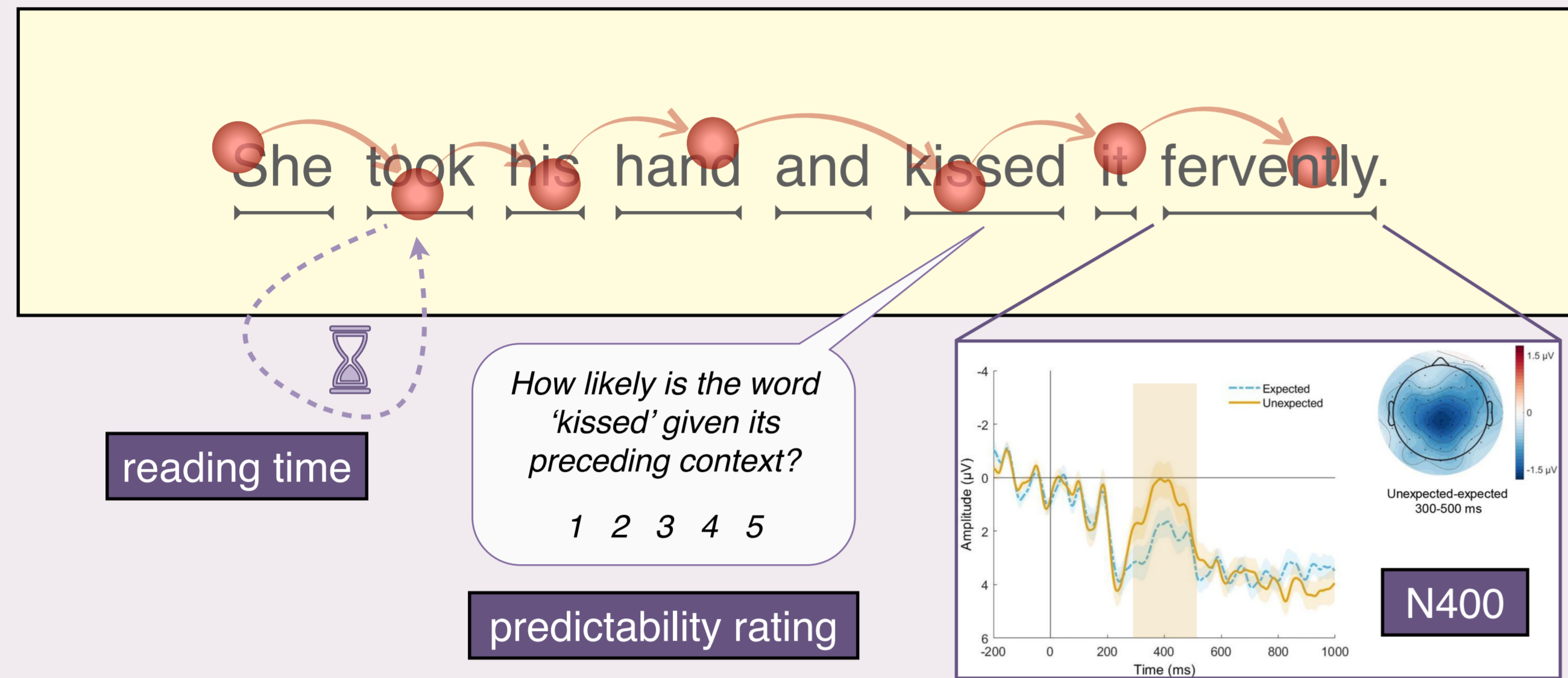
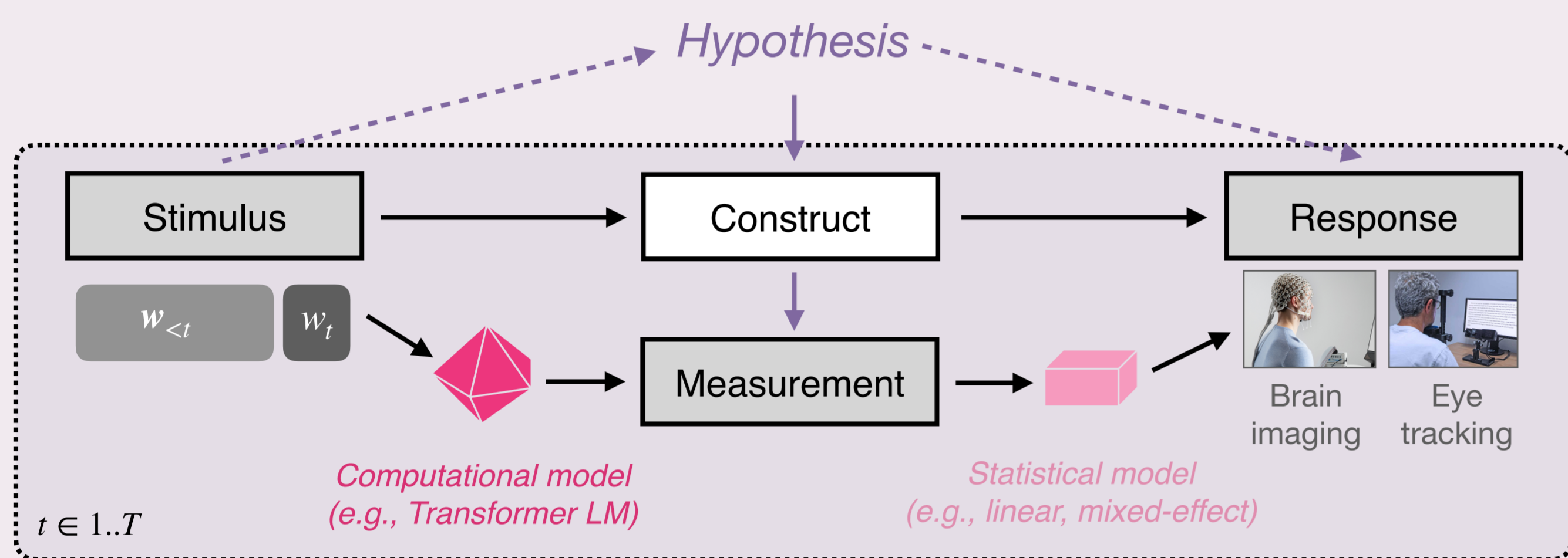


