SOCIAL NORMS GUIDE REFERENCE RESOLUTION

MITCHELL ABRAMS, MATTHIAS SCHEUTZ

DO SOCIAL NORMS MODULATE REFERENCE RESOLUTION?

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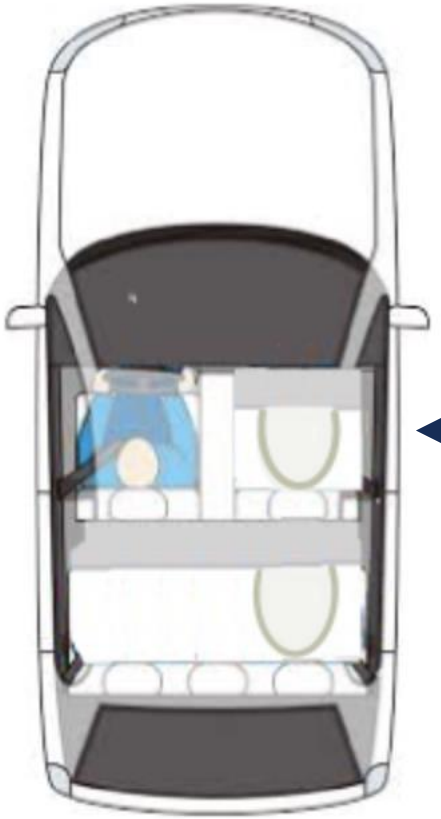

Context: Friend's Car

" Take [a seat] "

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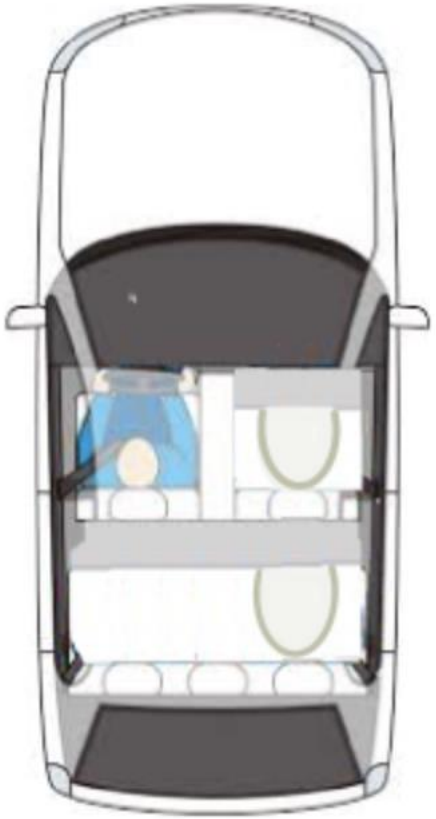


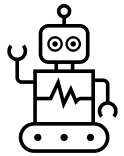
Context: Taxicab

" Take [a seat] "

BACKGROUND: PRAGMATIC CONSTRAINTS

- Psycholinguistics evidence for pragmatic constraints (Hanna and Tanenhaus, 2004)

- Attempts to model social norms (Malle et al., 2020)
  - Norms as *prescriptions* and *prohibitions*



- Datasets for testing contextual knowledge and common-sense reasoning
  - Winograd Schema Challenge (WSC) (Levesque et al., 2012)
  - KnowRef dataset (Emami et al., 2018)

REFERENCE RESOLUTION

What is needed to test whether norms modulate reference resolution?

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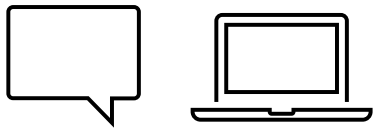
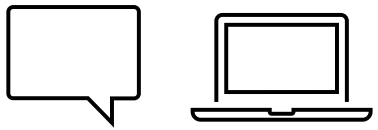
Reference task



REFERENCE RESOLUTION

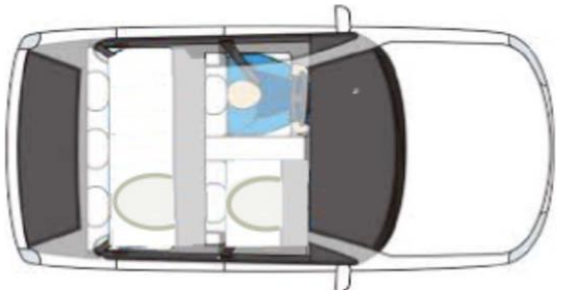
What is needed to test whether norms modulate reference resolution?

