



# Cue Reliability and Re-Weighting in Speech Perception

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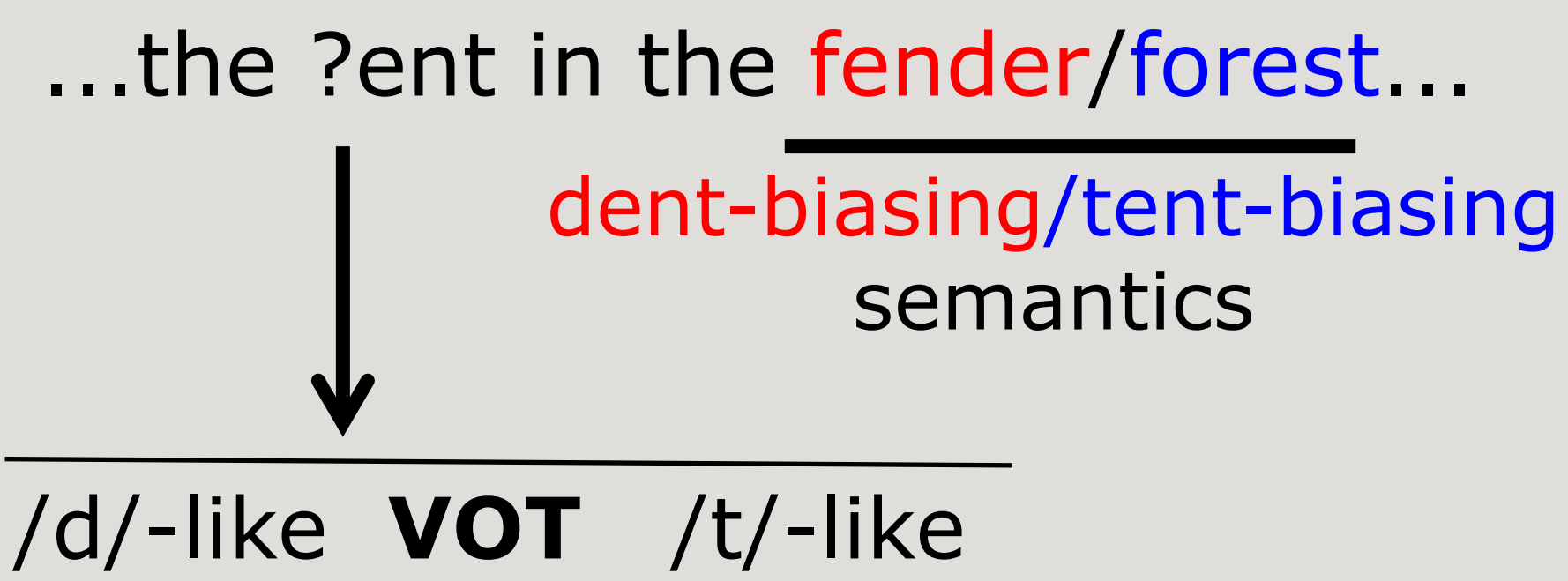
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## Introduction

Listeners integrate top-down and bottom-up cues in speech perception

But cues are distributed differently in different contexts (e.g., between speakers)

