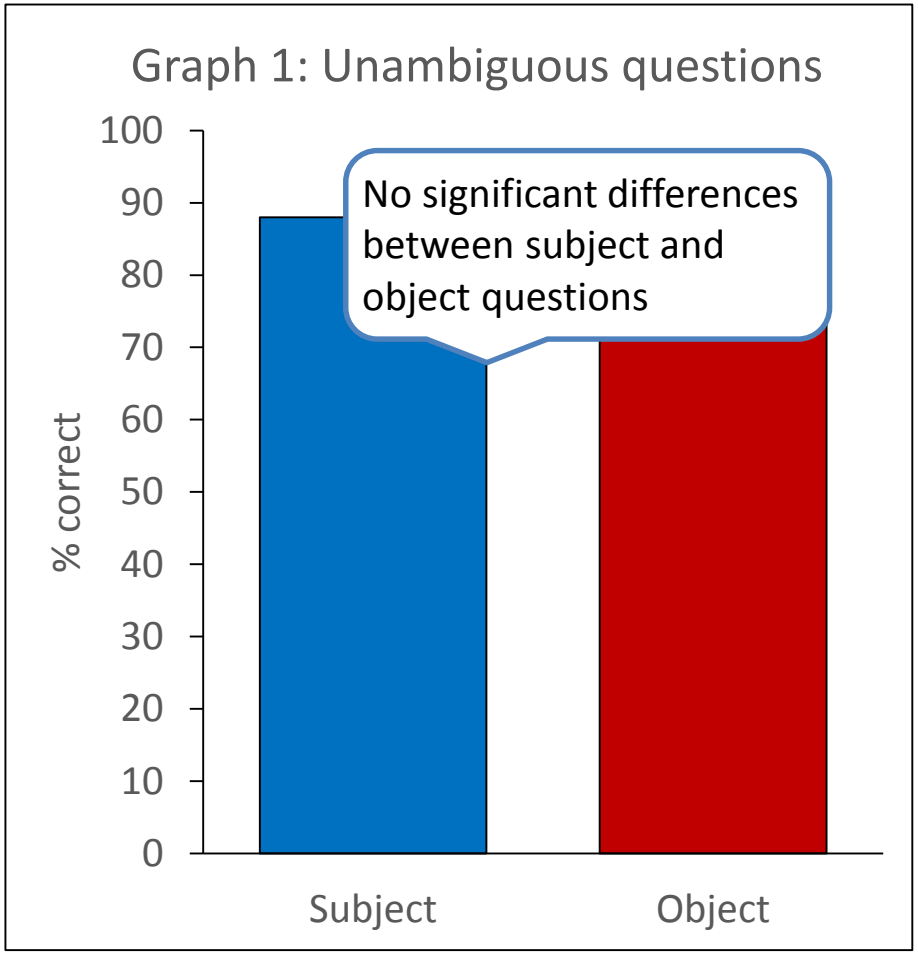
'Which author do you think respected the publisher?'