Reference task ***Modulate contexts and associated norms***



Taxicab

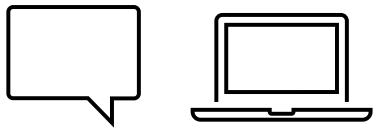
Friend's Car



REFERENCE RESOLUTION

What is needed to test whether norms modulate reference resolution?

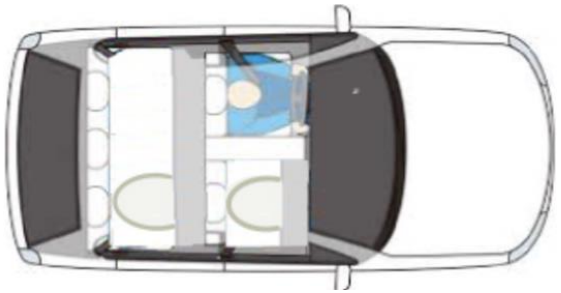
Reference task



Modulate contexts and associated norms

Taxicab

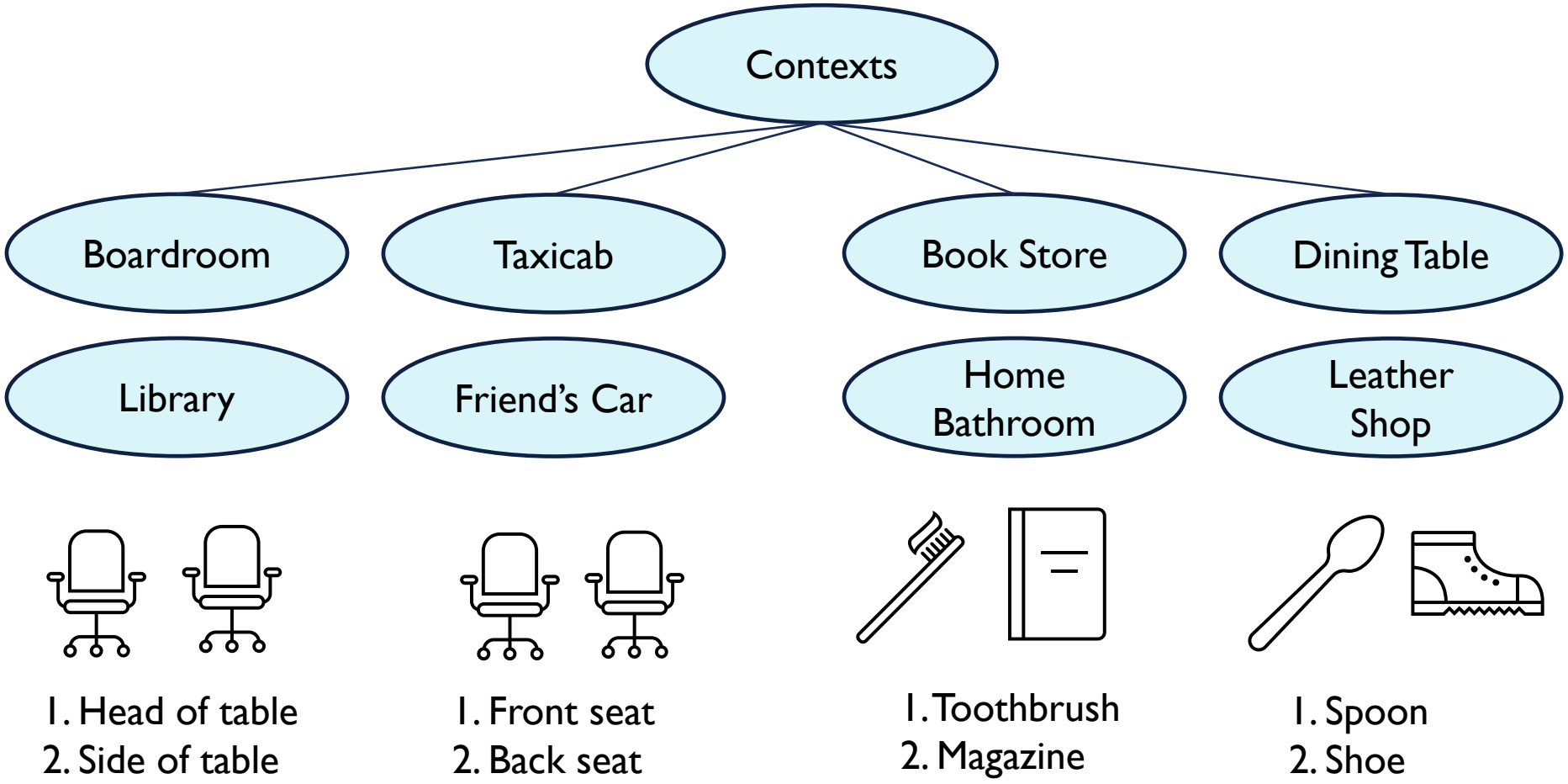
Friend's Car



Control Referring Expression

" Take a seat "

EXPERIMENTAL DESIGN



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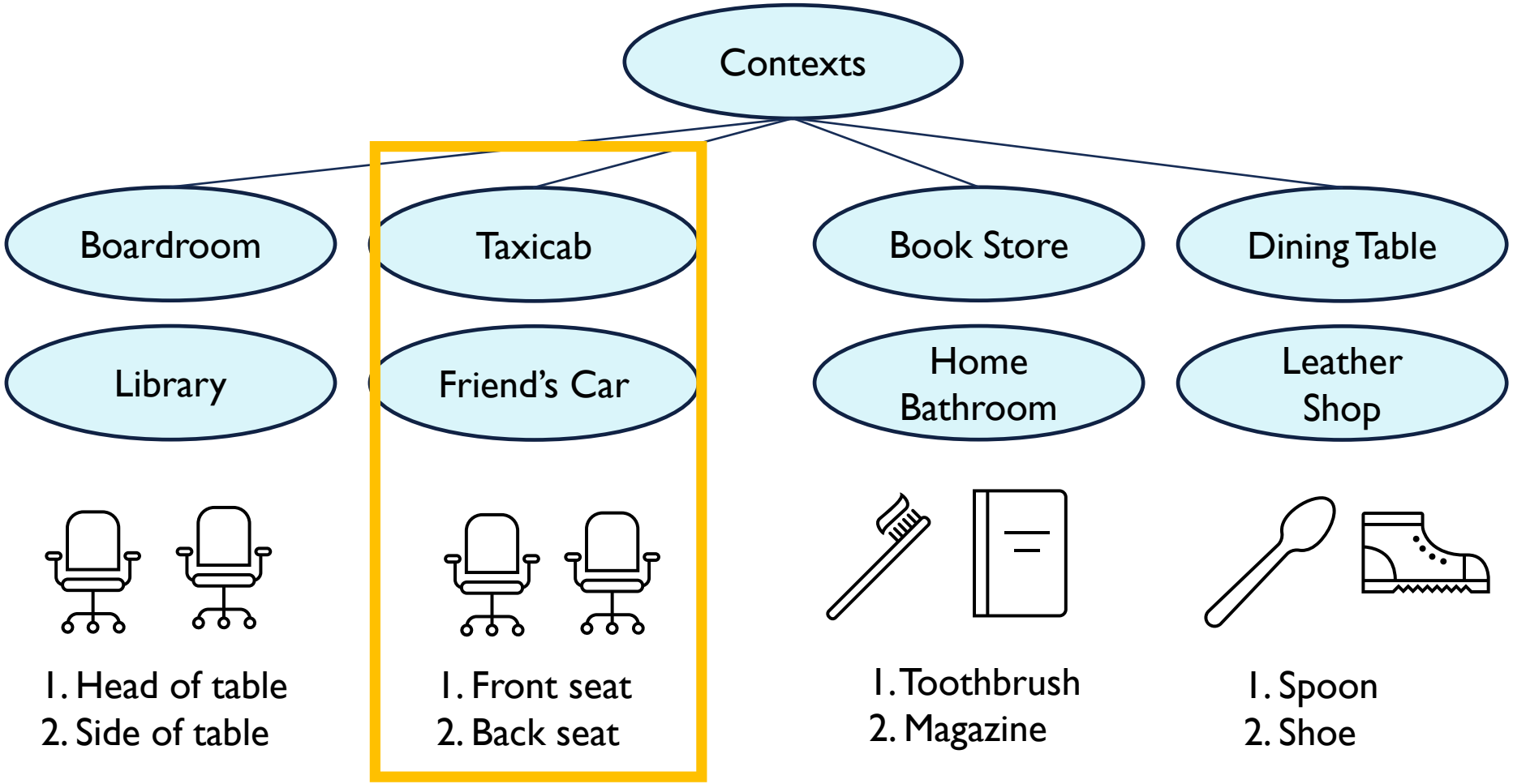


REFERENCE EXPERIMENT

Background:
The scene takes place in a taxicab.

