

Processing of ambiguous and unambiguous morphological cues in object-verb-subject sentences: Is there an SVO-bias?



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BACKGROUND

Comprehension of sentences with OVS order leads to increased processing demands in terms of higher end-of-sentence response times.^[1,2] In German, this has been observed for locally **case-ambiguous** as well as **case-unambiguous OVS sentences**. The OVS-disadvantage is associated with a **processing-bias for an SVO interpretation**, which needs to be revised when the input provides conflicting case or inflectional cues. In contrast, studies using the visual-world paradigm found evidence for **incremental processing** and rapid integration of case-marking as well as inflectional cues indicating OVS order.^[3,4,5]

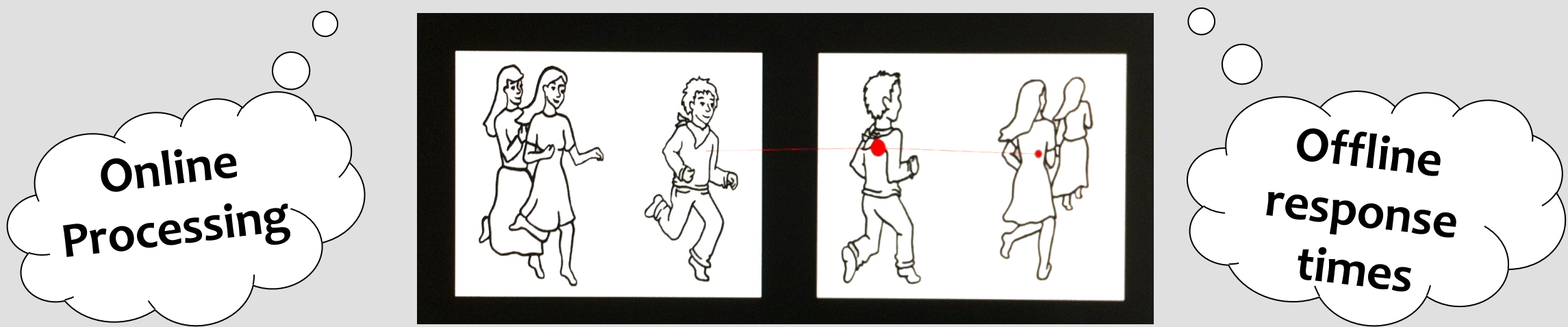
AIMS OF THE STUDY

- Investigate processing of locally ambiguous and unambiguous SVO and OVS sentences in German using a modified visual-world paradigm: eye-tracking during sentence-picture matching
- Is there an SVO bias even in sentences with early unambiguous case cues indicating OVS order?
- To what extent are structural predictions in case-marked OVS sentences influenced by the presence of filler sentences in passive voice?