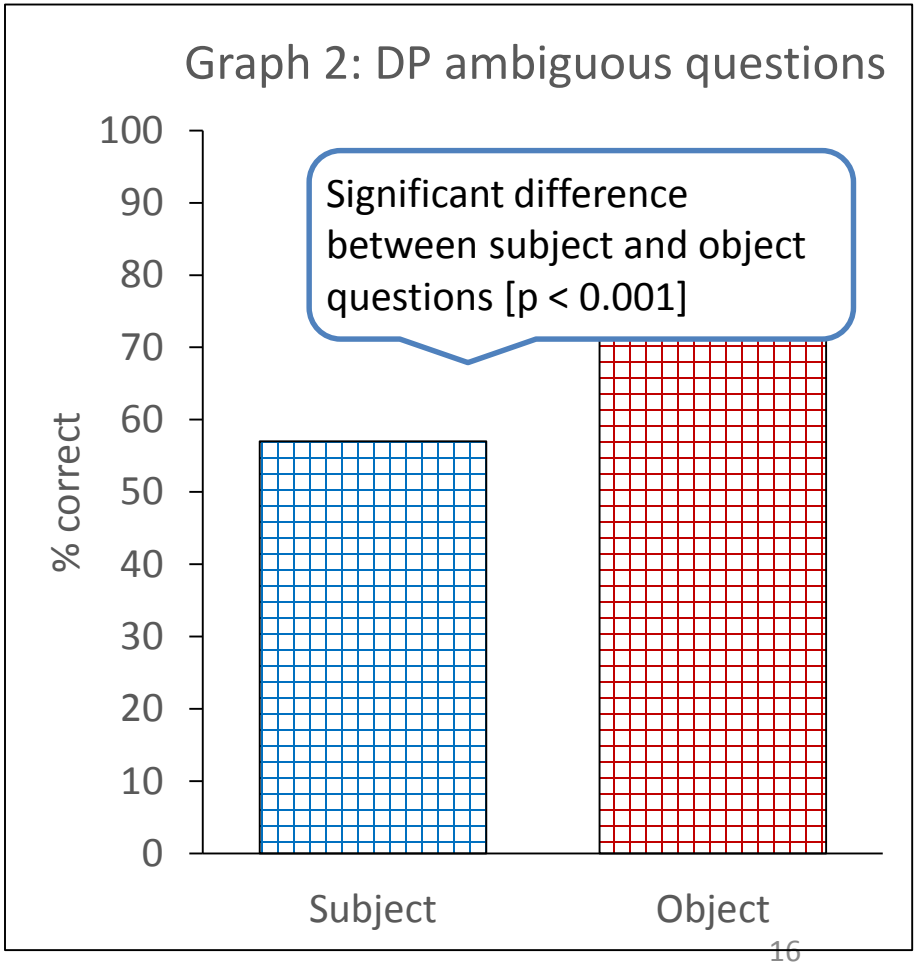
Comprehension statement

(A) Ich denke, dass der britische Schriftsteller die Verlegerin geschätzt hat — Correct
'I think that the British author appreciated the publisher-fem'