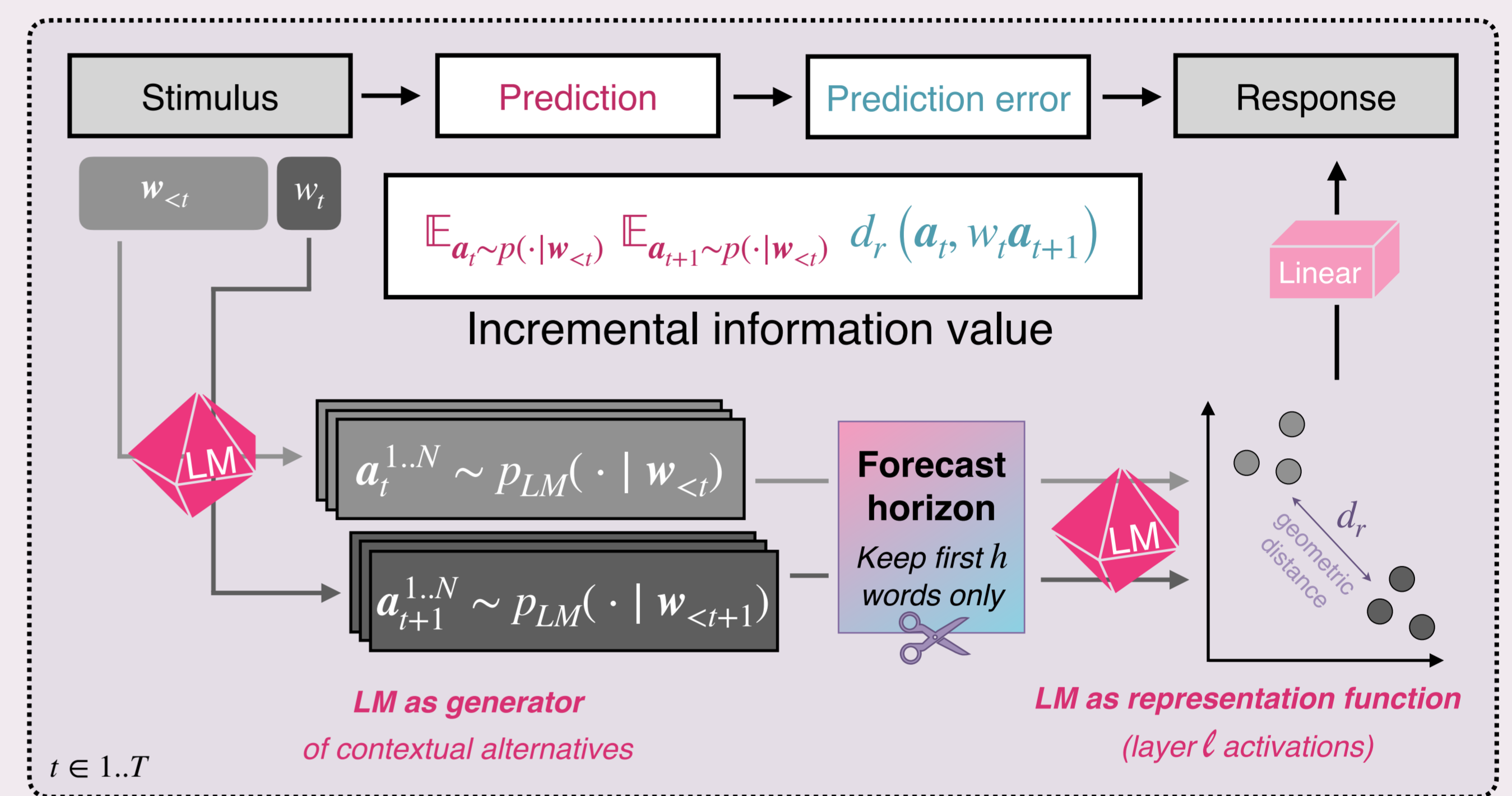
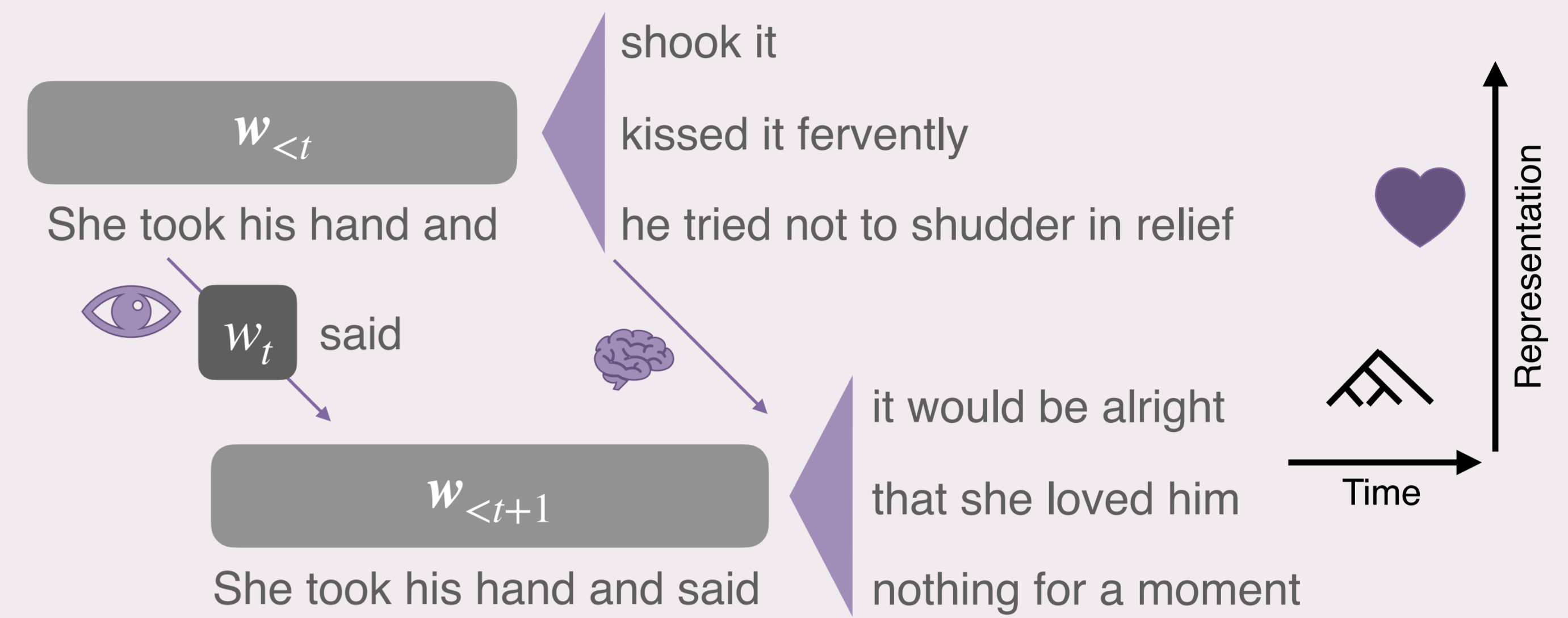
Behavioural and neural responses provide a window into the **information processing tasks** carried out during language processing.