**Do listeners adaptively change cue weightings given new exposure distributions?**

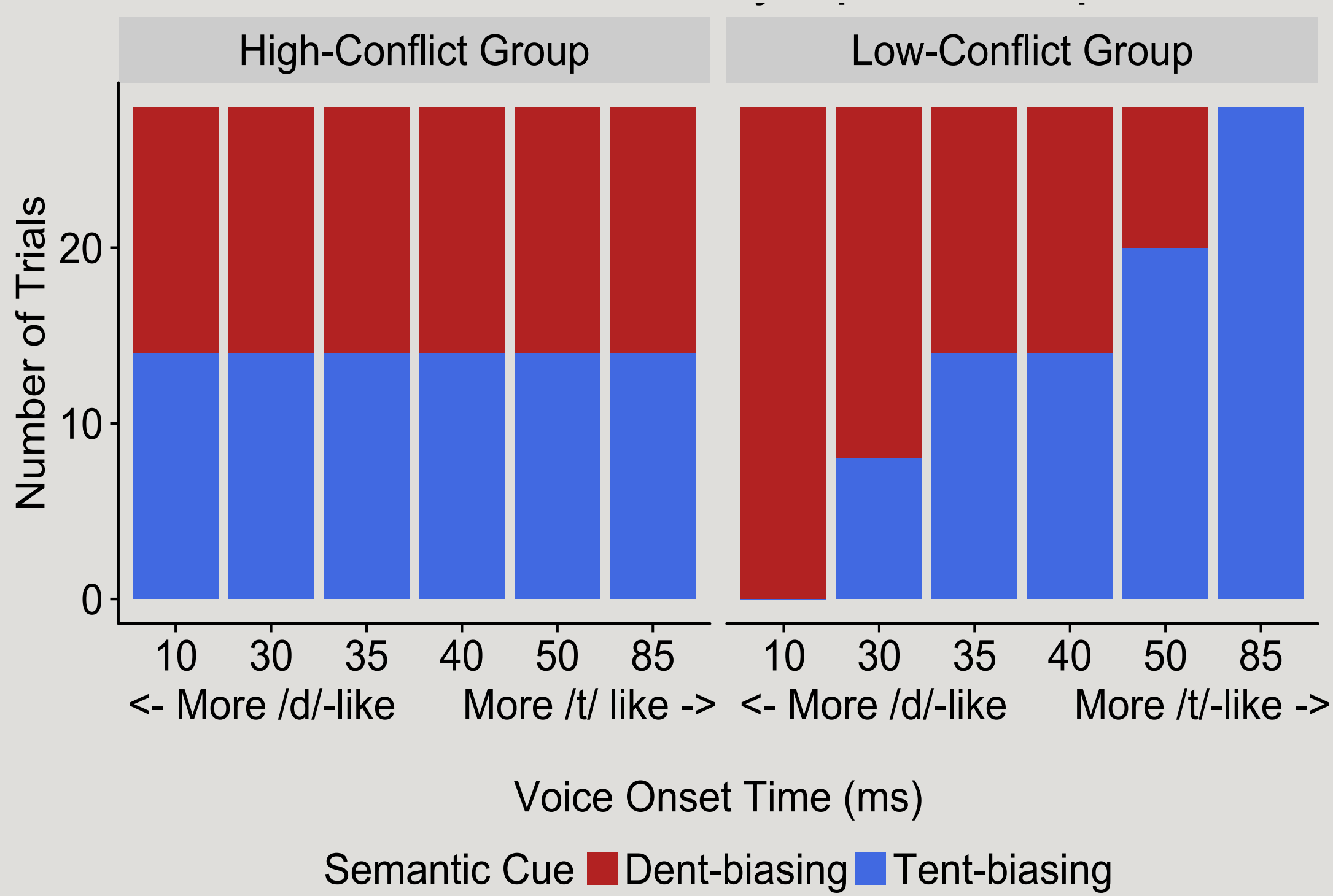


## Methods

Manipulate **acoustic cues** and **semantic cues** in a sentence