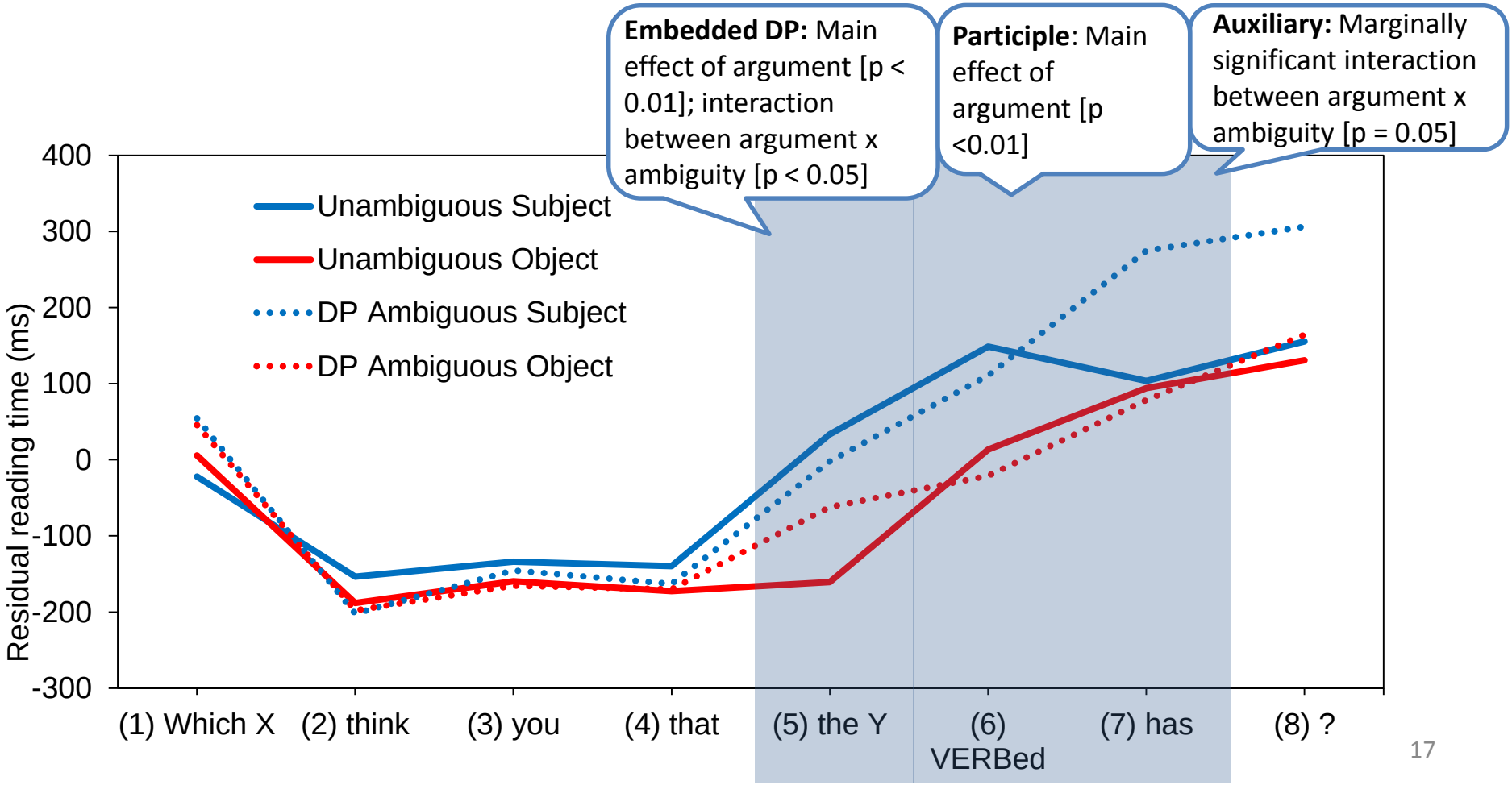
(B) Ich denke, dass die Verlegerin den britischen Schriftsteller geschätzt hat — Incorrect
'I think that the publisher-fem appreciated the British author'

