

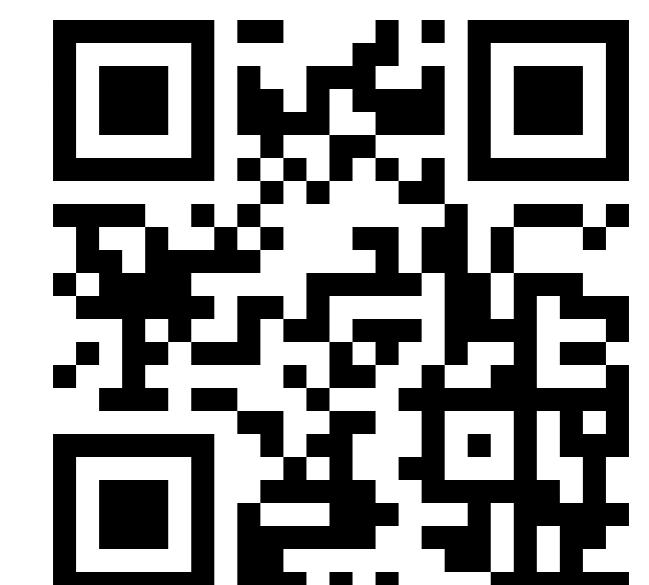
Introduction

- Benchmark data (e.g., [3, 8]) are an important tool for developing theories and evaluating model predictions.

Our Work (in Progress)

- We collect self-paced reading benchmark data for a battery of postulated effects in **German** (10 phenomena).
- In parallel, we also collect eye-tracking data on the same materials.
- So far (December 2025):
 - 950 Prolific participants have been tested with SPR. 63 were excluded due to low accuracy on comprehension questions.
 - 195 in-lab participants have been tested with eye tracking. 1 was excluded due to low accuracy on comprehension questions.
- We show the results so far, next to predictions based on qualitative theories, GPT-2 surprisal [1, 4, 11, 16], and lossy-context GPT-2 surprisal [2, 3, 6, 16].
- Model comparisons using Pareto-smoothed importance sampling [19] assess out-of-sample predictiveness.

Pre-Registration Protocol (SPR)



osf.io/wpra9

- Predictor performance ranking (SPR): **1. Lossy-context surprisal, 2. Surprisal, 3. Theory** (but no reliable differences in eye tracking)

Predictions, Results, and Model Comparison

Experimental Designs

GPSD (2x2): Garden Paths From Subject-vs.-Direct-Object Ambiguity
Ambiguous/Unambiguous × S-O/O-S — closely replicating [13]

GPSI (2x2): Garden Paths From Subject-vs.-Indirect-Object Ambiguity
Ambiguous/Unambiguous × Active/Passive — loosely replicating [14]

GPCA (2x2): Garden Paths From Coordination Ambiguity
NP-/VP-Coordination × AP-/PP-Modifier — closely replicating [10]

GPMI (2x2): Garden Paths From Modifier-vs.-Indirect-Object Ambiguity
Modifier/No-Modifier × Ambiguous/Unambiguous — closely replicating [9]

AGAT (2x2): Agreement Attraction in Grammatical Sentences
Singular-/Plural-Controller × Match/Mismatch — closely replicating [5]

LOCO (2x2): Local Coherence
Coherent/Incoherent × Intervener/No-Intervener — closely replicating [15]

SBIN (2x2): Similarity-Based Interference

Subject-Cue [Yes/No] × Animacy-Cue [Yes/No] — closely replicating [17]

RCSO (2x2): Subject vs. Object Relative Clauses

Subject/Object × Double-/Single-Embedding — German adaptation of [7]

