

# Pragmatic Competence in LLMs: The Case of Eliciture

Dingyi Pan, Andrew Kehler

{dipan, akehler}@ucsd.edu, Department of Linguistics, UCSD

UC San Diego

## Background

**Conversational Eliciture:** a “non-mandated” pragmatic inference [1].

- Melissa detests the children who are arrogant and rude. → children are detested by Melissa **because** they are arrogant and rude.
- Melissa detests the children who live in La Jolla.

Large Language Models (LLMs) succeed in making mandated pragmatic inferences, such as presuppositions and implicatures [2]. However, It is unclear whether these models can draw pragmatic inferences when sentence felicity is not at stake.

### MAIN QUESTIONS

- Do LLMs have the ability to recognize non-mandated pragmatic inferences, in the case of conversational elicitures?
- Can LLMs utilize the potential for elicitures to influence downstream linguistic tasks, such as syntactic processing?

### What triggers this inference?

**Implicit causality verbs** (e.g., **detests**) impute causality to the one of the participants associated with the eventuality the verb denotes, which creates a strong expectation for an ensuing explanation [2].

- Melissa **detests** the children.  
Why does Melissa detest the children?
- Melissa **babysits** the children.  
e.g., What happened as a result?/What else does Melissa do?/...

### Using elicitures in relative clause (RC) attachment

The default low-attachment bias of RC in English can be shifted toward high attachment [3,4].

- Melissa **babysits** the children of the musician who \_\_\_\_
- Melissa **detests** the children of the musician who \_\_\_\_

The reasoning is three-fold:

- IC verbs create a strong expectation for an ensuing explanation.
- The explanation can be provided by the immediately-following RC.
- Object-biased IC verbs create a strong expectation that the explanation will be about the verb’s direct object (*i.e.*, *the children*).

## Take Away

LLMs have the ability to make non-mandated pragmatic enrichments in the form of conversational elicitures, with larger and more recent models demonstrating sensitivity to the influence of pragmatic inferences on syntactic processing.

## References

[1] Cohen & Kehler (2021). [2] Hu et al. (2023). [2] Garvey & Caramazza (1974). [3] Rohde, Levy, Kehler (2011). [4] Hoek et al. (2021).

## Links

Data and analysis scripts can be accessed at: [https://github.com/pennydy/llm\\_eliciture](https://github.com/pennydy/llm_eliciture).

## Experiment 1: Detecting Eliciture

**Stimuli** (60 sentences in each condition)

Melissa **detests**/**babysits** the children who are arrogant and rude. [IC/nonIC, ExplIRC]

Melissa **detests**/**babysits** the children who live in La Jolla. [IC/nonIC, noExplIRC]