There are two available seats in a taxicab: the front seat and the back seat.
The driver says, "take a seat."

The passenger chooses to sit in the back seat

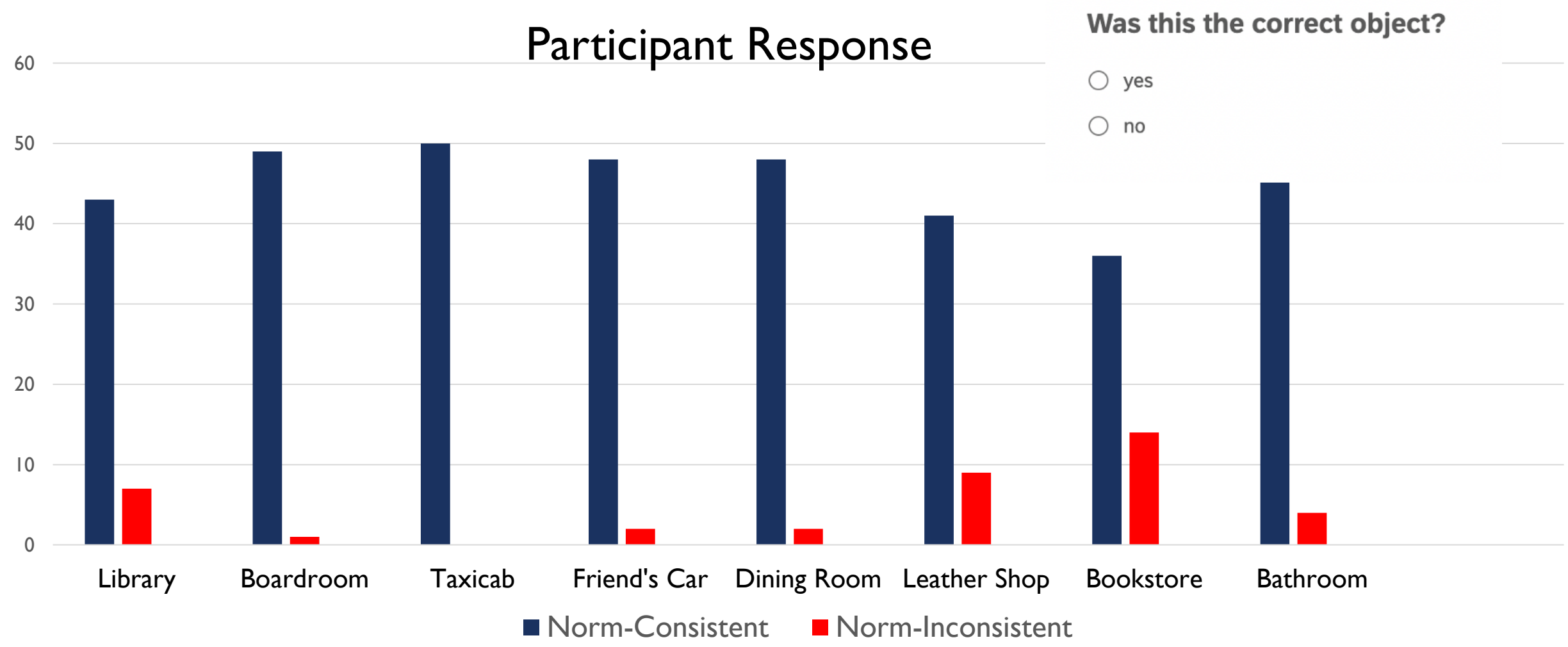
Was this the correct object?