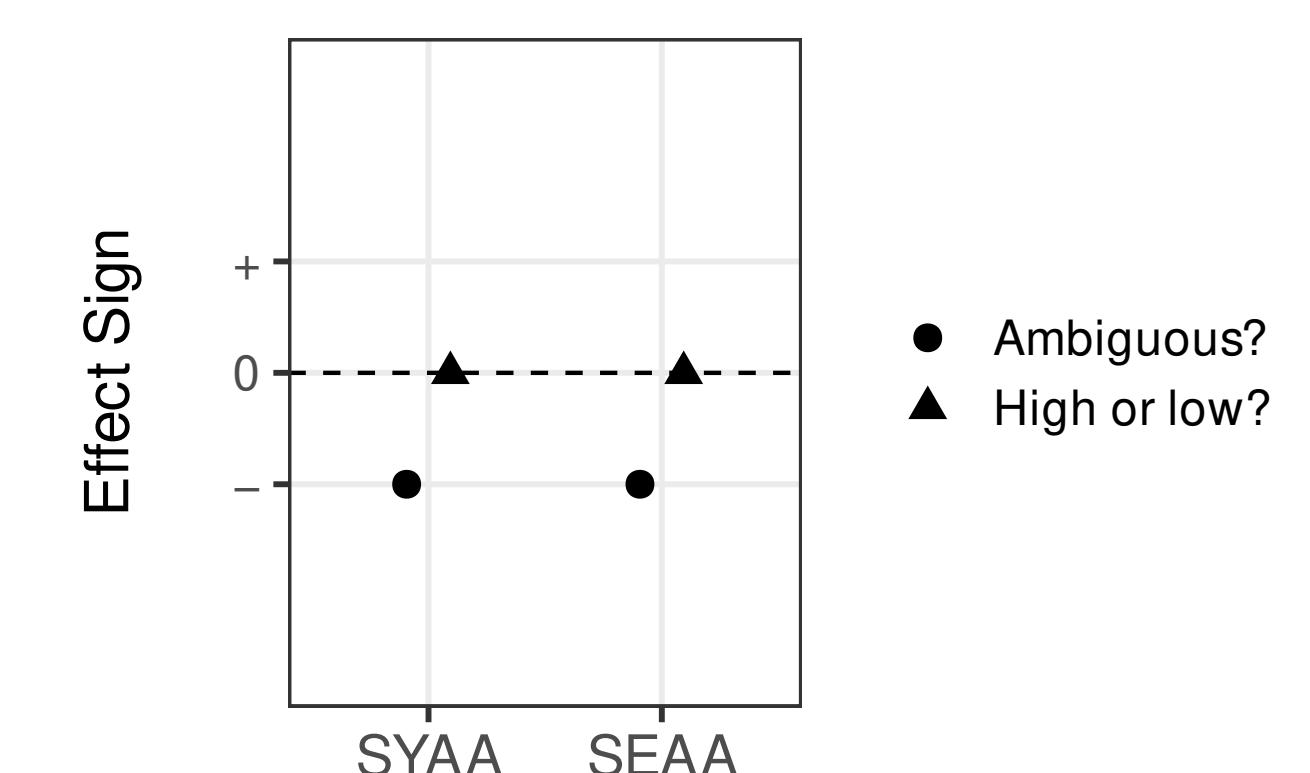
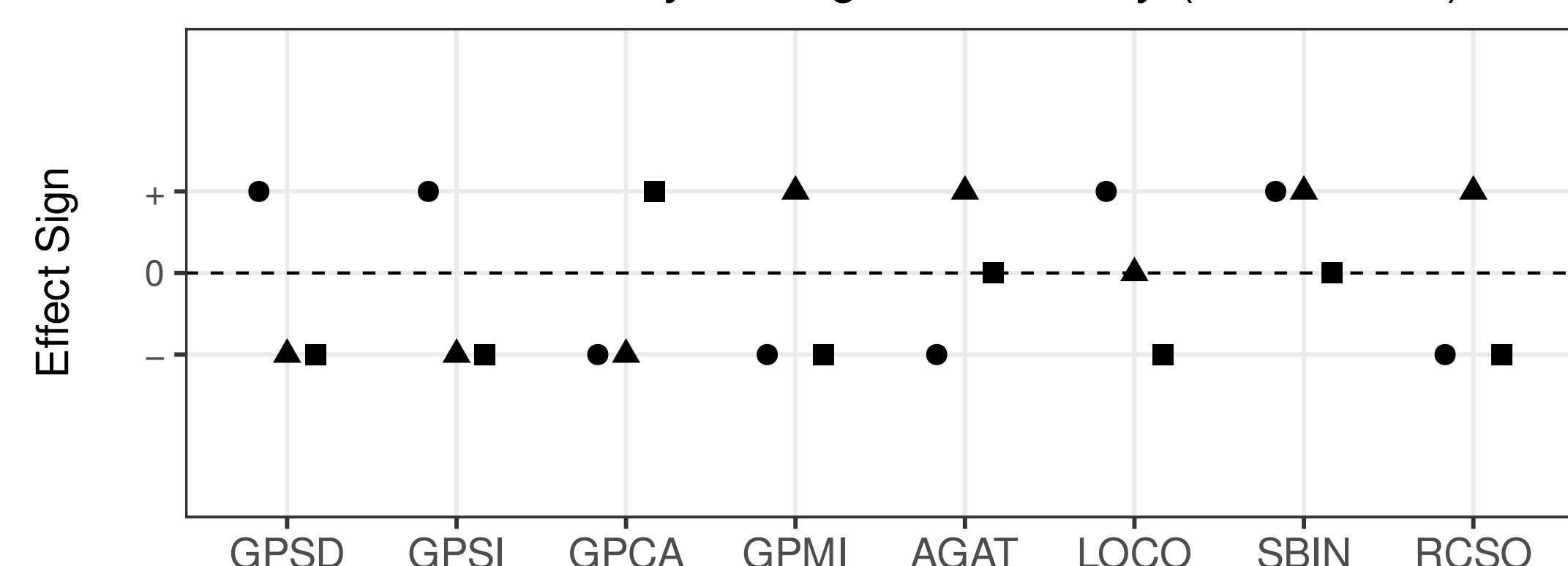
SYAA (3x1): Syntax-Based Attachment Ambiguity