**Models**

GPT-3.5-turbo, GPT-4, and GPT-4o

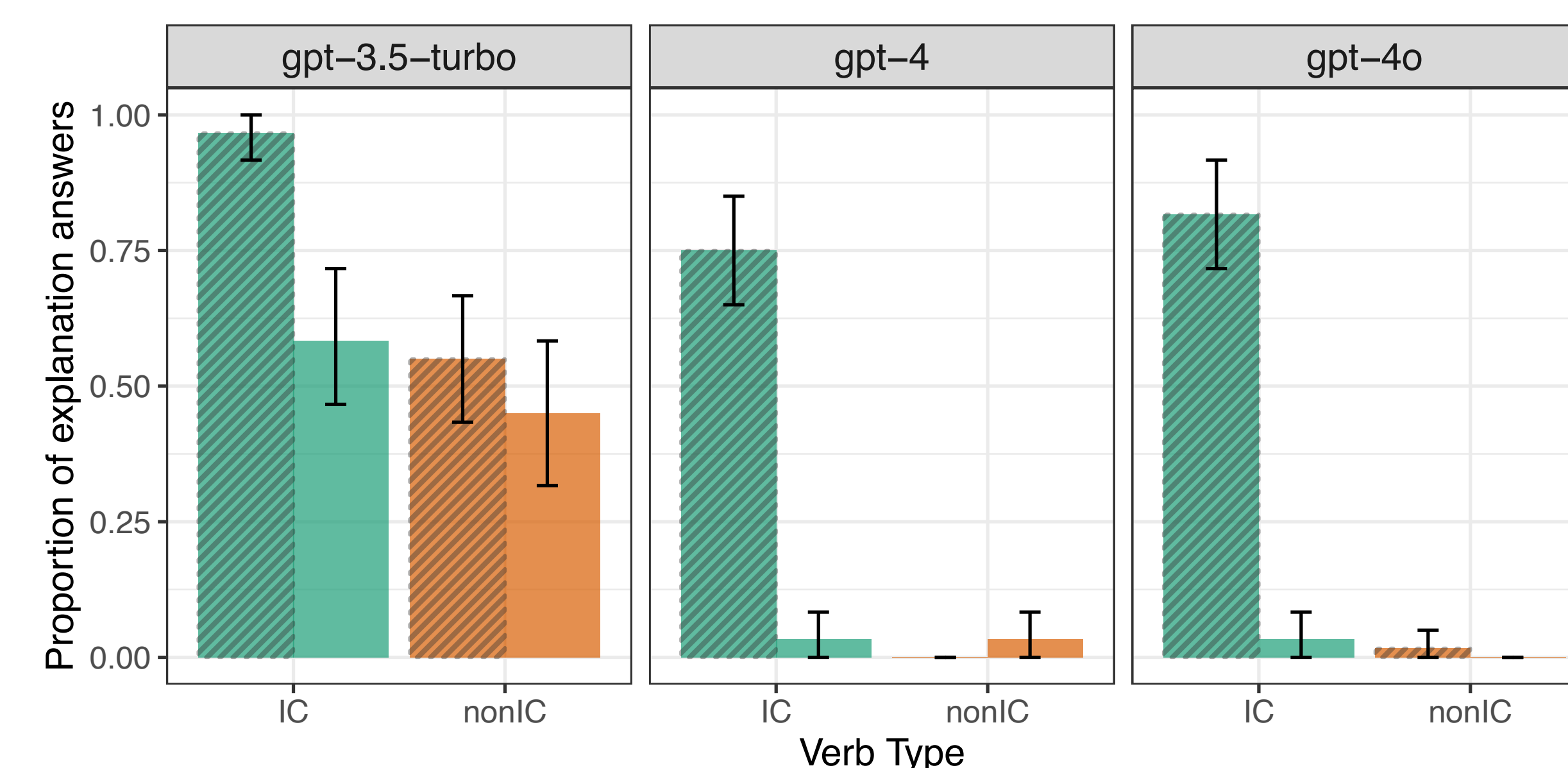
**Prompt**

*Sentence:* Melissa detests the children who are arrogant and rude.

*Question:* Does this sentence explain why Melissa detests the children? If yes, please provide an explanation. If not, just say no and you don’t need to provide an explanation.