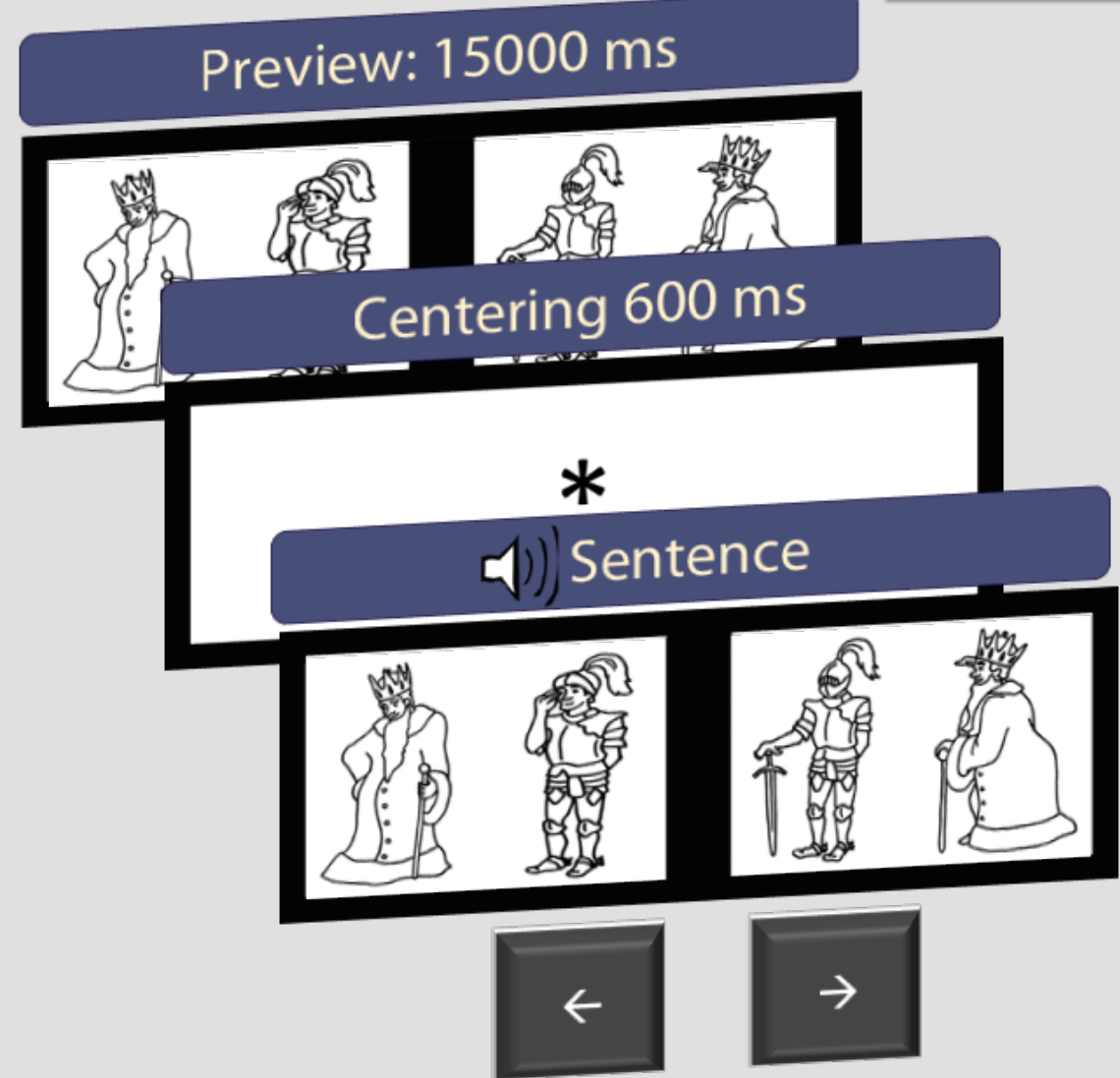


DESIGN

Modified visual-world study:
Eye-tracking during sentence-picture matching



PROCEDURE



- Task is to identify the picture that matches the sentence (button-press)
- RTs & eye-movements on target picture and foil (thematic role reversal)
- Exp.1 & Exp. 2: same stimuli & design as in Hanne et al. (2015)^[5]
- n=20 participants per experiment (mean age: Exp.1: 26, Exp.2: 24, Exp.3: 25 yrs.)

MATERIAL

EXP. 1: CASE-AMBIGUOUS NP1

Target	SVO n=20	Das Kind fängt die Frauen [The _{NOM/ACC} child catches _{3rd pers.sg.} the _{NOM/ACC} women]
	OVS n=20	Das Kind fangen die Frauen [The _{NOM/ACC} women catch _{3rd pers.pl.} the _{NOM/ACC} child]
Filler	passive n=10	Das Paket wird von den Frauen geschoben [The _{NOM/ACC} parcel is being by the _{NOM/ACC} women pushed]
	passive n=10	Von den Frauen wird das Paket geschoben [By the _{NOM/ACC} women is being the _{NOM/ACC} parcel pushed]

EXP. 2: CASE-UNAMBIGUOUS NP1

Target	SVO n=20	Der König sieht den Ritter [The _{NOM} king see _{3rd pers.sg.} the _{ACC} knight]
	OVS n=20	Den König sieht der Ritter [The _{ACC} king see _{3rd pers.pl.} the _{NOM} knight]
Filler	passive n=10	Der Wagen wird vom Ritter gesehen [The _{NOM} chariot is being by the _{DAT} knight seen]
	passive n=10	Vom Ritter wird der Wagen gesehen [By the _{DAT} knight is being the _{NOM} chariot seen]