High-/Low-/Ambiguous-Attachment — closely replicating [12]

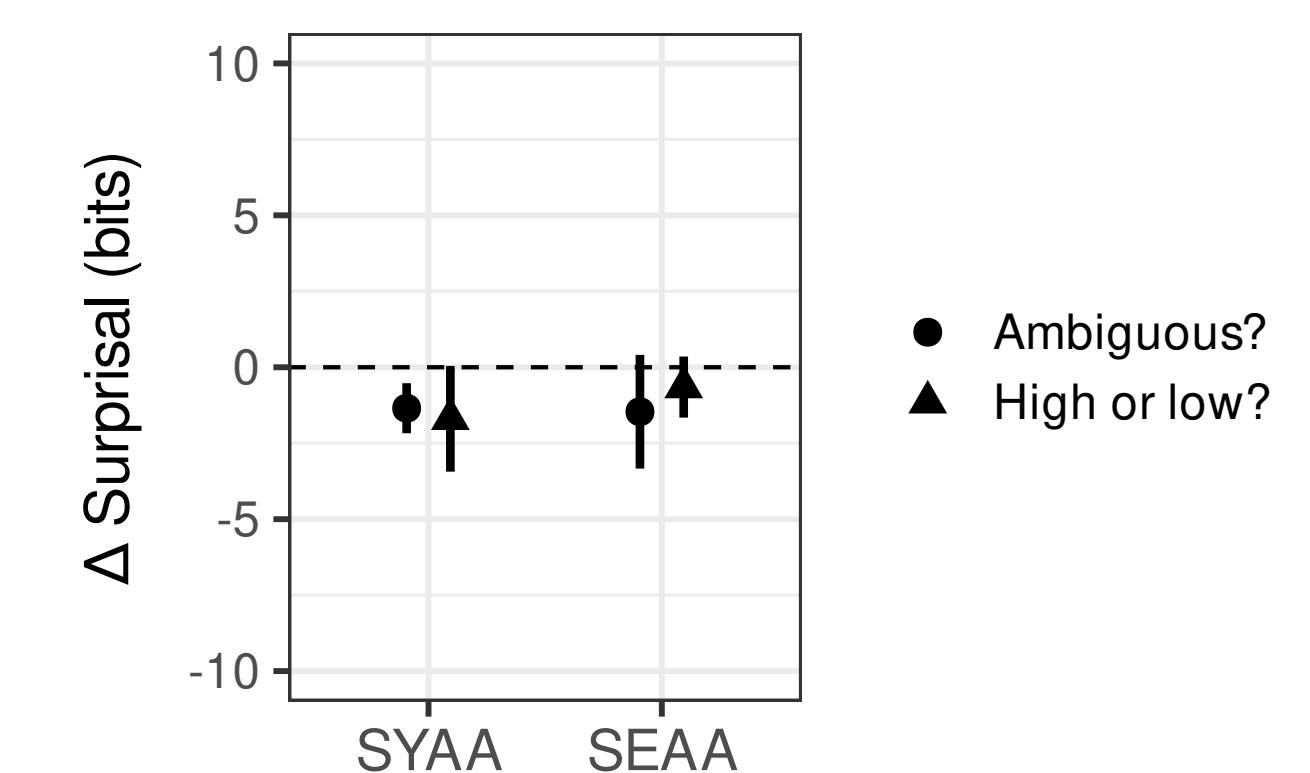