- ○ yes
- ○ no

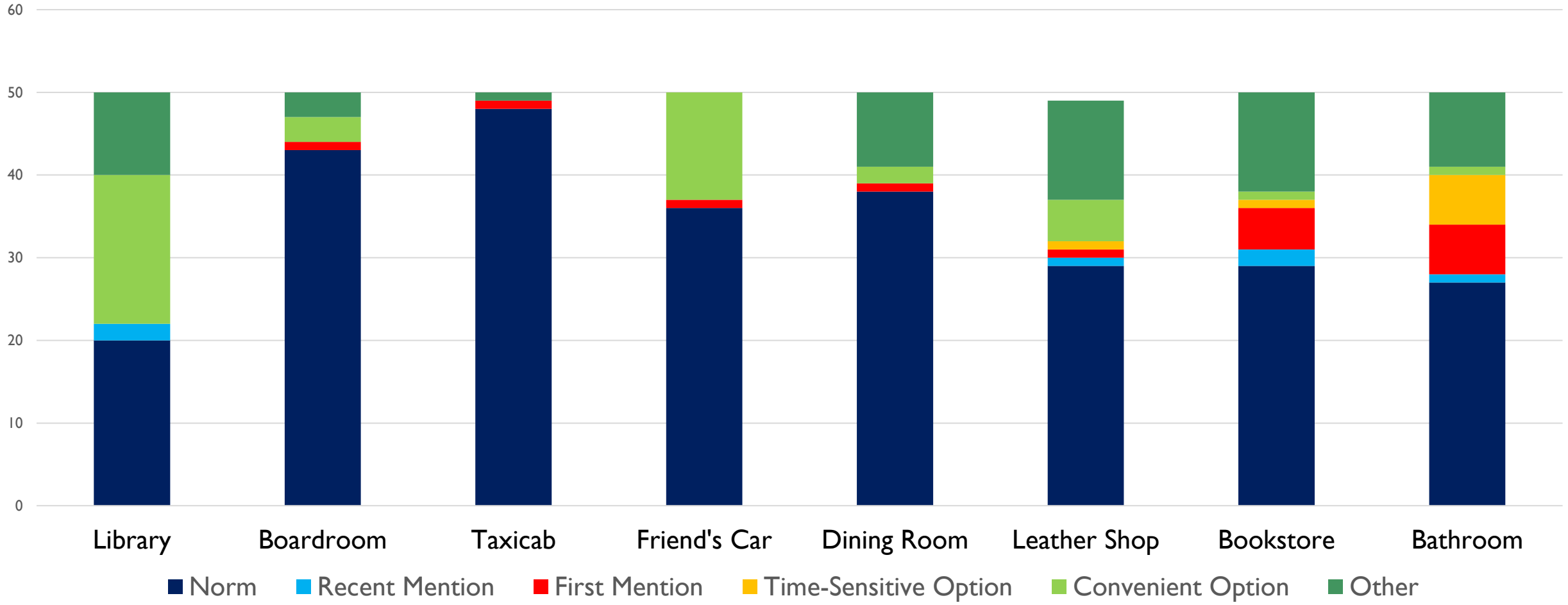
Please select the best reason for your response:

- ○ typical for the setting
- ○ object is mentioned first
- ○ object is mentioned more recently
- ○ time sensitive option
- ○ more convenient option
- ○ other:

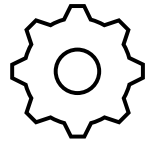
Participant Response



Summary of Explanations



How well do NLP tools perform the same reference task?



NeuralCoref (Hannibal and Johnson, 2015)

Stanford CoreNLP (Finkel et al., 2005)

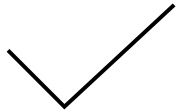
AllenNLP (Lee et al., 2017)

GPT-3 Davinci Model (Brown et al. , 2020)

GPT-3 Curie Model (Brown et al. , 2020)

AllenNLP

Dining Room Scene



*The scene takes place in a dining room. There is **a shoe** and a spoon sitting on a dining room table. Dinner is about to be served.*

*Someone says, "remove **it**."*

Someone else removes the shoe from the table.

AllenNLP

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GPT-3: Davinci

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GPT-3: Davinci

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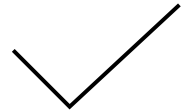
GPT-3: Davinci

Home Bathroom Scene



The scene takes place in a home bathroom. There is a magazine and ***a toothbrush*** *visible on a bathroom floor.*

Someone says, "pick it up."

