

Introduction

- Regularities in the environment allow to generate expectations about upcoming events (Bar, 2009).
- While expectation effects have been demonstrated for semantic processing in language comprehension (Federmeier, 2007), there is hardly any evidence for expectation effects with regards to syntactic processing.
- In languages with a flexible word-order (e.g. German) there is a strong tendency to produce a sentence with a subject-initial word-order although object-initial sentences are also grammatically correct (Bader & Häussler, 2010). This allows listeners to generate expectations regarding the syntactic structure of an upcoming sentence.
- In order to investigate how extralinguistic information affects syntactic expectations we developed a paradigm in which the probability of a particular syntactic structure is coupled to a particular speaker.
- Expectations were tested by including ambiguous probe sentences for which participants had to identify the subject or the object.

Research questions

- Do listeners use speaker identity in order to generate expectations about the syntactic structure of a sentence?
- How do expectations change over time with increasing exposure to the speakers?

Methods

- 20 participants were tested in two sessions on two consecutive days. A follow-up test was conducted 9 months later.
- All sentences were recorded as a *Subject-Object-Verb (SOV)* and an *Object-Subject-Verb (OSV)* structure both by a male and a female speaker.
- Speakers were operationalized as **SOV-Speaker** (90% SOV vs. 10% OSV) and **OSV-Speaker** (90% OSV vs. 10% SOV) - speaker gender was balanced across participants.
- Sentences were presented with or without noise on top of the determiner (regular vs. probe trial)

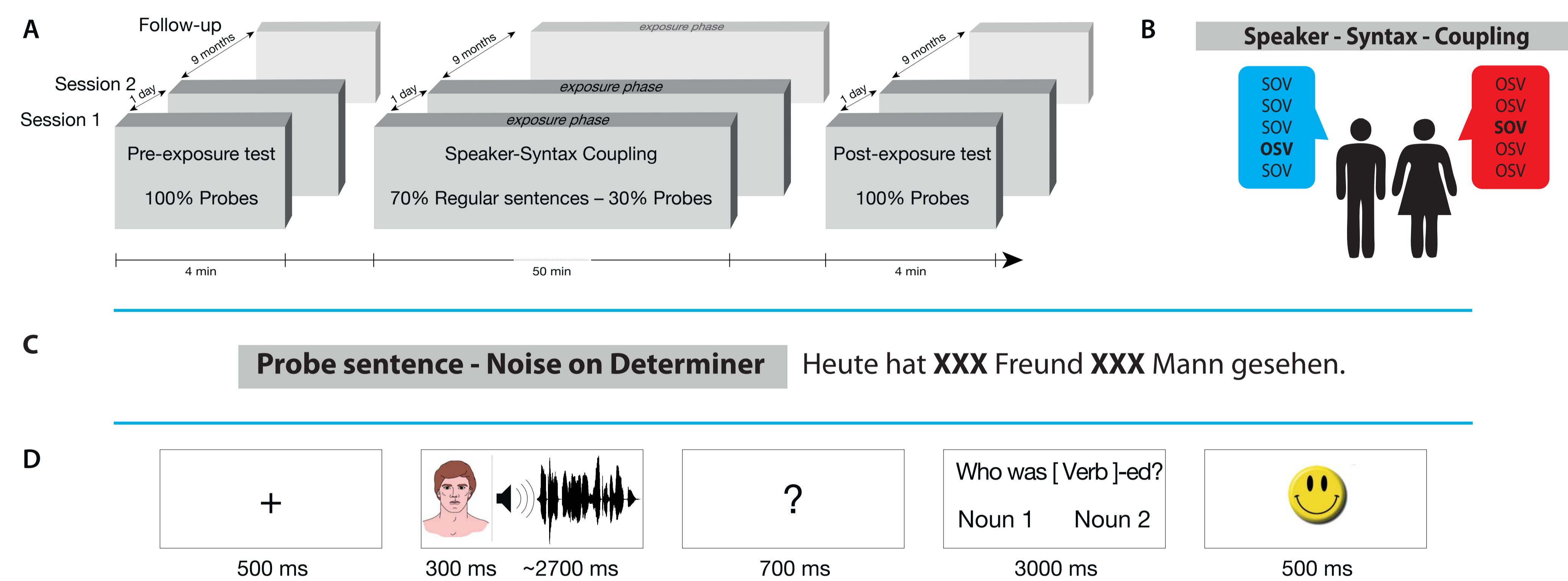
SOV

Heute hat der Mann den Freund gesehen.
Today has the [Nom.] man the [Acc.] friend seen.