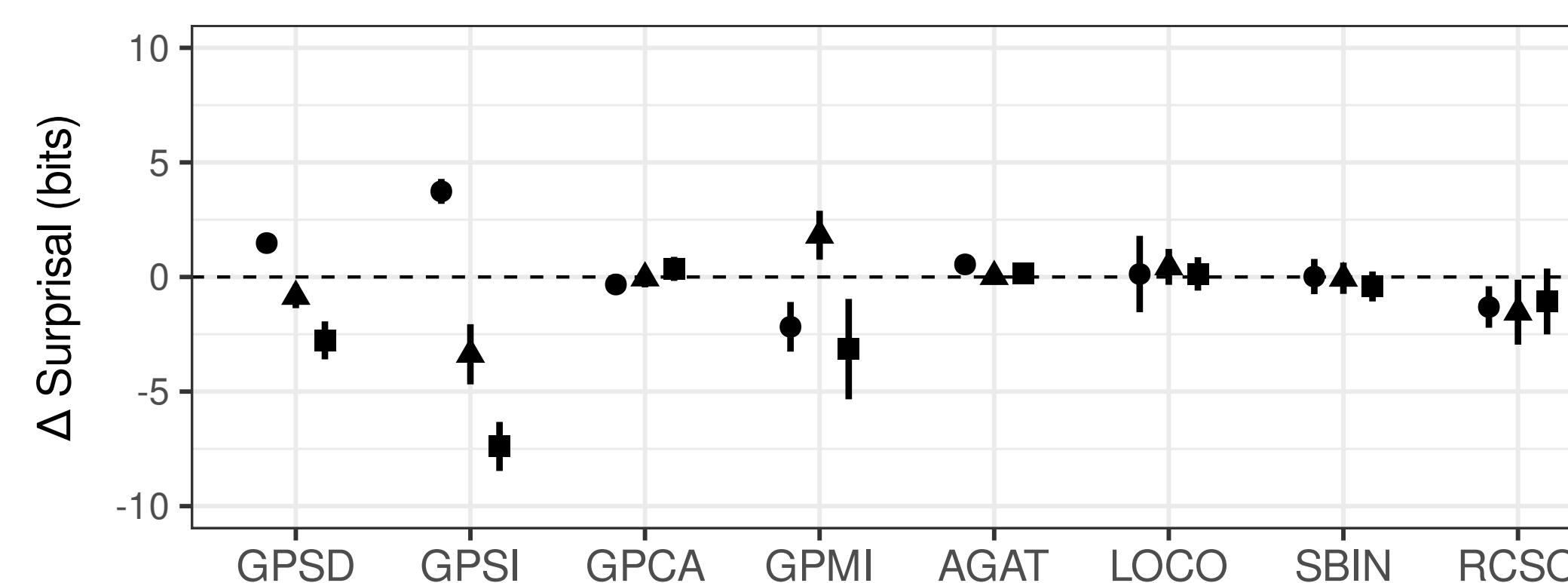
SEAA (3x1): Semantics-Based Attachment Ambiguity

