

# A priority list of factors for syntactic encoding (in German)

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## Introduction

Syntactic encoding in language production is affected by factors, such as **animacy**, **visual saliency**, **thematic roles**, or the **discourse status** of the referents to be encoded (Bock & Levelt 1994).

Our aim here is to determine which information is prioritized for syntactic function assignment, or the linearization of referents mentioned in a sentence, respectively.

In a picture description task, we manipulated the discourse status of the agent and patient in transitive scenes (Prat-Sala & Branigan 2000), as well as the sequence of fixations directed to the event participants by means of an attention-capture procedure (Gleitman et al. 2007).

## Method

Two picture description experiments with eyetracking; participants (N=16/N=32) were native speakers of German; all students at Heidelberg University

### Materials

*Pictures (Exp 1/Exp 2):*

- 28 lead-in-pictures + 28 target pictures showing transitive events (Exp 1/ Exp 2)

*Lead-in-discourse (Exp 1):*

- In this picture, you see [Referent 1] and [Referent 2]. Please tell me what happens in the next picture.

*Lead-in-discourse (Exp 2):*

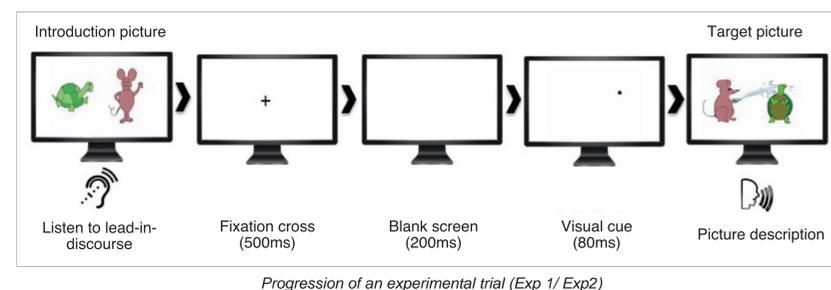
- In this picture, you see [Referent 1] and [Referent 2]. In the next picture you will see [Referent 1] again. please tell me what happens to the [Referent 2].
- In half of the trials, [Referent 1] was the agent in the target picture and [Referent 2] was the patient, in the other half this was reversed.

*Visual cues*

- 0.5" x 0.5", black square, displayed for 80 ms (stimulus pictures 15.4" x 11")
- Exp 1: half in the agent region, other half in the patient region
- Exp 2: only in the patient region

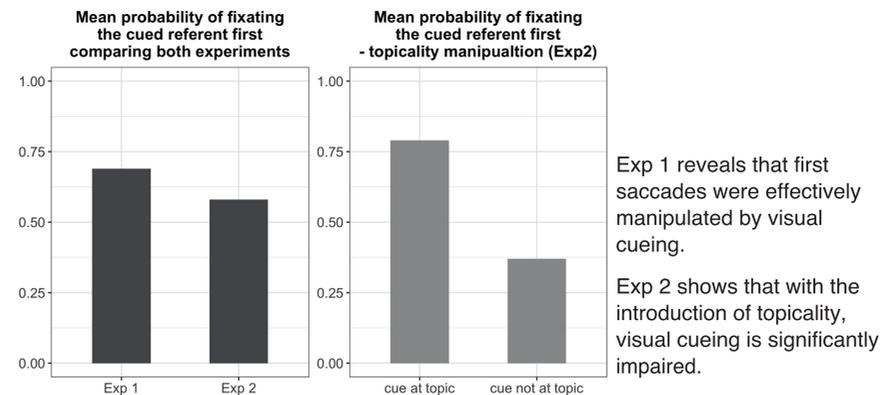
### Task

Look at the pictures, listen to discourses, answer the question by describing the target picture