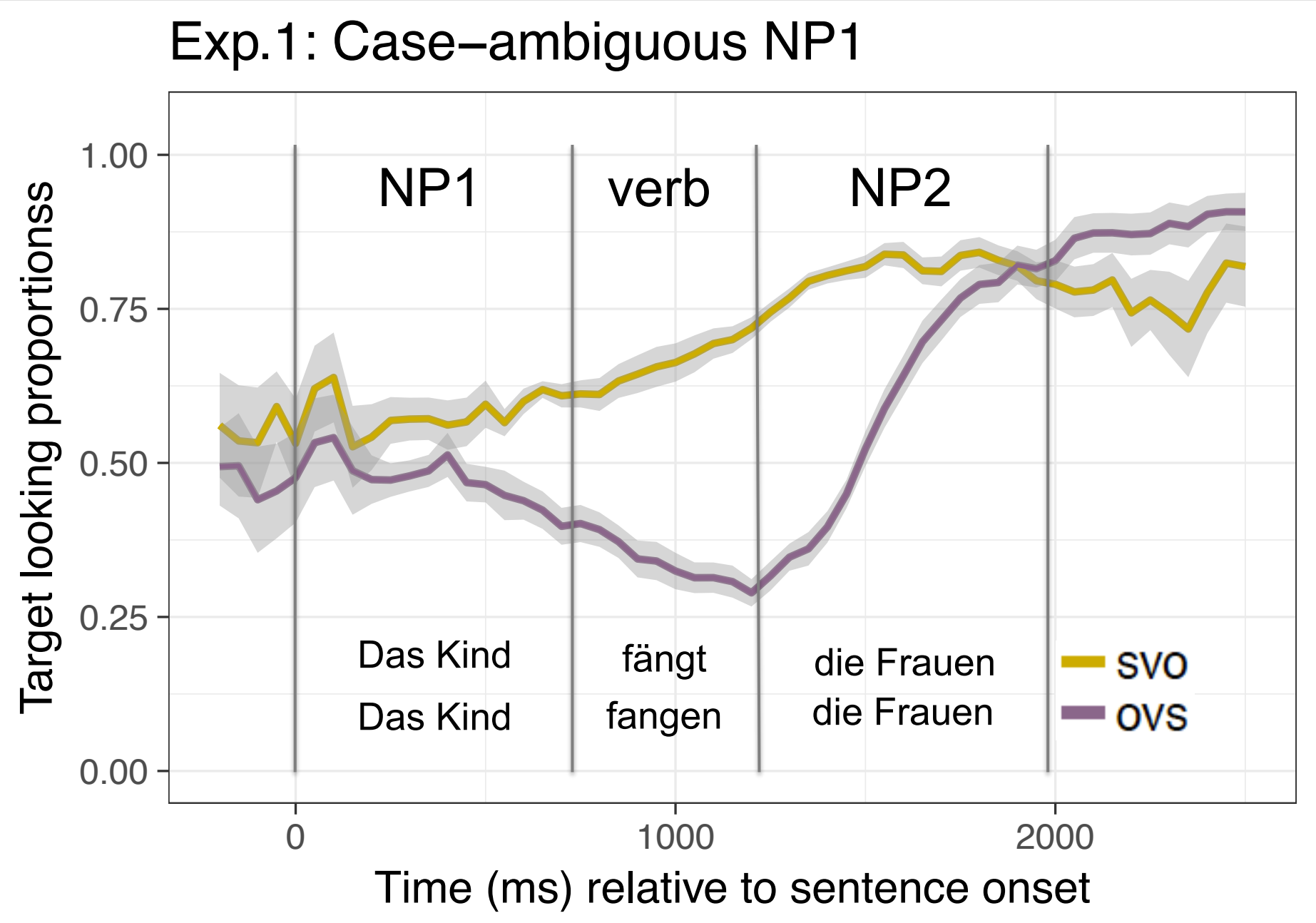
EXP. 3: CASE-UNAMBIGUOUS NP1 (WITHOUT PASSIVE FILLERS)

Target	SVO n=20	Der König sieht den Ritter [The _{NOM} king see _{3rd pers.sg.} the _{ACC} knight]
	OVS n=20	Den König sieht der Ritter [The _{ACC} king see _{3rd pers.pl.} the _{NOM} knight]