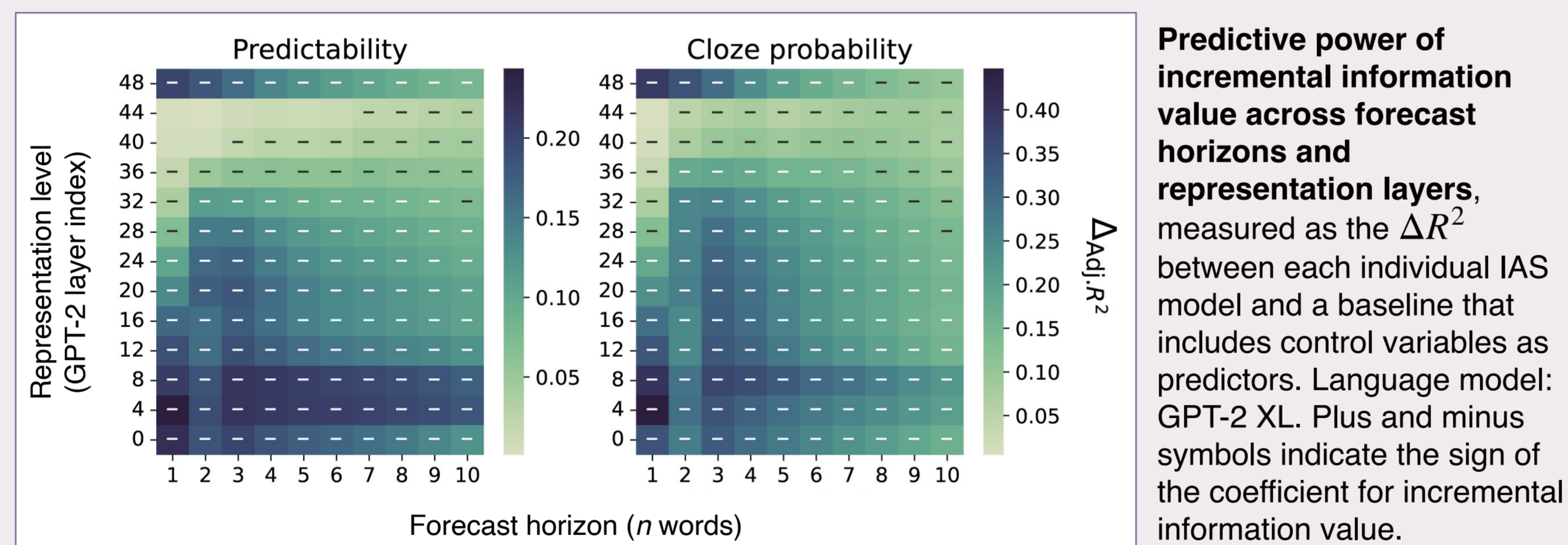
Artificial neural network language models can serve as **computational simulations** to operationalise quantitative, verifiable hypotheses.