**Task:** did you hear "tent" or "dent"?"

Vary distribution of cues between subjects



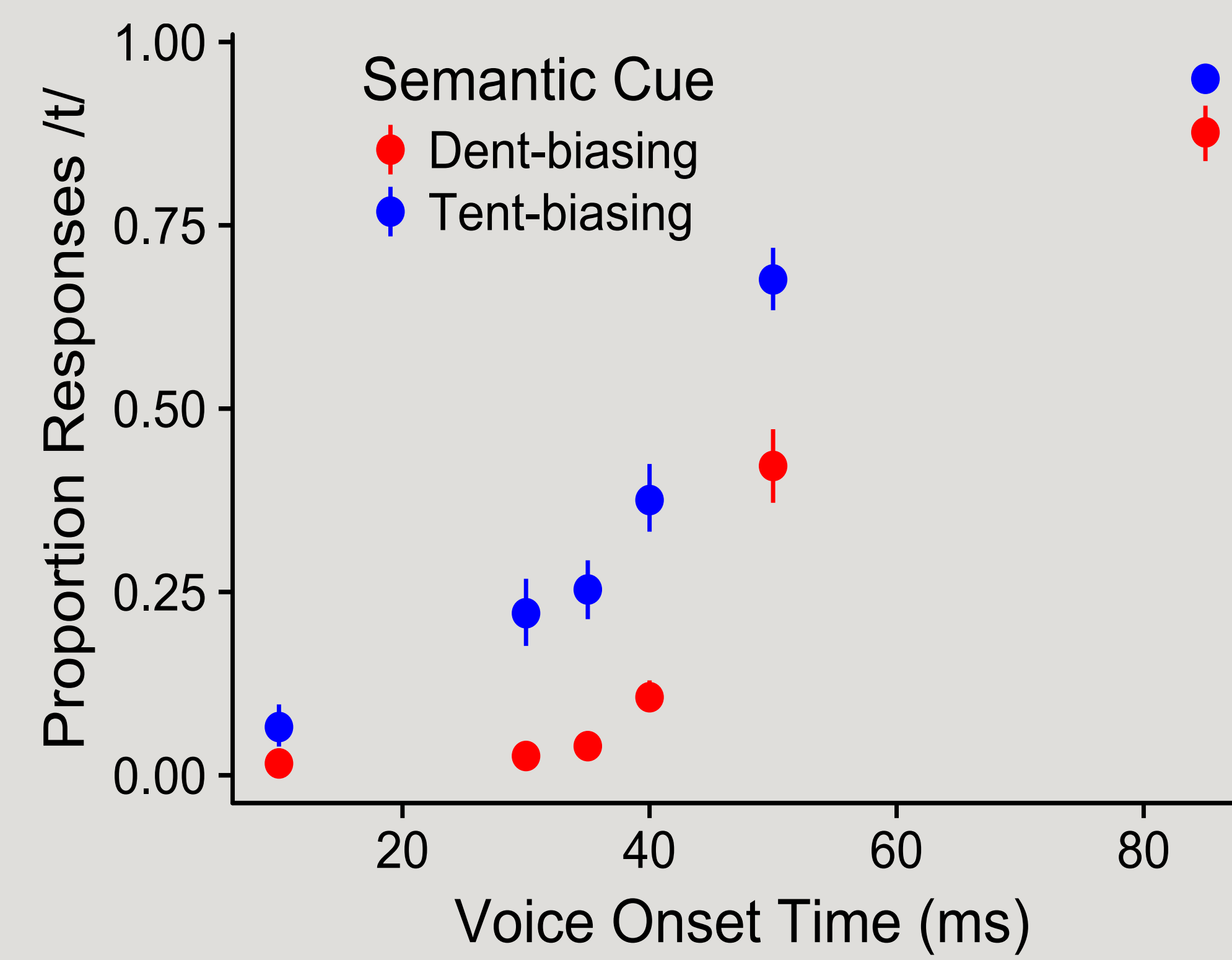
Mechanical Turk subjects (N = 106)

VOTs used: 10, 30, 35, 40, 50, 85ms (based on norming)