Results – comprehension





Graph 3: Reading times



Discussion

- RQ 1: unambiguous conditions showed a slowdown in reading times at the embedded subject gap -> behavioral evidence for the COMP-trace effect
  - Accuracy data showed this did not hamper comprehension
- RQ 2: locally ambiguous condition strongly garden-pathed participants towards object readings for subject questions -> evidence for good enough processing

On crosslinguistic variation

- Reduced COMP-trace effect in German solely due to the fact that violations are more difficult to detect?
- Cannot be the whole story, in unambiguous conditions, subject gaps are clearly detected.
- Still, does not appear to lead to outright ungrammaticality.
- Interim conclusion: COMP-trace is a violable constraint.
- Hypotheses:

  →COMP-trace is a matter of accessibility

  →Acceptability judgements are influenced by availability of functional competitors.

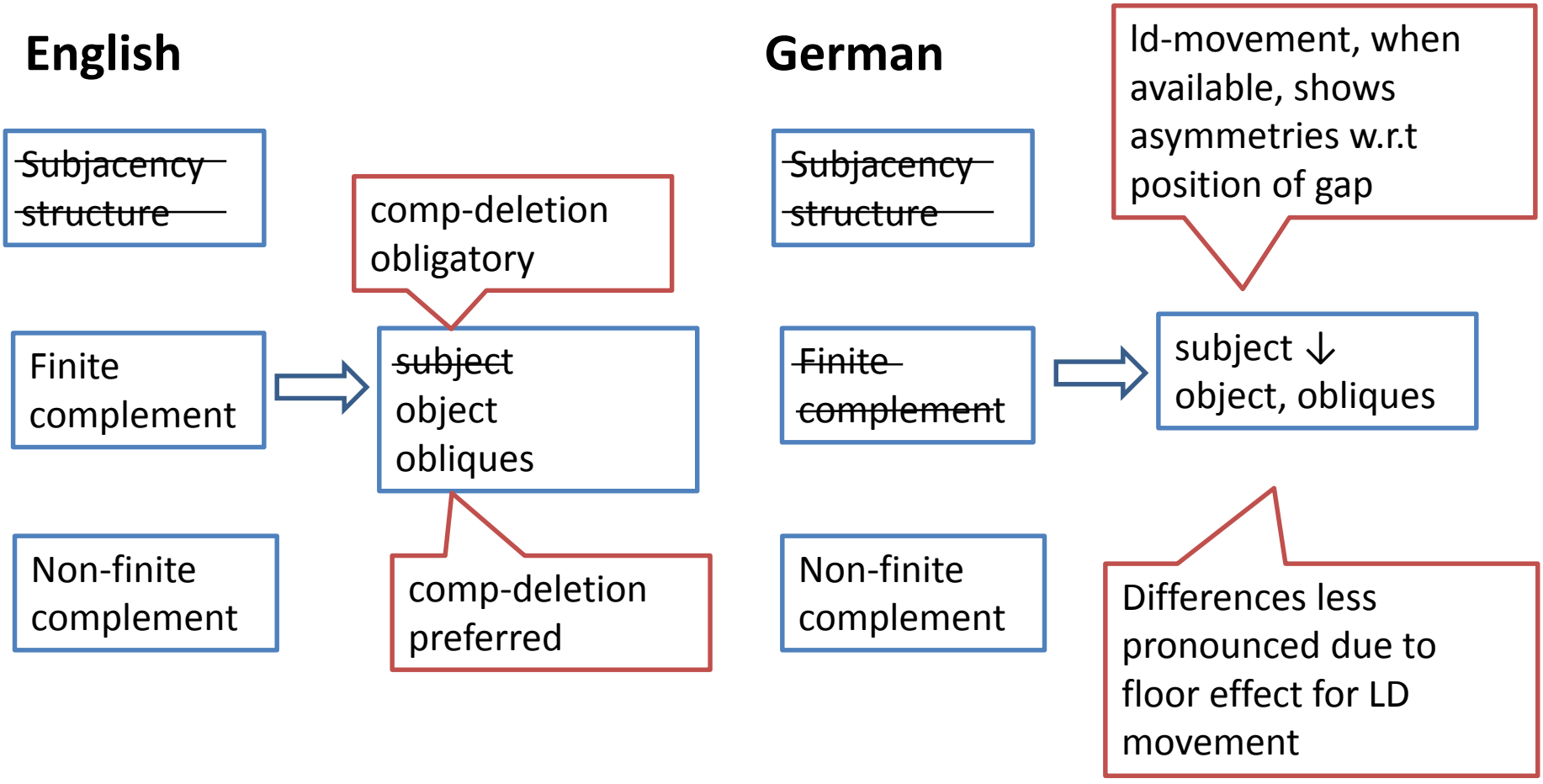
COMP-trace and accessibility

- **Clause embedding hierarchy for gaps (Hawkins 2014)**: infinitival complement > finite complement > subjacency structure.

- **Hierarchy for embedded gaps (McDaniel et al. 2018)**: oblique > object > subject

Explanation:

- German and English have different cut-off points
- Acceptability judgements are influenced by availability of functional competitors.


English
~~Subjacency~~
~~structure~~
Finite complement
Non-finite complement
comp-deletion obligatory
~~subject~~
object
obliques
comp-deletion preferred
German
~~Subjacency~~
~~structure~~
~~Finite~~
~~complement~~
Non-finite complement
ld-movement, when available, shows asymmetries w.r.t position of gap
subject ↓
object, obliques
Differences less pronounced due to floor effect for LD movement

Functional competitors extraction out of finite clauses in German

- Various alternatives:
  1. partial wh-movement:

     Was denkst du, welcher Schriftsteller den Verleger geschätzt hat?
  2. parenthetical questions/ “embedded V2”

     Welcher Schriftsteller denkst du, hat den Verleger geschätzt?
  3. resumptive prolepsis

     Von welchem Schriftsteller meinst du, dass er den Verleger inspiriert hat?
- Alternatives available to all speakers, LD-movement only to a subset (Salzmann 2006).
- Alternatives have by-and-large replaced LD-movement (Schippers 2012).