OSV

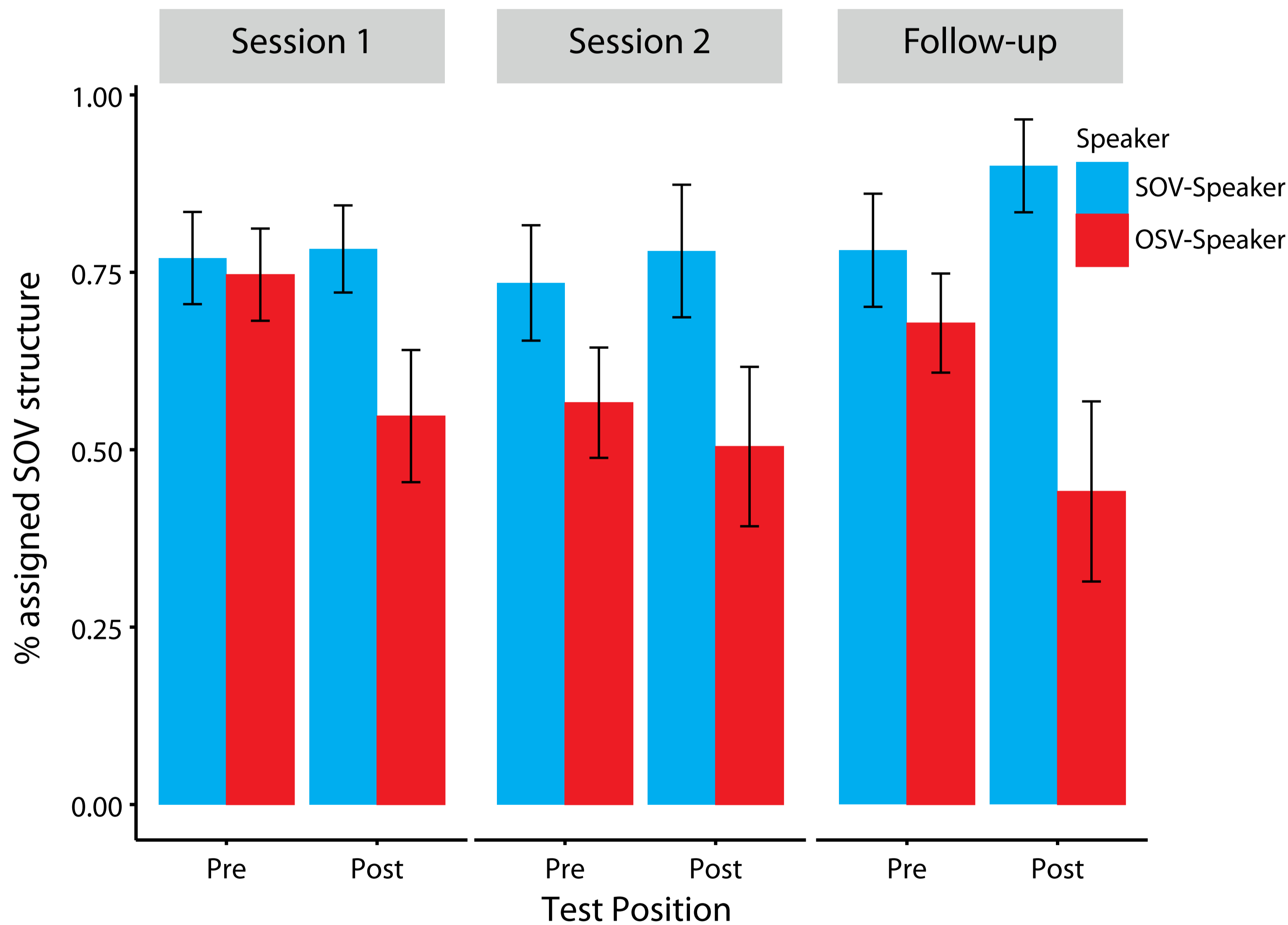
Heute hat den Freund der Mann gesehen.
Today has the [Acc.] friend the [Nom.] man seen.