*Answer:*

RC Type ExplIRC noExplIRC

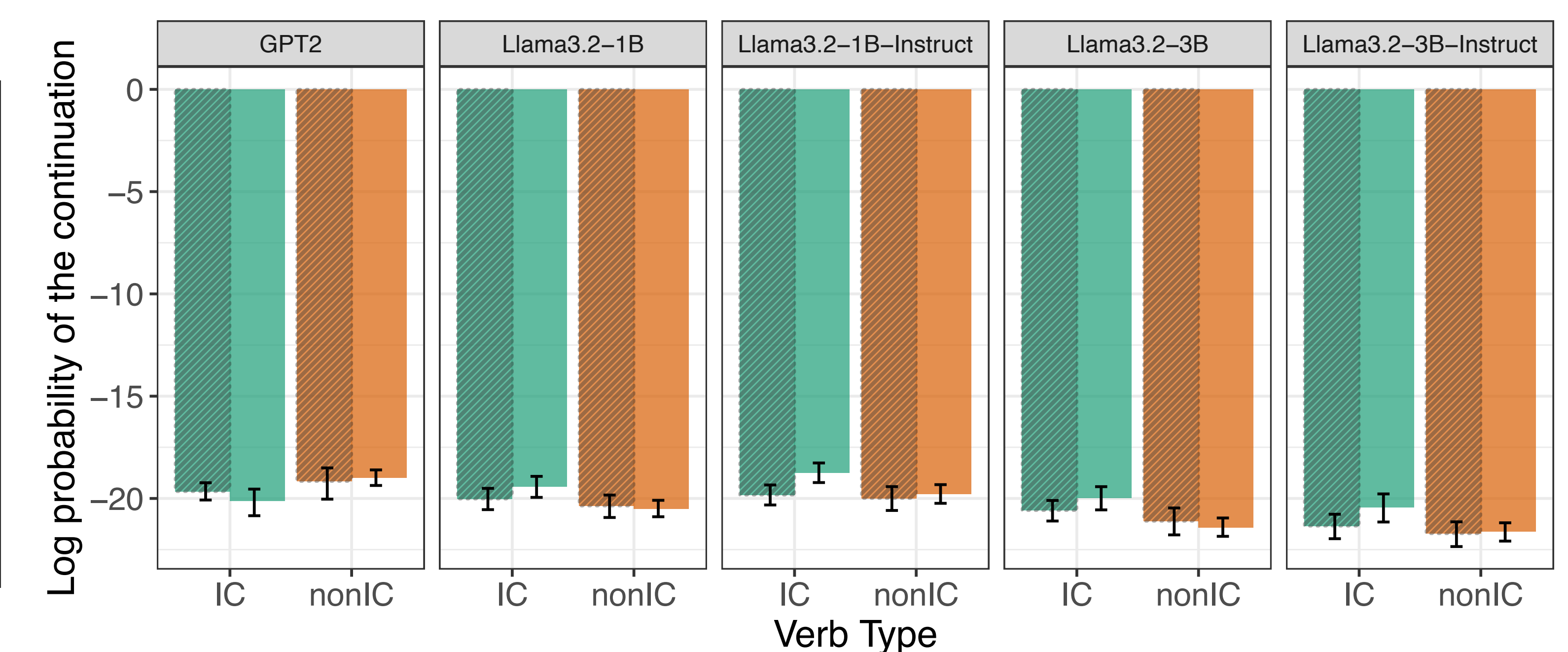


**Models**

GPT-2, Llama-3.2-1B, Llama-3.2-3B, Llama-3.2-1B-Instruct, Llama-3.2-3B-Instruct

**Prompt**

Melissa detests the children who are arrogant and rude, and I don’t know why.



All closed-sourced models provide more explanation responses in the IC/ExplIRC condition than in the other three conditions, suggesting that they have the ability to draw elicitures.

All Llama models show the effects of verb type and the content of the RC as well as their interaction on the log probability of the continuation, suggesting that they can draw eliciture inferences, regardless of the model size and the use of additional instruction-tuning. GPT-2 shows no such evidence.