High-/Low-/Ambiguous-Attachment — German adaptation of [18]

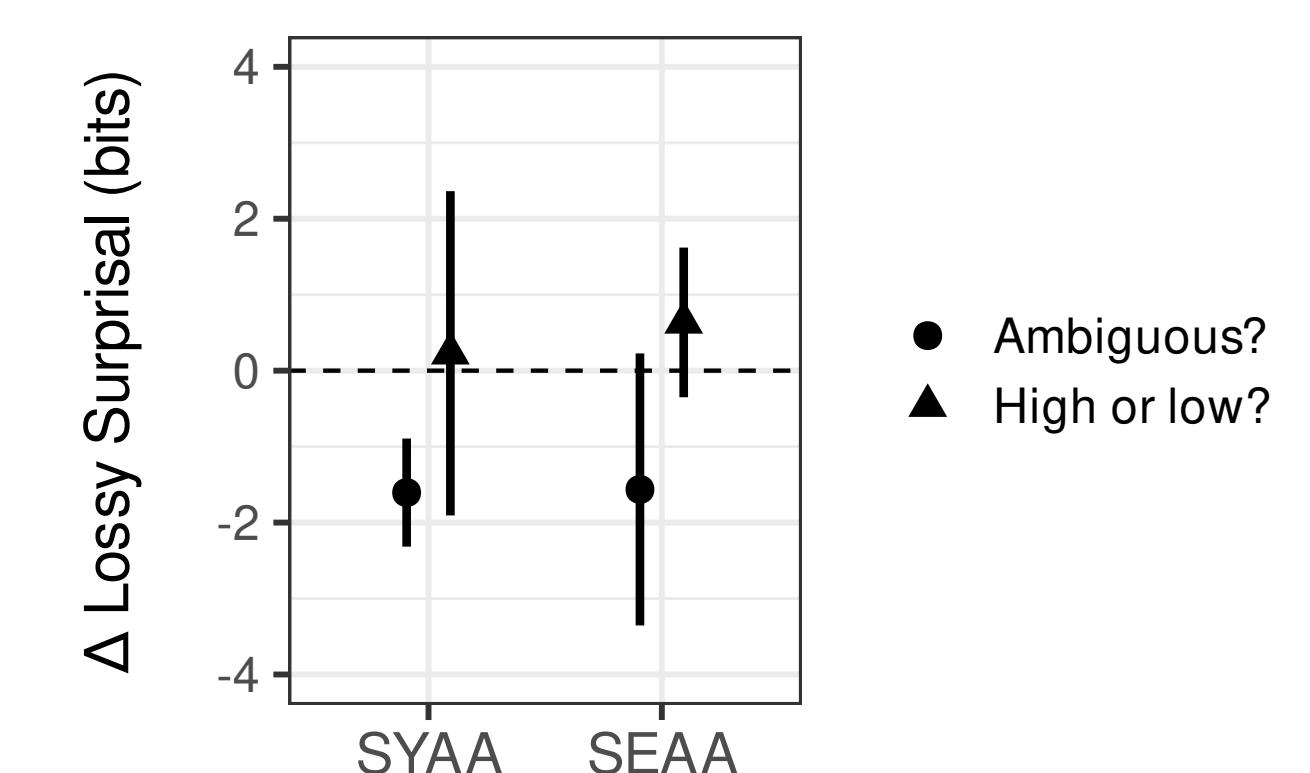
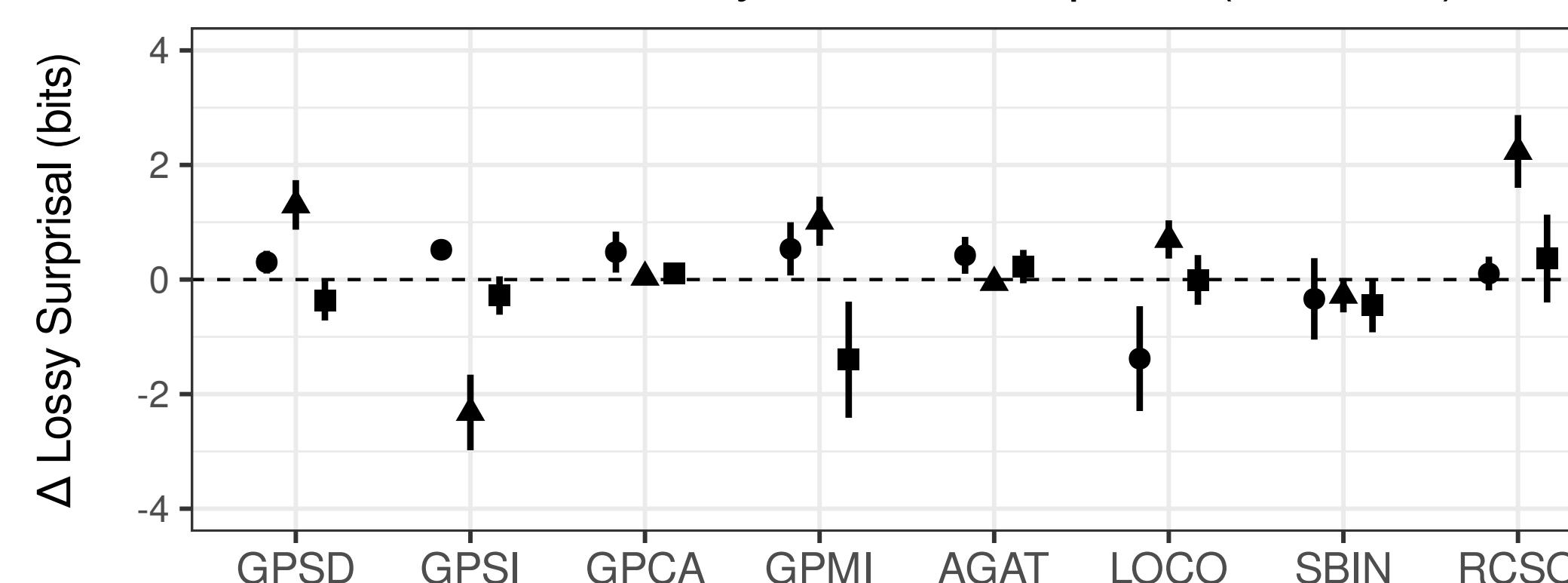
Predictions From Psycholinguistic Theory (Qualitative)