Paradigm



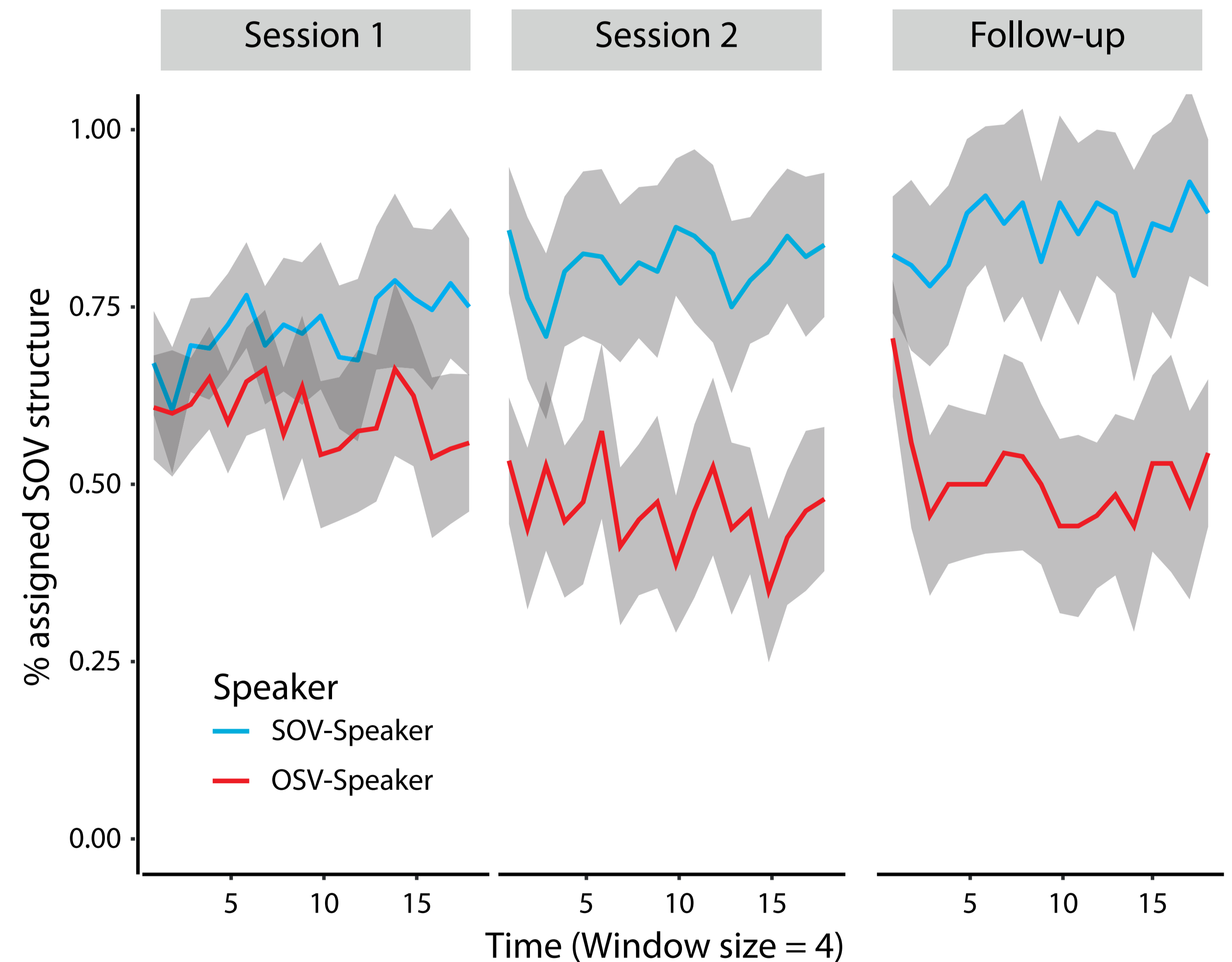
Results

Pre-/Post-Exposure Tests



A logit mixed effect model was calculated with the pre-test of S1 as a baseline. Compared to baseline *Speaker* effects were increased at subsequent test positions (Post-S1: $Z = 3.025$, $p = .002$; Pre-S2: $Z = 2.220$, $p = .026$; Post-S2: $Z = 3.880$, $p < .001$). In the follow-up study there were no differences between speakers in the pre-test ($Z = 0.851$, ns), while there was an increased *Speaker* effect at the post-test ($Z = 5.683$, $p < .001$).

Exposure Phase



Growth curve analysis was used to evaluate changes over the course of the experiment. The results demonstrate a linear increase in the difference between speakers [$t(76.75) = 2.313$, $p = .023$] as well as an increased speaker effect in S2 compared to S1 [$t(60.28) = 2.672$, $p = .01$]. For the follow-up study, there was only a main effect of *Speaker* [$t(31.99) = 3.351$, $p = .002$], but no effect of *Time* and no interaction between *Time* and *Speaker*.

Discussion

- Participants start with a strong bias towards the SOV structure. This reflects the default preference for SOV structures in German (Bader & Häussler, 2010).
- With increasing exposure to the speakers, participants generate expectations regarding the syntactic structure of a sentence that deviate from these language defaults depending on the speaker.
- When participants hear an ambiguous sentence (determiners replaced by noise), which is spoken by the OSV-speaker, they are more likely to assign a OSV structure to this sentence than a SOV structure, and vice versa for the SOV-speaker.
- Strikingly, this effect can be reinstated almost instantaneously after a period of 9 months. The results suggest that this is not due to a simple association between speaker and structure but depends on communicative relevance.
- This demonstrates that listeners are sensitive to speaker-specific syntactic preferences and that this information is used as a top-down mechanism in language comprehension.

References

- Bar, M. (2009). The proactive brain: memory for predictions. *Philosophical Transactions of the Royal Society of London B: Biological Sciences*, 364(1521), 1235–1243.
- Federmeier, K. D. (2007). Thinking ahead: The role and roots of prediction in language comprehension. *Psychophysiology*, 44(4), 491–505.
- Bader, M. & Häussler, J. (2010). Word order in German: A corpus study. *Lingua*, 120(3), 717–762.