

I. Introduction

In theoretical linguistics it is assumed that German has an underlying verb-final structure, although in main clauses the finite verb appears in second position. We provide evidence from a self-paced reading experiment that supports the psychological reality of the underlying head-final structure by means of the licensing of a negative polarity item (NPI).

II. V2 Property of German

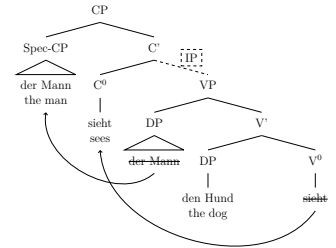
Basic Word Order

- ▶ German basic word order is verb final (SOV).
- ▶ This is evident in embedded clauses (1).

(1) ... dass du ein Poster ansiehst.
 that you a poster looking at
 '...that you are looking at a poster.'

Main Clause V2

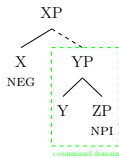
- ▶ The finite verb moves to C⁰.
- ▶ In declarative clauses one constituent moves to Spec-CP.
- ▶ In analytic verb forms only the finite auxiliary moves.
- ▶ With particle verbs a separable particle remains in clause final position.



III. NPIs

Licensing Requirements:

- ▶ NPIs such as *any* have to be licensed by downward entailing operators (e.g. negation).
- ▶ NPI-licensing is obtained by the c-command relation.



Previous Research:

- shows that non-licensed NPIs
- ▶ elicit prolonged reading times (RTs) (Vasishth et al., 2008; Parker and Phillips, submitted).
- ▶ yield N400 effects (Saddy, Drenhaus, and Frisch, 2004).
- ▶ are interpreted as a violation of the semantic/pragmatic licensing requirements.
- ▶ elicit smaller RT effects if an NPI follows a non-c-commanding (intrusive) negation.

IV. A Dilemma?

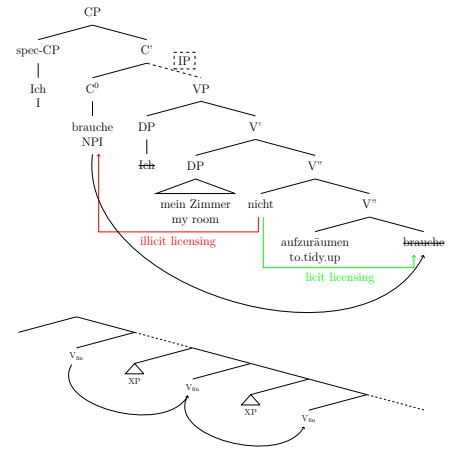
“brauchen”: The German deontic modal *brauchen* ('have to') is an NPI:

(2) ...dass ich mein Zimmer *(nicht) aufzuräumen brauche.
 '...that I doesn't have to tidy up my room.'

Puzzle: If *brauchen* appears in V1/V2-position, it strangely precedes and c-commands its licenser.

Solution: The solution to this puzzle is that the NPI (as all German verbs in second position) undergoes reconstruction into the sentence-final base position. If so, the NPI ends up in a position in which it is c-commanded by the negation, i.e. standard licensing applies.

Parsing: In on-line sentence comprehension we assume that the reconstruction of the finite verb is realized via successive lowering of the verb to the purported final position after every incoming phrase that virtually completes the parse.



V. Method and Materials

Self-Paced Reading Experiment: stationary window paradigm. 32 subjects, 32 items, and 35 fillers in a 2 × 2 × 2 design.

Conditions: *brauchen* 'have to' NPI × NEG₁ × NEG₂
beschließen 'decide' NEUTRAL × POS × POS

NPI Also braucht der Autor [[den Roman (nicht) zu drucken]_{VP1} #1 dieses Mal *(nicht) zu verbieten]_{VP2} #2 um das mediale Interesse zu wecken.
 thus has the author the novel not to print this time not to forbid for the medial interest to arouse
 'Thus the author doesn't have to forbid to not print the novel this time in order to arouse the attention of the media.'

Neutral Also beschließt der Autor den Roman (nicht) zu drucken dieses Mal (nicht) zu verbieten um das mediale Interesse zu wecken.
 'Thus the author doesn't decide to forbid to not print the novel this time in order to arouse the attention of the media.'

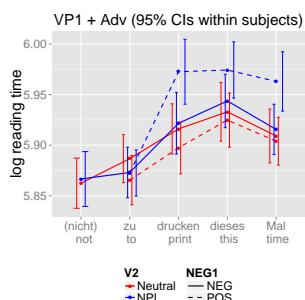
Prediction:

- ▶ A parser which makes minimal assumptions about the input will reconstruct the NPI-verb as soon as possible, i.e. to #1. We predict prolonged RTs if the NPI at #1 is not in the scope of a negator.
- ▶ Ultimately VP₁ turns out to be the object of *verbieten* and is irrelevant for NPI-licensing. The NPI has to be reconstructed in #2. Again we expect RT effects due to NPI-licensing.

VI. Results and Discussion

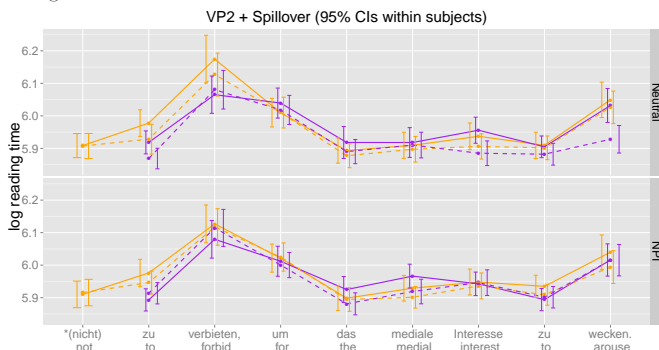
V₁ + Adverb Region

- ▶ Interaction of VERB × NEG₁
- ▶ longer RTs for the NPI condition without NEG₁
- ▶ indicates that readers reconstruct the finite verb below V₁ and are sensitive to the licensing requirements of the NPI



V₂ + Spillover Region

- ▶ main effect of NEG₂ at V₂
- ▶ main effect NEG₁ in the spillover region (*mediale Interesse*).
- ▶ indicates semantic processing effort of negation



Sentence Final Word

- ▶ 3-way Interaction: NEUTRAL non-negated condition vs. all other conditions
- ▶ indicates processing effort of negation and NPI at sentence final wrap-up

VII. Conclusions

- ▶ Effects of the NPI conditions in the V₁ + adverb region is the consequence of a mandatory search for the clause final position to reconstruct the finite verb into.
- ▶ The process is comparable to active filler parsing.
- ▶ After insertion of the NPI-verb *brauchen*, prolonged RTs are observable if NPI-licensing fails, similarly to *filled gap effects*.
- ▶ Verb reconstruction in German is a reflex-like parsing process that applies blindly, i.e. also in environments in which it fails semantically.
- ▶ The results provide evidence for head movement and head reconstruction.
- ▶ The results refute syntactic accounts which assume base-generation of V1/V2-clauses.

Invisible verb-final parsing in German: Uncovered by NPIs

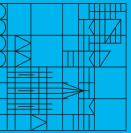
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