

## Introduction

### What is the functional interpretation of the N400 and the P600?

- Traditional account:** N400 = semantic integration, P600 = structural reanalysis (e.g., Brown & Hagoort, 1993).
- Retrieval-Integration account:** N400 = lexical retrieval, P600 = semantic integration (Brouwer et al., 2012, 2017).
- The two approaches make different predictions about the “semantic illusion phenomenon” (e.g., “For breakfast the eggs/boys would eat”, Kuperberg et al., 2003) in absence of semantic violations (and in wider discourse).
- We tested these predictions by comparing ERPs to lexically primed target words that were easy (plausible) vs. difficult (implausible) to integrate into the unfolding discourse representation → N400 or P600 effect?

## Design

### Easy to integrate

- Johann entered the restaurant. Before long he opened the menu and ...  
“Johann betrat das Restaurant. Wenig später öffnete er die Speisekarte und ...”

### Hard to integrate

- Johann left the restaurant. Before long he opened the menu and ...  
“Johann verließ das Restaurant. Wenig später öffnete er die Speisekarte und ...”

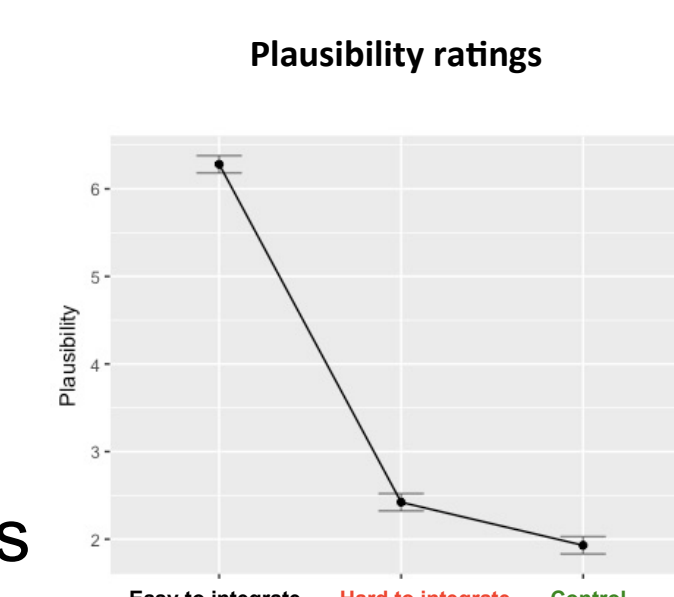
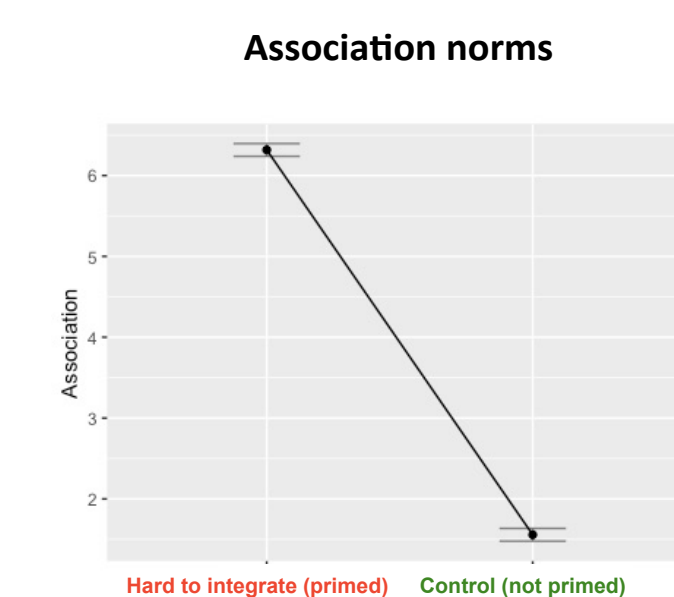
### Control (not primed)

- Johann entered the apartment. Before long he opened the menu and ...  
“Johann betrat die Wohnung. Wenig später öffnete er die Speisekarte und ...”

primed  
Implausible

## Method

- 21 right-handed German speakers.
- 90 items arranged in 3 counterbalanced lists (30 items x condition).
- Two pre-tests:
  - Association norms (on a 1-7 scale how strongly associated are “restaurant-menu” vs. “apartment-menu”?).
  - Plausibility judgments (on a 1-7 scale).