Conclusions

- COMP-trace in German is real: our data supports the unacceptability of embedded subject gaps.
- However: acceptability contrast between LD subject/object movement is decreased due to:
  - Floor effects for LD movement constructions
  - Subject gaps more difficult to detect due to SOV word order
  - Difficulty is increased when case-marking cues are (partly) missing
- Subject extraction from embedded clauses not categorically excluded: COMP-trace = a matter of accessibility.

Implications for COMP-trace

- Some languages do allow LD subject movement (albeit reluctantly).
- (purely) syntactic constraints don't deal with this very well.
- Data suggest the COMP-trace effect is processing related and/or has a processing related origin.

Acknowledgements

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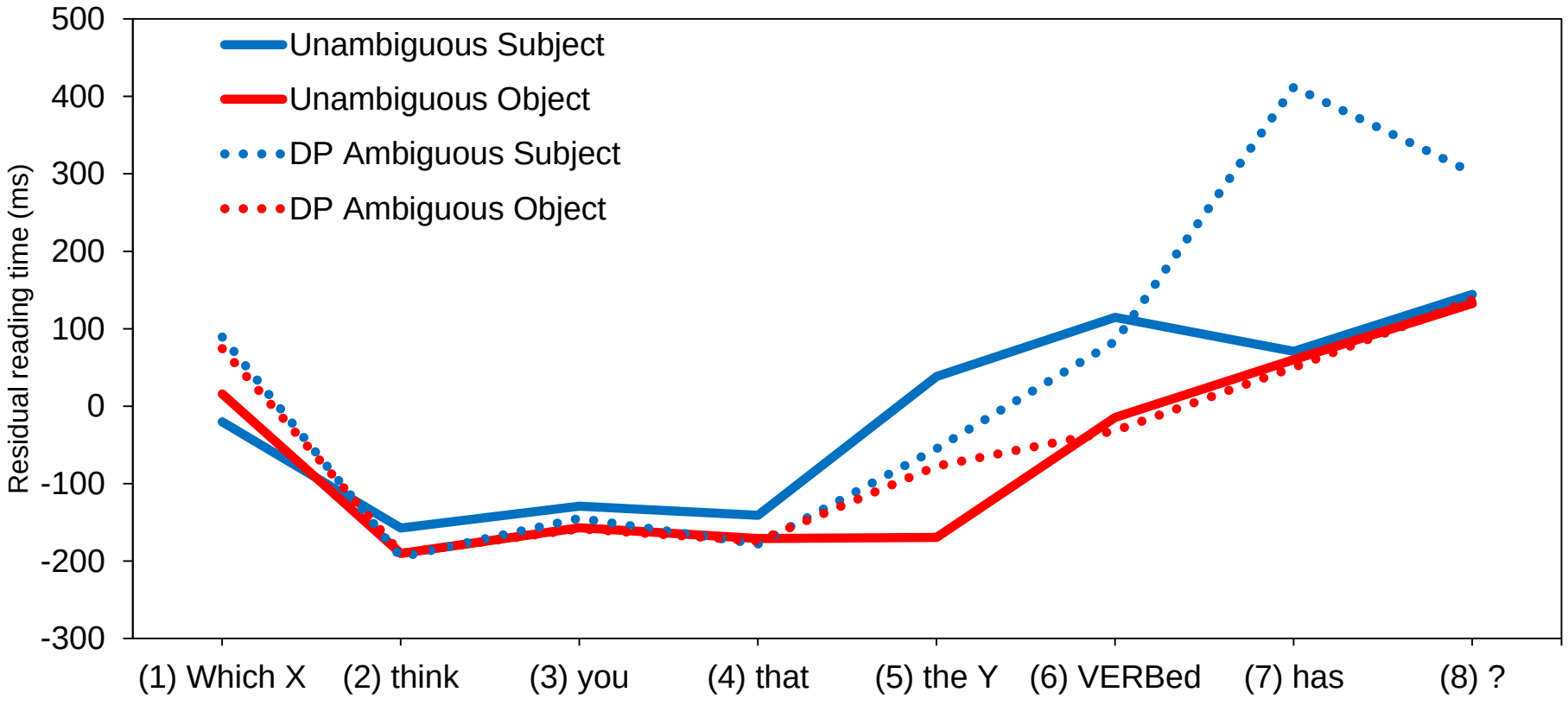
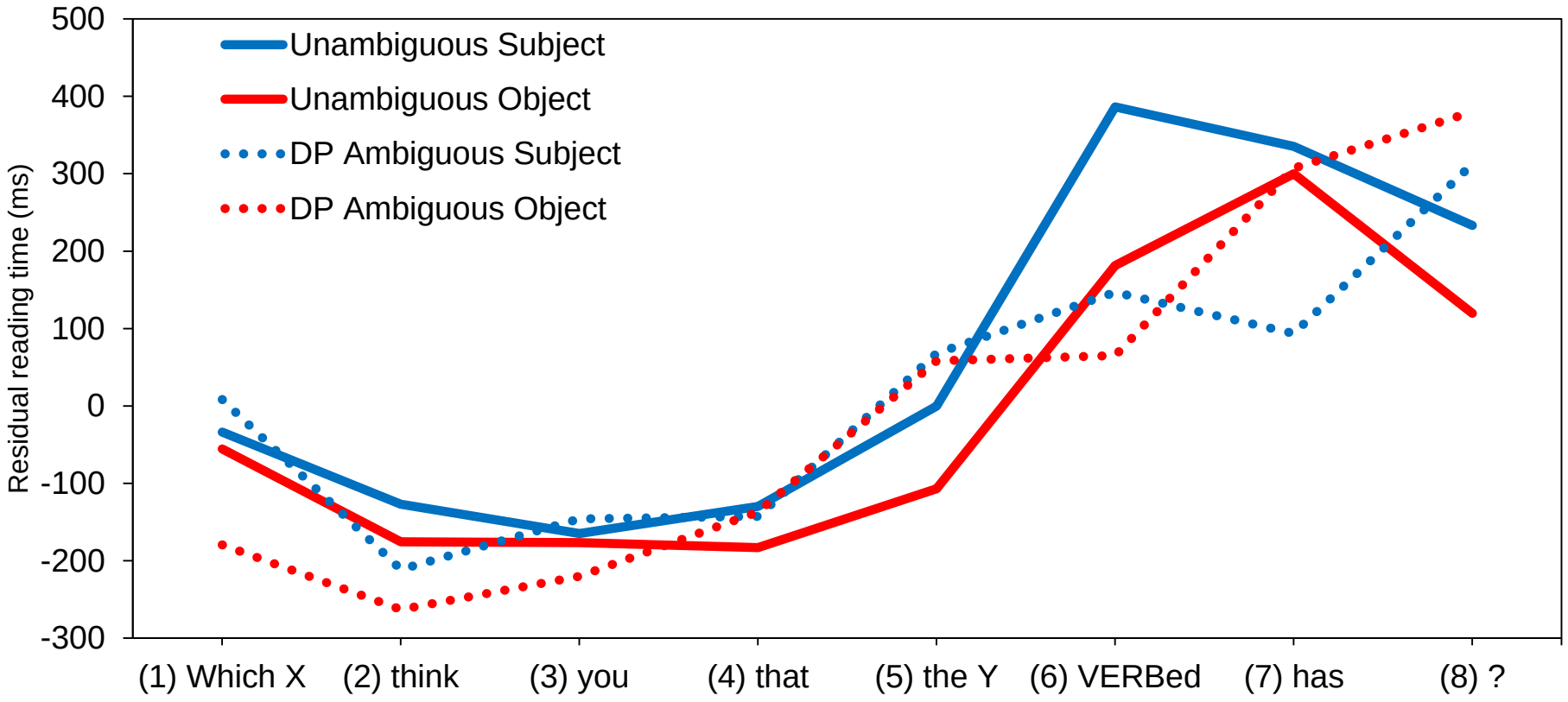
Graph 4: Reading times correct responses



Graph 5: Reading times incorrect responses



Histogram correct responses per condition