## Results

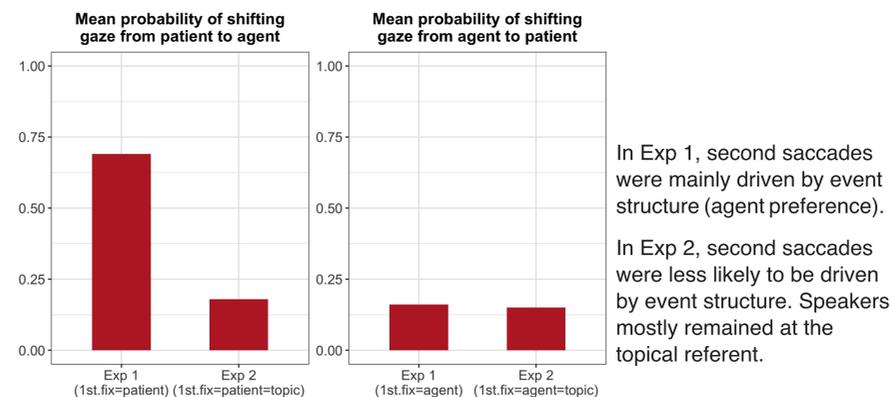
### First fixation locations - effectiveness of the visual cue



Exp 1 reveals that first saccades were effectively manipulated by visual cueing.

Exp 2 shows that with the introduction of topicality, visual cueing is significantly impaired.

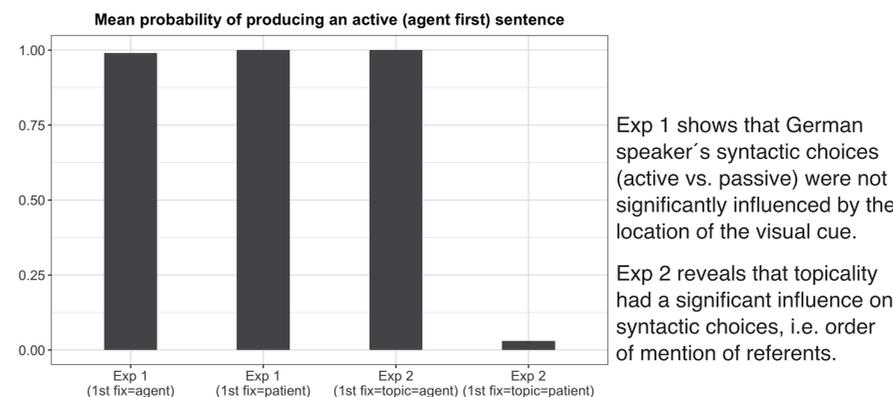
### Second fixation locations - top-down effects on starting points



In Exp 1, second saccades were mainly driven by event structure (agent preference).

In Exp 2, second saccades were less likely to be driven by event structure. Speakers mostly remained at the topical referent.

### Syntactic choices - order of mention of referents



Exp 1 shows that German speaker's syntactic choices (active vs. passive) were not significantly influenced by the location of the visual cue.

Exp 2 reveals that topicality had a significant influence on syntactic choices, i.e. order of mention of referents.

## Discussion

In Experiment 1, the location of the visual cue had a reliable effect on the placement of the first fixation. However, no visual-attentive effects on sentence structures (word order) were observed. Both second saccades and syntactic choices were influenced by event structure (thematic roles).

In Experiment 2, we found a significant effect of topicality on the placement of the first fixation. Effects of event structure on second saccades and syntactic choice were largely replaced by effects of topicality.

The factors manipulated in the current study differ in strength to impact syntactic function assignment and the linearization of referents. In German native speakers, the priority list of factors that influences syntactic choices is as follows: 1. discourse status of the referents, 2. event structure (thematic roles), 3. attentional starting point. This may be different in other languages.

## References

- Bock, K., & Levelt, W. (1994). Language production: Grammatical encoding. Handbook of psycholinguistics, ed. by Morton Ann Gernsbacher, 945-84.
- Gleitman, L. R., January, D., Nappa, R., & Trueswell, J. C. (2007). On the give and take between event apprehension and utterance formulation. Journal of memory and language, 57(4), 544-569.
- Prat-Sala, M., & Branigan, H. P. (2000). Discourse constraints on syntactic processing in language production: A cross-linguistic study in English and Spanish. Journal of Memory and Language, 42(2), 168-182.