- 90 filler passages including 1/3 same structure, plausible, not primed; 1/3 different structure, plausible, primed; 1/3 different structure, implausible, not primed (more severe violation)

- Yes/No plausibility judgment task

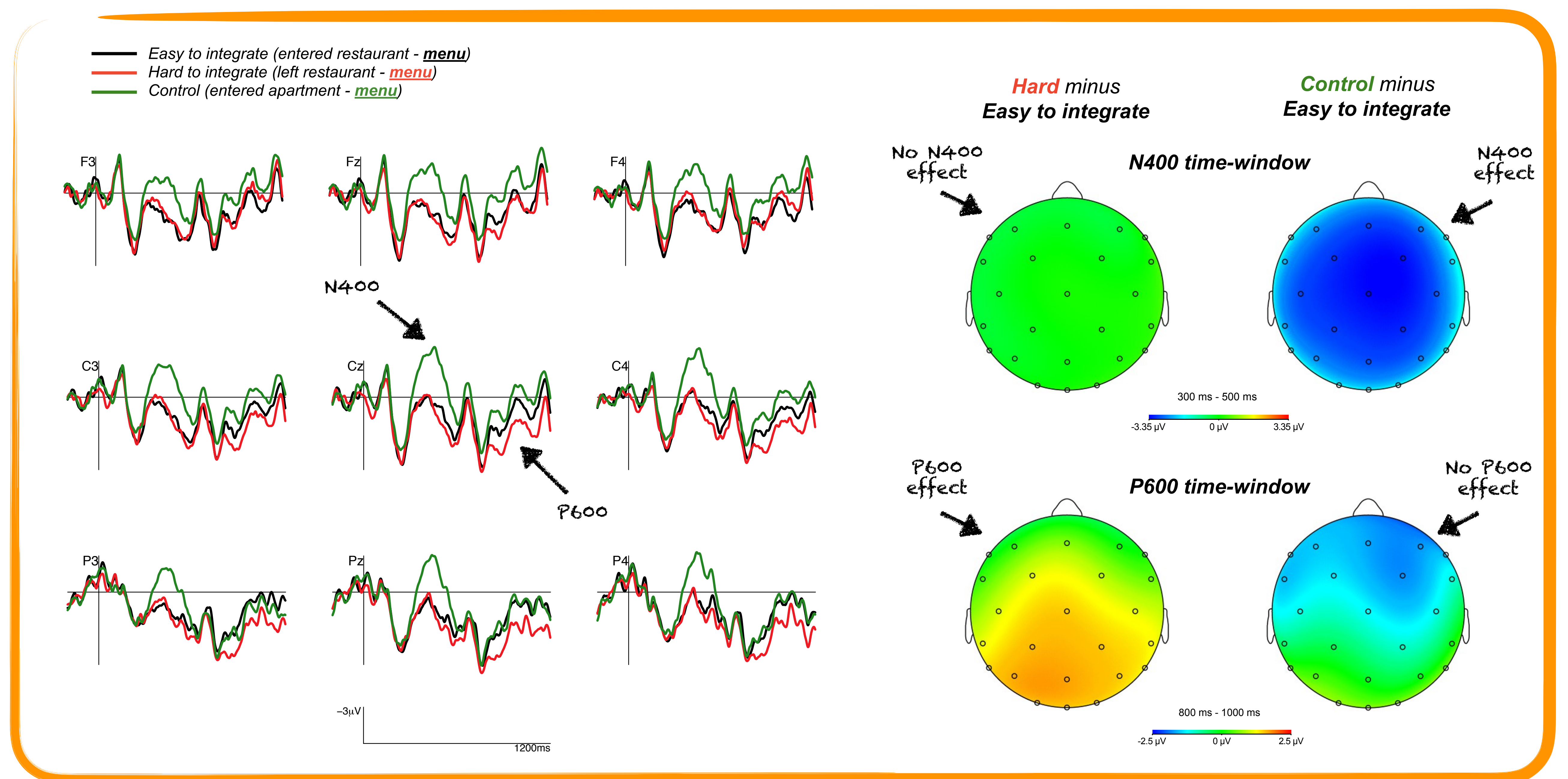
- Target sentence presented word-by-word (350 ms word + 150 ms blank)

## Predictions

	Easy vs. <b>Hard to integrate</b>	<b>Control vs. Easy to integrate</b>
<b>Traditional account</b>	N400 effect No P600 effect	N400 effect No P600 effect
<b>Retrieval-Integration account</b>	No N400 effect P600 effect	N400 effect P600 effect*

\*if it survives component overlap (Brouwer & Crocker, 2017)

## Results



## Summary

### N400 time-window:

- No N400 effect for primed but implausible targets indicates N400 modulations are driven by lexical priming rather than semantic integration difficulty → inconsistent with the Integration view of the N400 (see also Lau et al., 2009).

### P600 time-window:

- P600 effect for implausible but primed targets indicates the P600 - not the N400 - indexes semantic integration difficulty → consistent with the Retrieval-Integration account
- No P600 effect for implausible targets not primed by the context (control) might depend on 1) stimuli not resulting in highly implausible scenarios (not uncommon to keep take-away menus at home) and/or component overlap issue (Brouwer & Crocker, 2017)

- Overall, our results are more consistent with the Retrieval-Integration view of the N400 and the P600

**N400 = lexical retrieval**  
**P600 = semantic integration**