### 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 session 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)

### Paradigm

#### Pre-/Post-Exposure Tests

<table>
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<tr>
<th>Session 1</th>
<th>Session 2</th>
<th>Follow-up</th>
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<tbody>
<tr>
<td>Speaker</td>
<td>SOV-Speaker</td>
<td>OSV-Speaker</td>
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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](image)

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 ($t(76.75) = 2.313, p = .002$) 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 ($t(13.99) = 3.351, p = .002$), 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 an 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 that this information is used as a top-down mechanism in language comprehension.

### References