## Experiment 2: Anticipating Eliciture

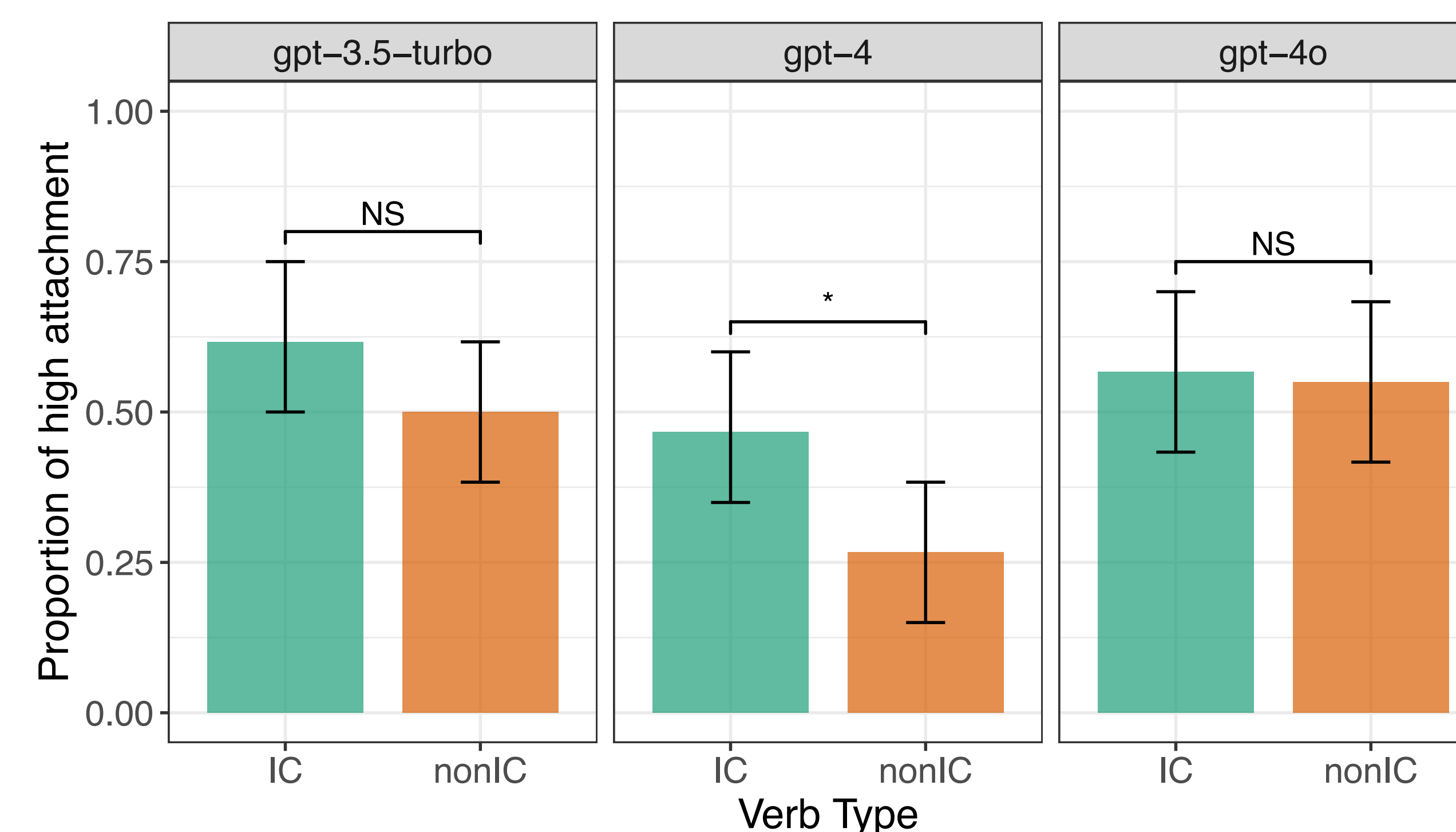
**Stimuli** (60 sentences in each condition)

Melissa **detests**/**babysits** the children of the musician who \_\_\_\_ [IC/nonIC]