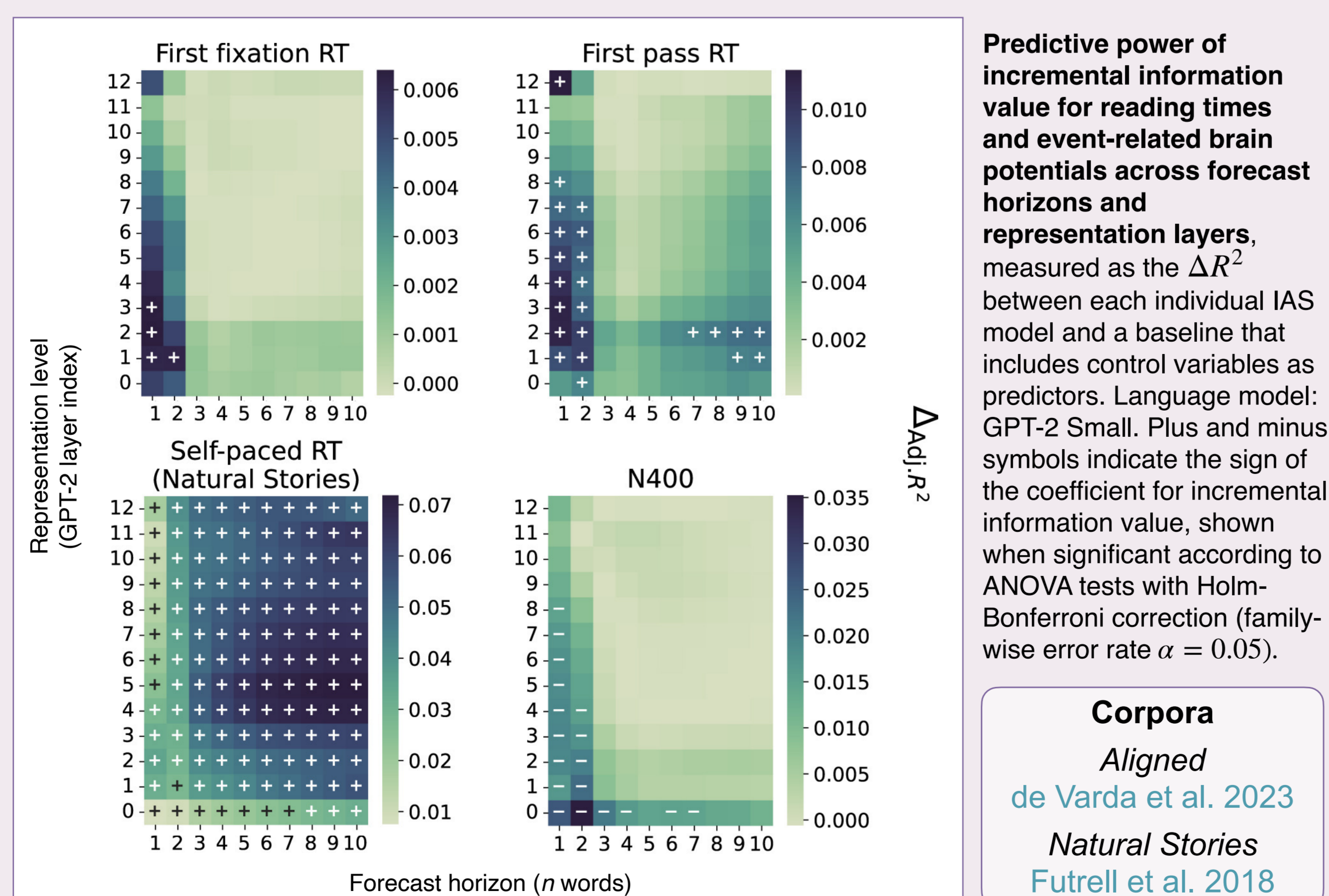
Incremental alternative sampling models the comprehender as **generating and evaluating alternative hypotheses** about possible continuations of partial linguistic contexts.