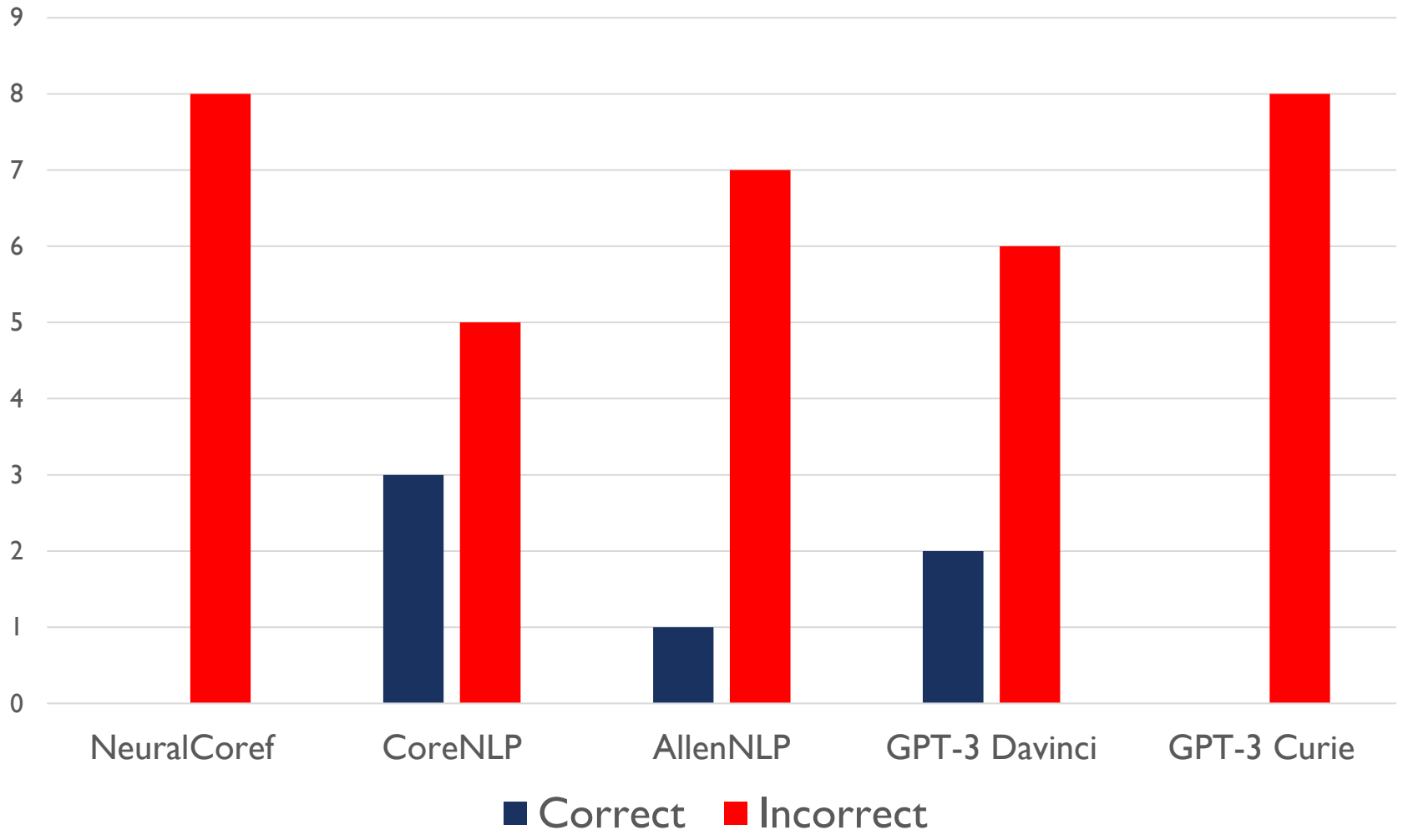
Which one?

GPT-3:

Justification

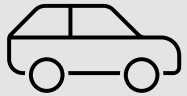
"If we use the noun that appears in the context, it is clear that the speaker is referring to the toothbrush. There is no other "it" in the sentence... We would never say, "Pick up the magazine." This is why it's important to know whether the noun is the subject or object of a sentence."

NLP Model Evaluations



CONCLUSION

- Norms in reference task
- Current approaches in NLP
- Embodied Systems (see paper for outlined approach)



THANK YOU

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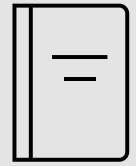

CITATIONS

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