RESULTS

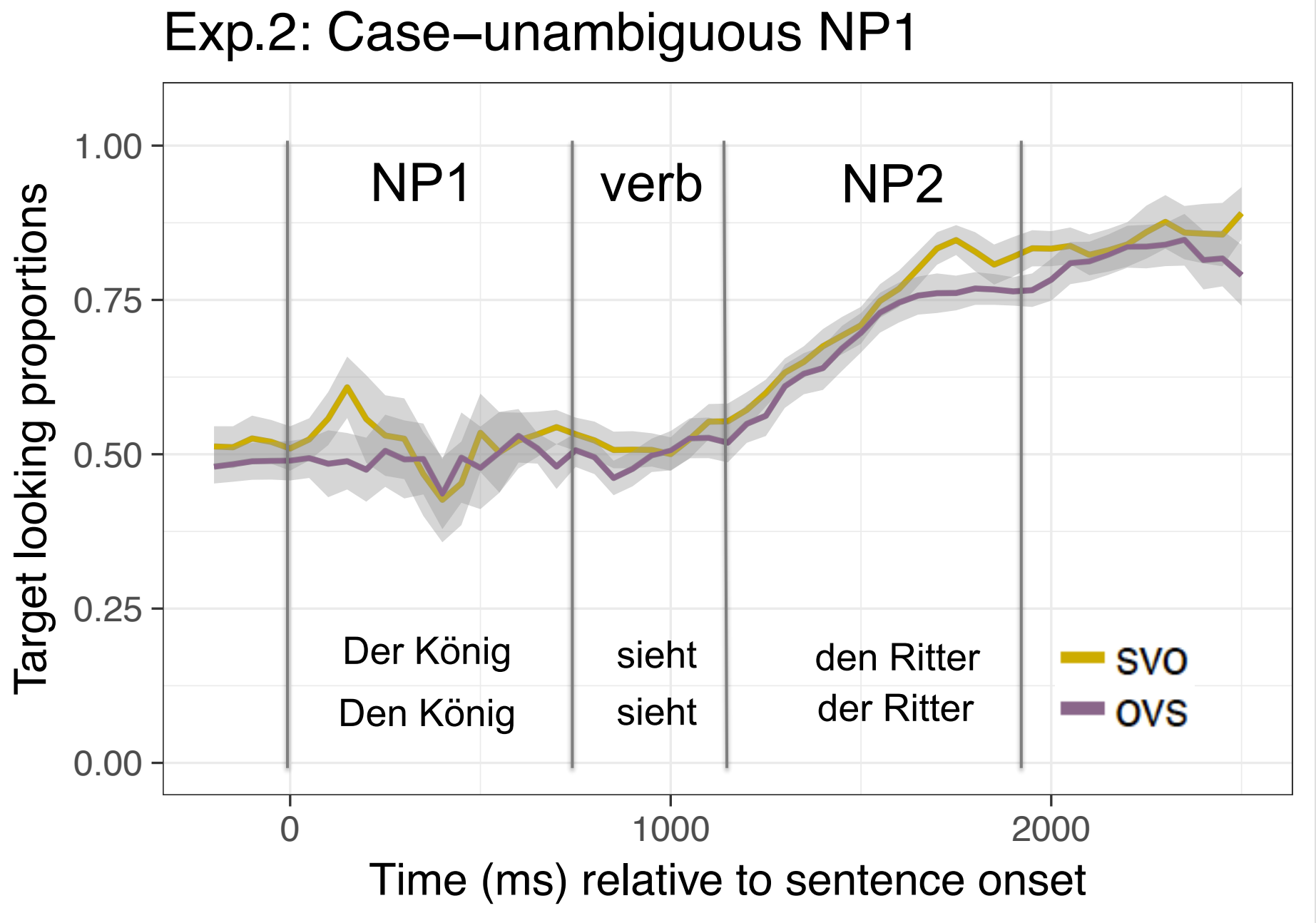
RTs:	SVO	OVS
	1662 (88.4)	<* 2050 (106.4)

Eye-movements:



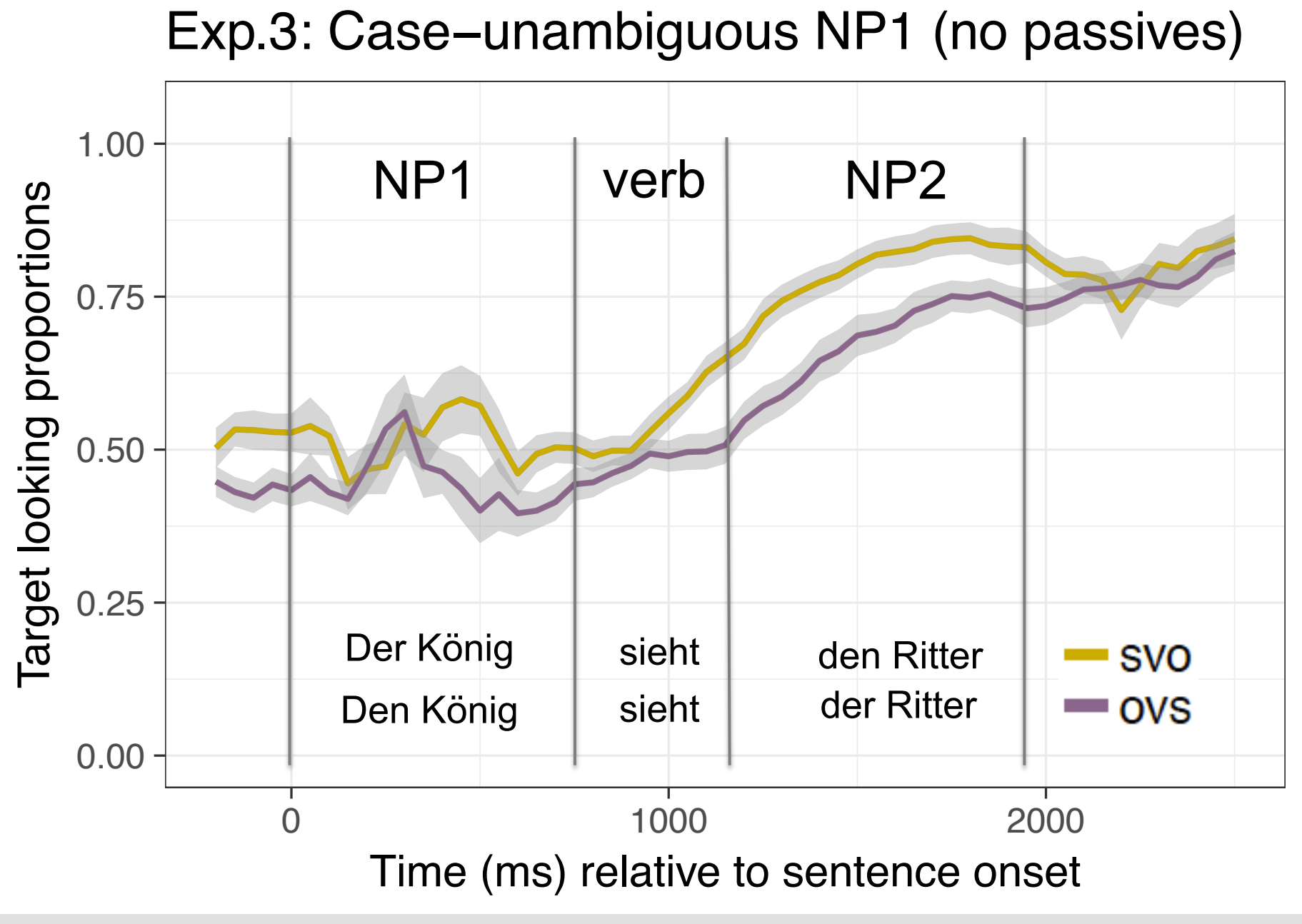
RTs:	SVO	OVS
	1392 (77.6)	<* 1654 (145.9)

Eye-movements:



RTs:	SVO	OVS
	1537 (99)	<* 1910 (145.9)

Eye-movements:



DISCUSSION

- ✦ Case-ambiguous NP1:
 - SVO: Target picture preference emerging
 - OVS: Preference for foil picture
- ✦ Inflectional cue at the verb:
 - Rapid reanalyses towards OVS structure
- **SVO-bias**
- **SVO prediction results in garden-path**
- **Reanalysis leads to increased RTs for OVS**

- ✦ Case-unambiguous NP1 (with passive fillers):
 - No difference between SVO and OVS
- ✦ Target picture preference starts emerging at the verb & NP2 in both conditions
- **No SVO-bias**
- **No disadvantage for accusative vs. nominative cues during online integration**
- **No reanalysis (?), yet increased RTs for OVS**

- ✦ Case-unambiguous NP1 (no passive fillers):
 - Tendency towards the foil picture in OVS
- ✦ Target picture preference emerges earlier in SVO vs. OVS
- **SVO-bias despite early accusative case cue**
- **Increased RTs for OVS due to reanalysis**
- **Intra-experimental adaption: presence of passives reduced the SVO-bias in Exp. 2**

REFERENCES

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- [2] Gorrell, P. (2000). The Subject-before-Object Preference in German Clauses. In B. Hemforth & L. Konieczny (Eds.) *German sentence processing* (p. 25–63). Dordrecht: Kluwer Academic Publishers.
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- [4] Knoeferle, P. (2007). Comparing the time course of processing initially ambiguous and unambiguous German SVO / OVS sentences in depicted events. In R. van Gompel, M. Fischer, W. Murray, & R. Hill (Eds.) *Eye-movement research* (pp. 517–536). Oxford: Elsevier.
- [5] Hanne, S., Burchert, F., De Bleser, R., & Vasishth, S. (2015). Sentence comprehension in aphasia: Eye-tracking reveals delayed morphological cue integration and late parsing commitments. *Journal of Neurolinguistics*, 34, 83–111.

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