**Prompt**

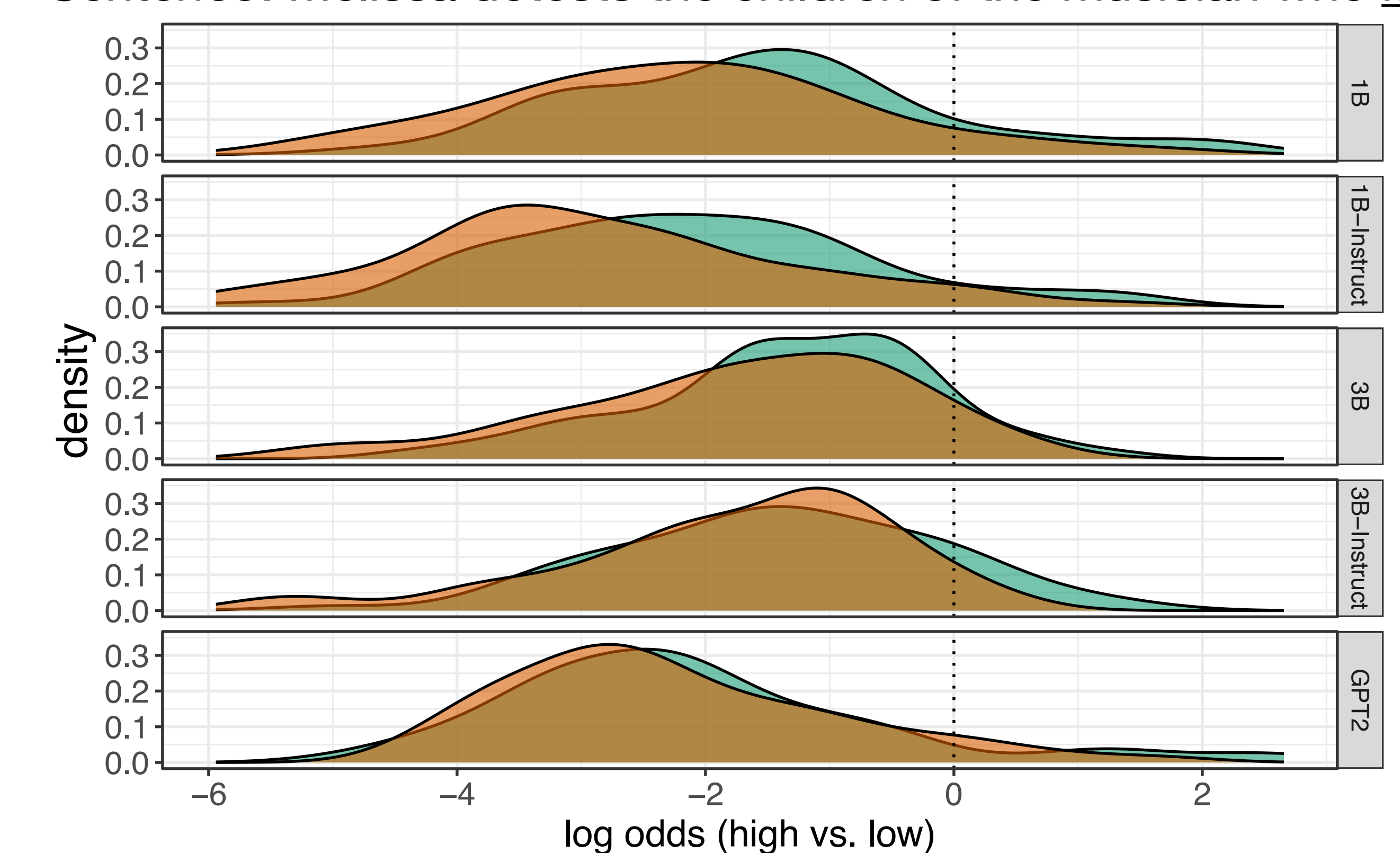
*Sentence:* Melissa detests the children of the musician who \_\_\_\_.

*Options:* 1) is, 2) are



**Prompt**

*Sentence:* Melissa detests the children of the musician who is/are



Only GPT-4 and Llama models show a higher bias toward the high attachment cite when an IC verb is used than when a nonIC one is used, suggesting that not only can the model infer elicitures, but also anticipate them as a source of information when performing word prediction. The other two closed-source models and GPT-2 do not show the predicted behavior.