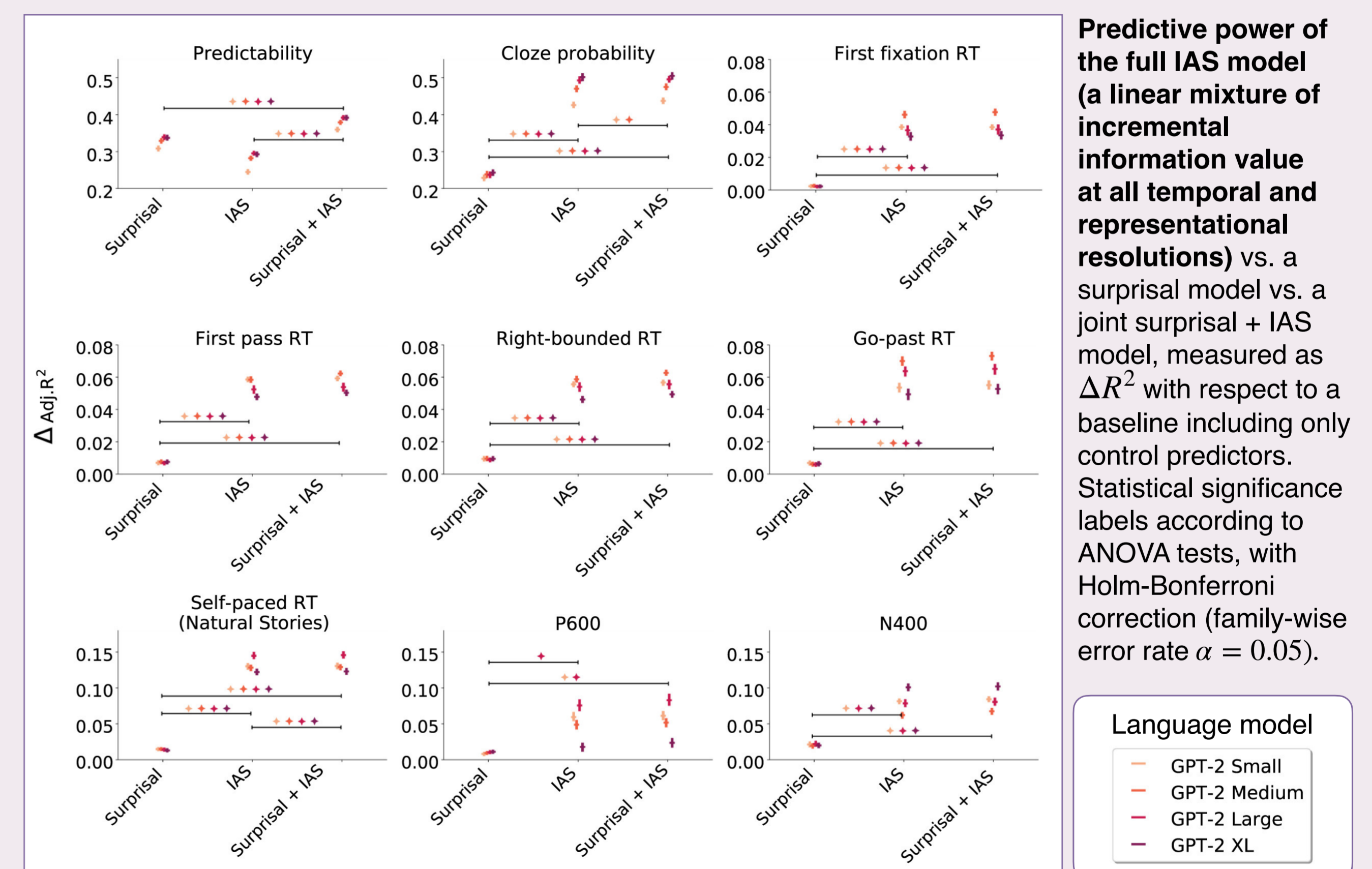
IAS predicts predictability under the human language model.



IAS predicts behavioural + neural signatures of processing effort.



Incremental processing engages prediction across multiple temporal and representational resolutions.



## Highlights

- Incremental Alternative Sampling is a computational-level model of language comprehension.
- IAS can be operationalised using artificial neural network language models — both as generators and representation functions.
- IAS explicitly models prediction horizons and linguistic levels of representation (e.g., syntactic and semantic).
- IAS outperforms surprisal for human cloze probability, reading times, and N400.
- Next-token prediction in Transformer LMs encodes uncertainty over longer horizons and multiple levels of representation (see paper).