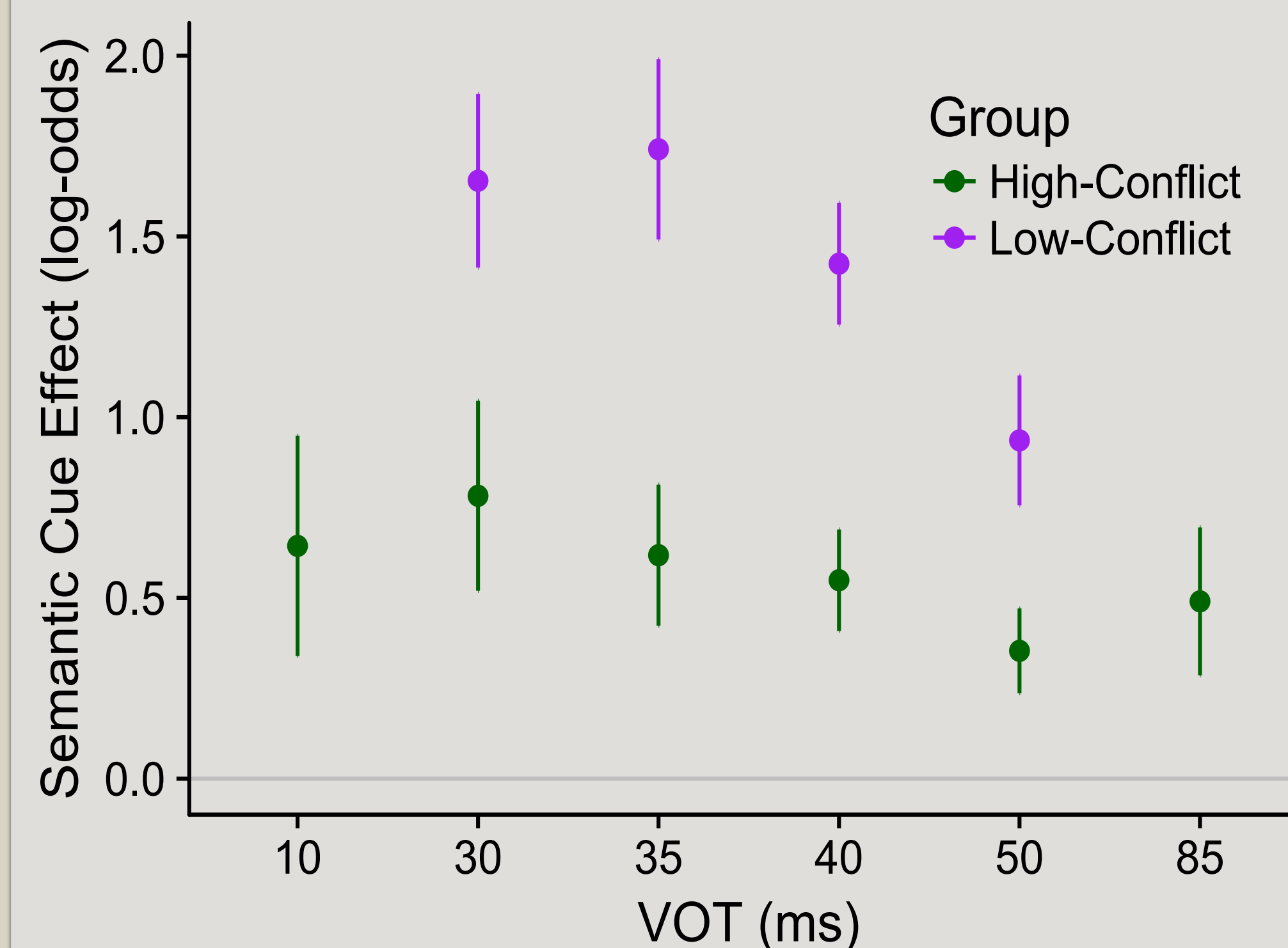
7 sentence frames repeated for each semantics, distance, & VOT combination = 168 total trials (no fillers)