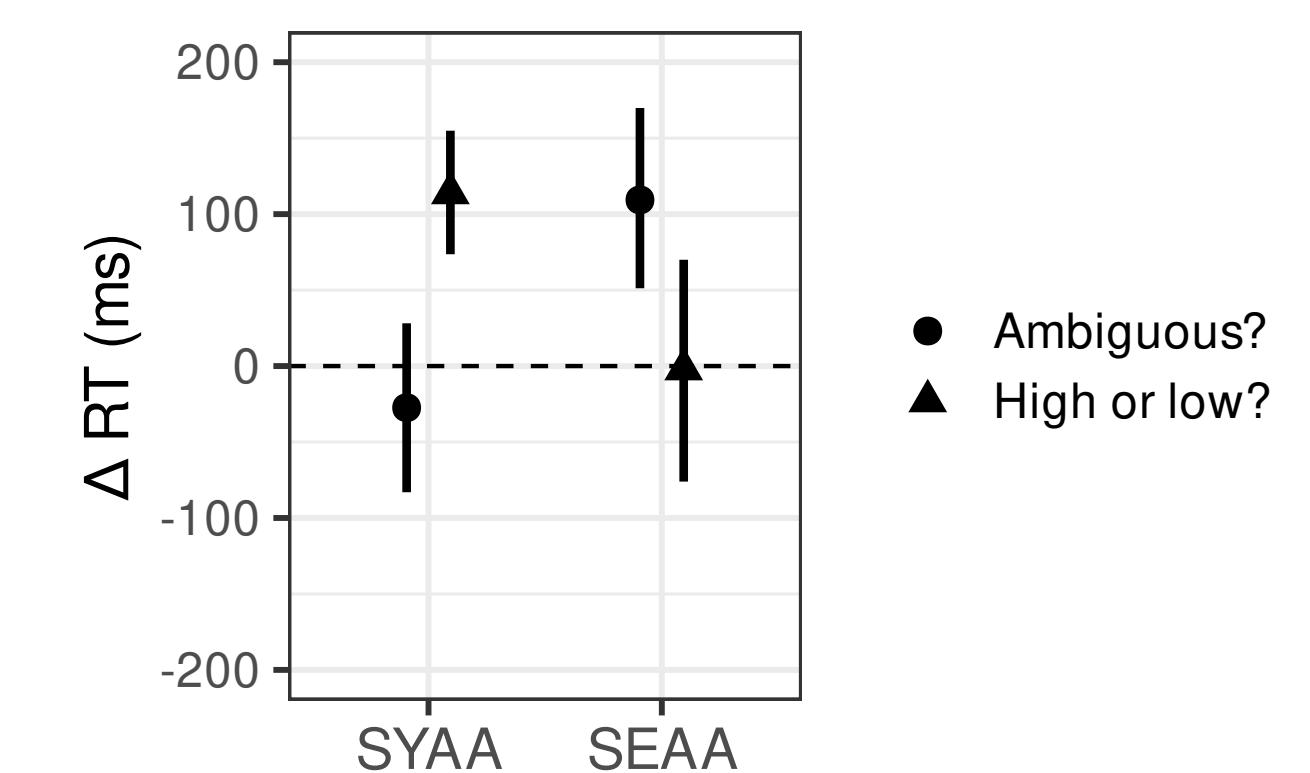
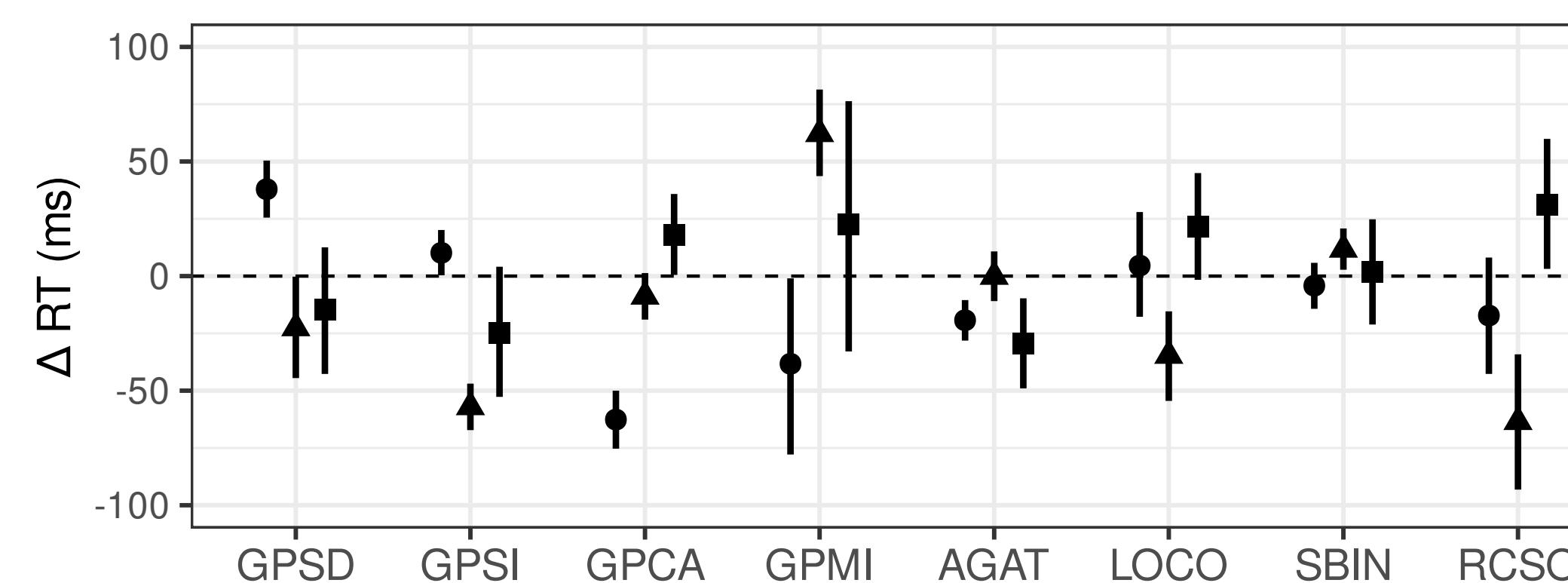
Predictions From Surprisal (95% CIs)