## Results

**Listeners integrate acoustic & semantic cues in their responses**

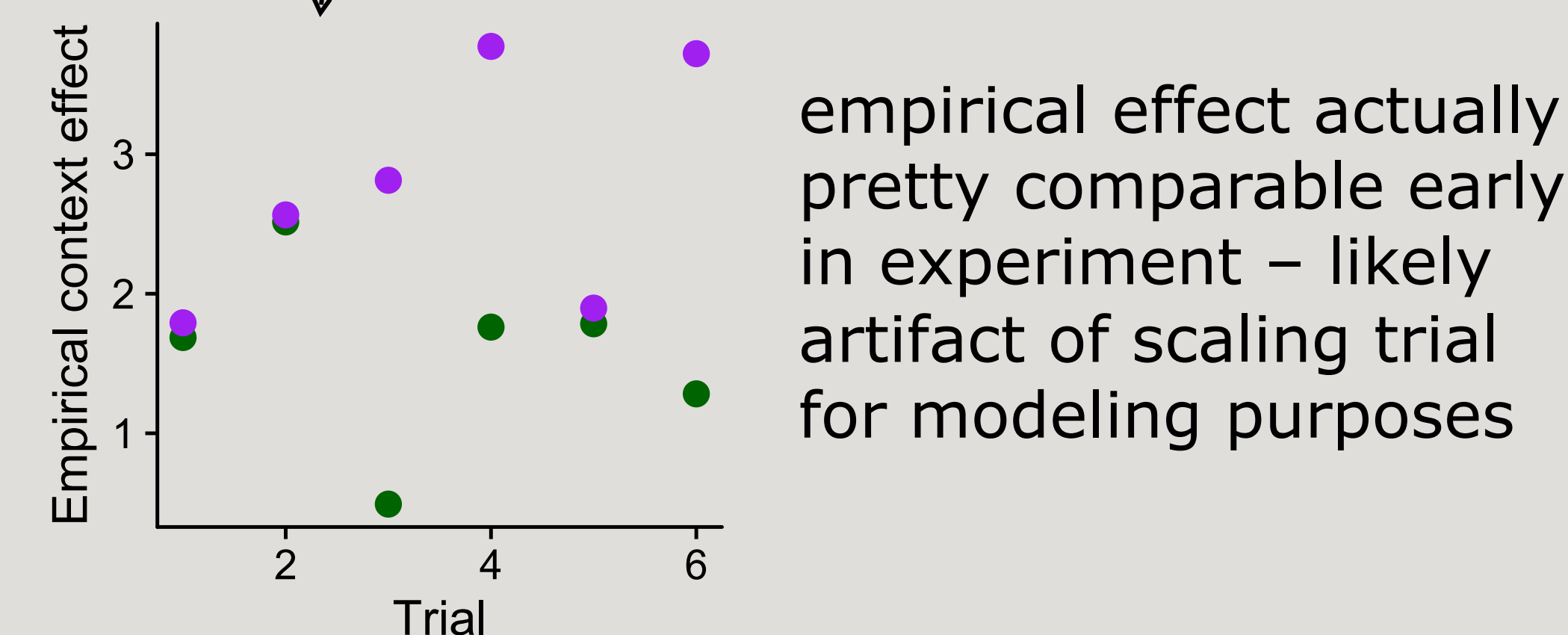
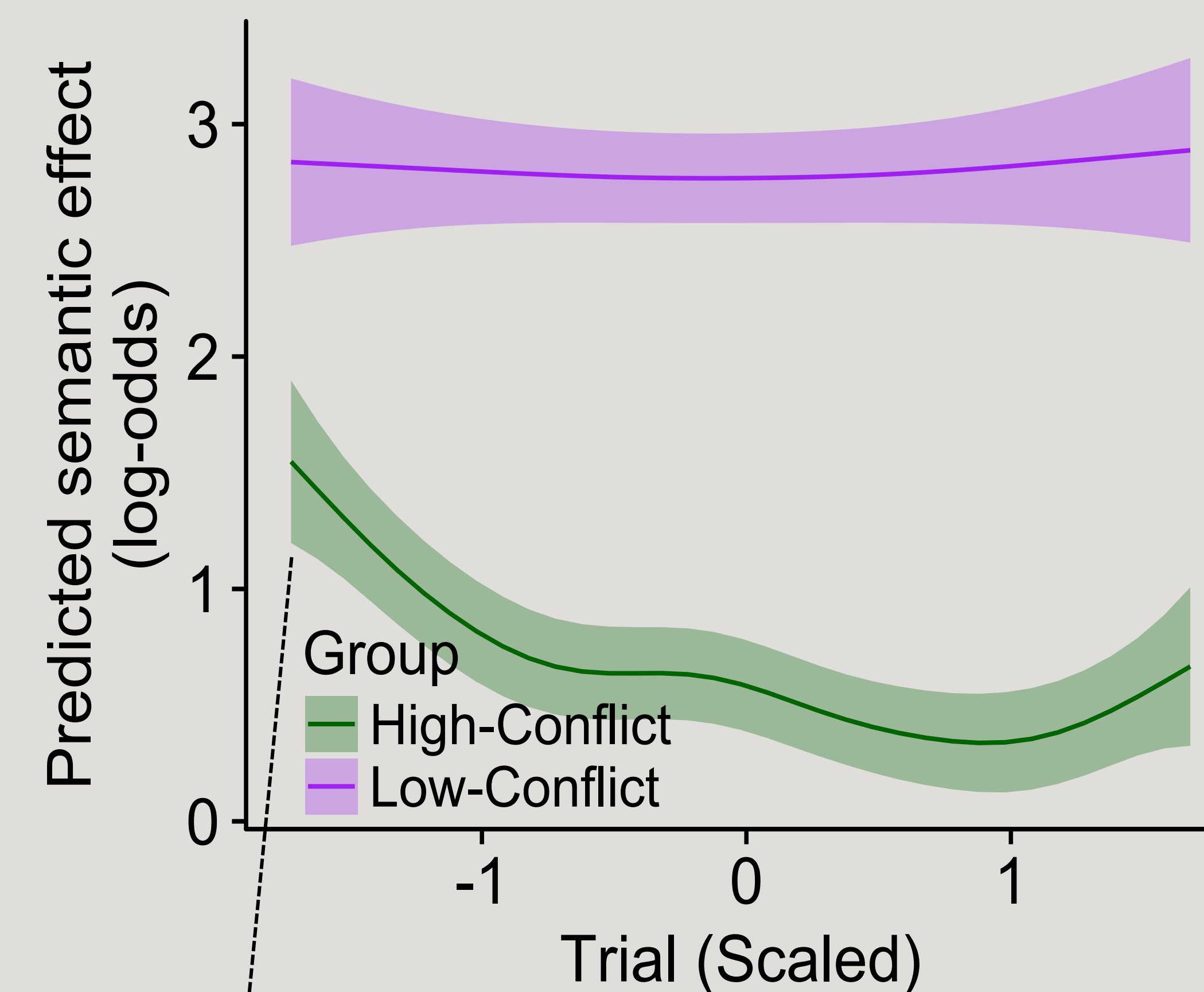