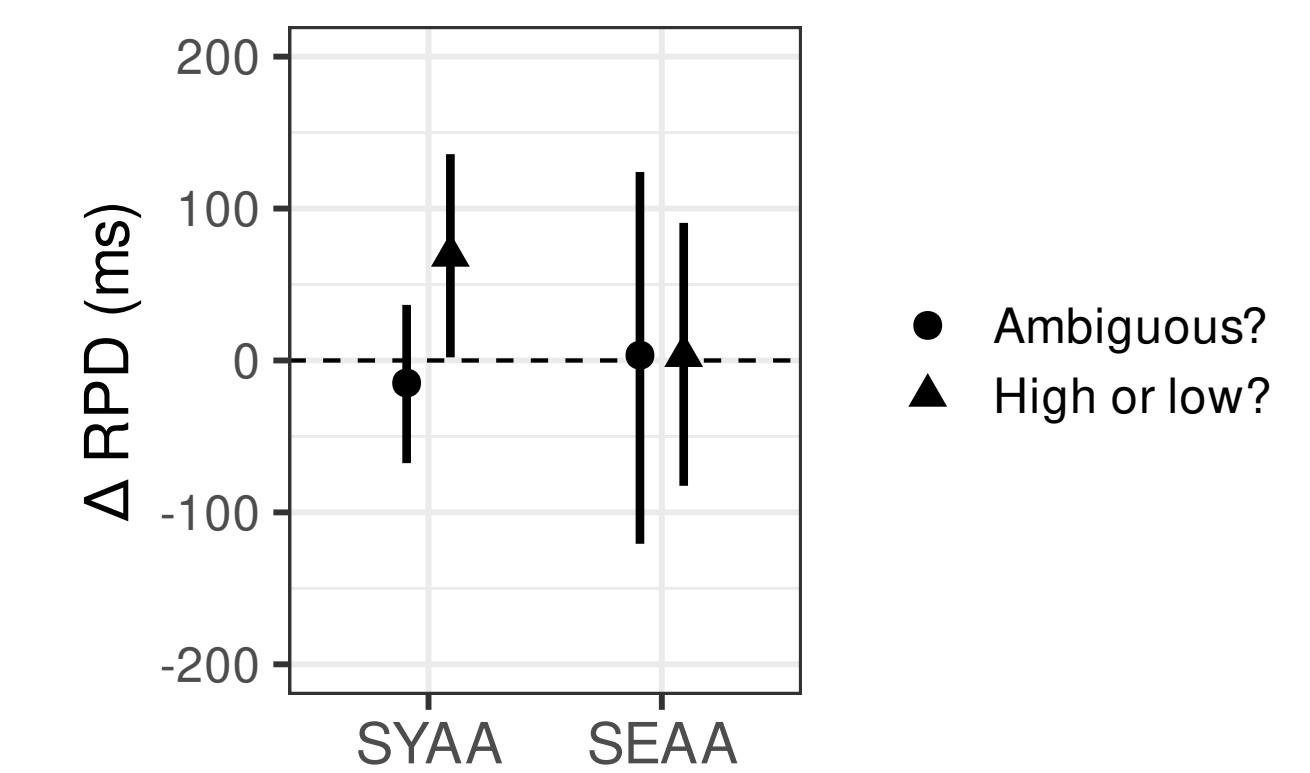
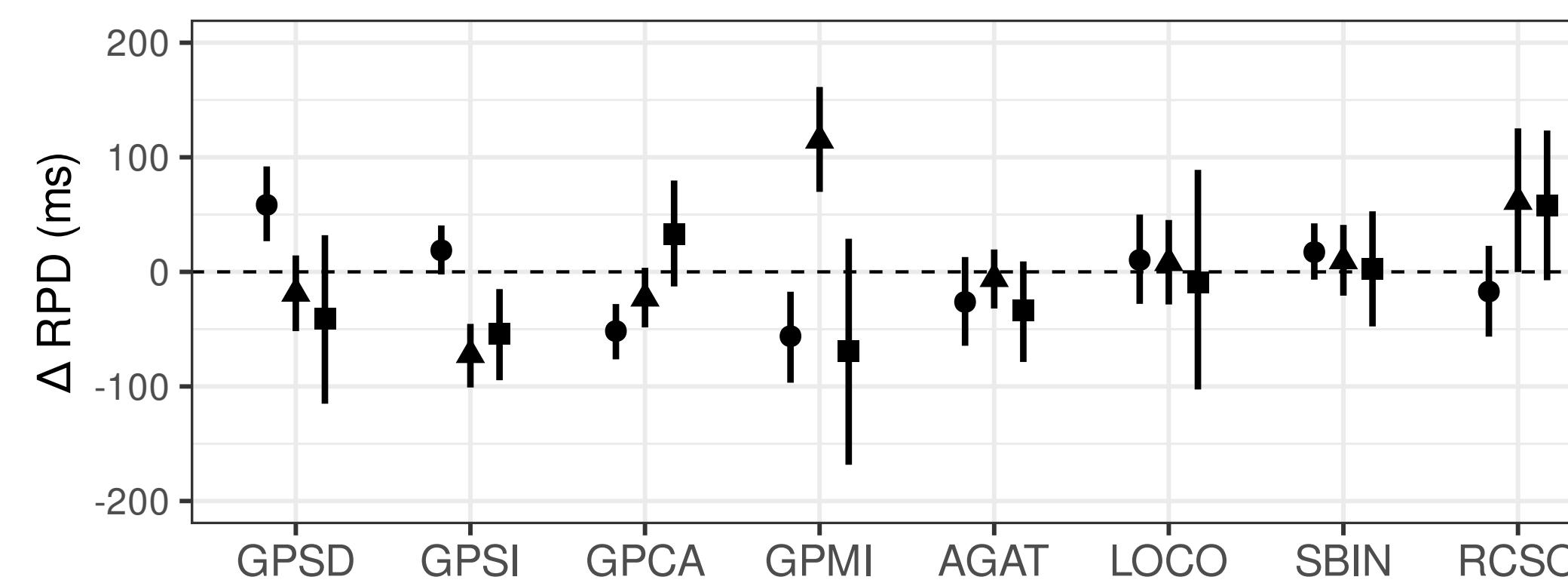
Predictions From Lossy-Context Surprisal (95% CIs)



Self-Paced Reading: Reading Times (RT), Critical Region (95% Crls)



Eye Tracking: Regression Path Durations (RPD), Critical Region (95% Crls)



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