**High conflict group shows smaller effect of semantic cue**

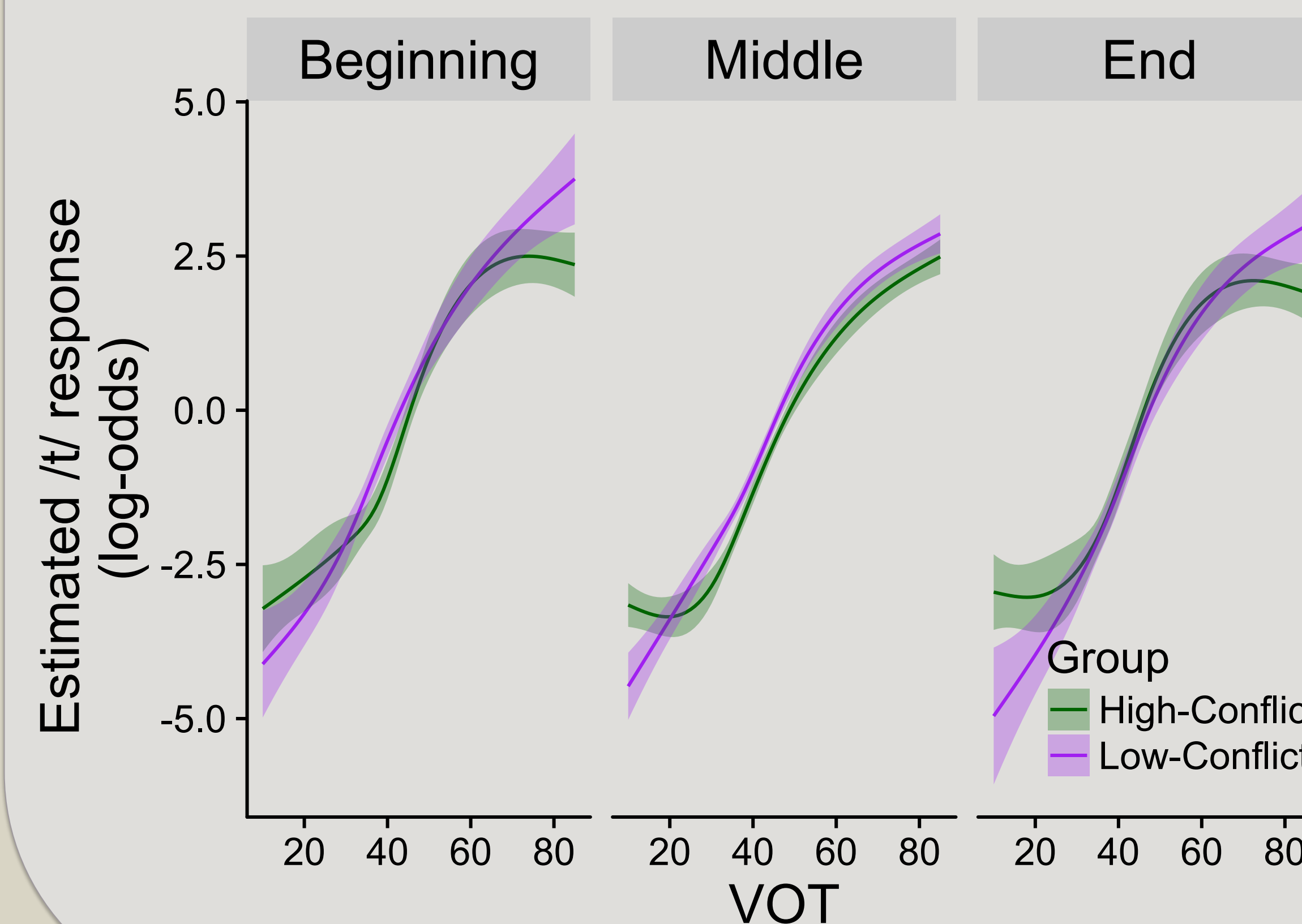


## Results: Group Analyses

**High conflict leads to incremental down-weighting of semantic cues**



**High conflict also (weakly) leads to down-weighting of acoustic cues**



## Conclusions

Humans **cumulatively track cue distributions** in their exposure

Listeners can **dynamically re-weight cues** in response

Listeners **selectively re-weight cues** (i.e., don't converge to 50/50 responses)

Important for future cue integration experiments: most designs create conflict!

## Future Work

Why are semantic cues the ones that are down-weighted?

→ Less reliable in natural speech?

→ Task-dependent?

How are semantic & acoustic cues distributed in natural speech?

## Acknowledgments

This work was partially funded by NSF NRT #1449828 (W.B.) and NSF IIS-1150028 and NICHD R01 HD075797 (to T.F.J.).