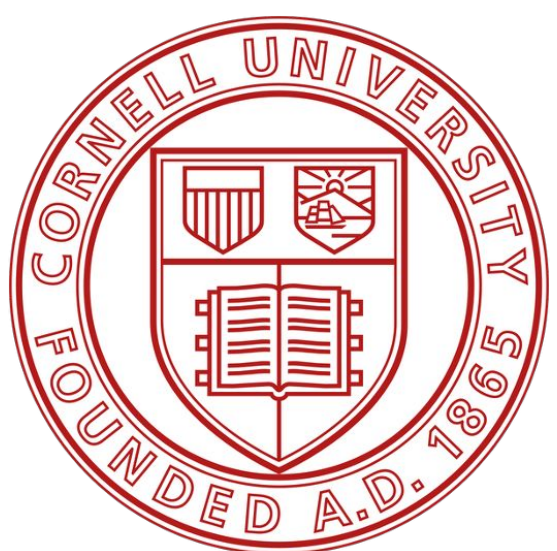# Experimentally extracting implicit instruments

CogSci 2025
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C.PSYD

Research Question

To what extent do people build representations of **implicit instruments** during event processing?

Background

"The <u>chef</u> chopped an <u>onion</u>."   IMPLICIT INSTRUMENT: <u>knife</u>
  AGENT   PATIENT

Instruments are **implied** in some events! [2]

- Event roles [1]:
  Agents initiate actions; **Patients** are acted upon;
  Instruments are used to carry out an action

Design

Covered box task:

The chef chopped an onion. Then, with the same ___

knife

4 answer conditions:
P: primary instrument   (knife)
O: object   (onion)
S: secondary instrument   (bowl)
A: associated item   (oven)

Experiments

The chef chopped an onion.

Then, with {the same/a different} . . .

knife (P)
onion (O)
bowl (S)
oven (A)

The chef chopped an onion.

Then, the chef used
        the chef took   {the same/a different} . . .
        using
        taking

knife (P)
onion (O)
bowl (S)
oven (A)

Experiment 1: *with*

with & *use* prime instruments [3]; *take* does not

Experiment 2:
verb bias: *use* vs. *take*
aspect: past vs. progressive

Results:
People always represent instruments

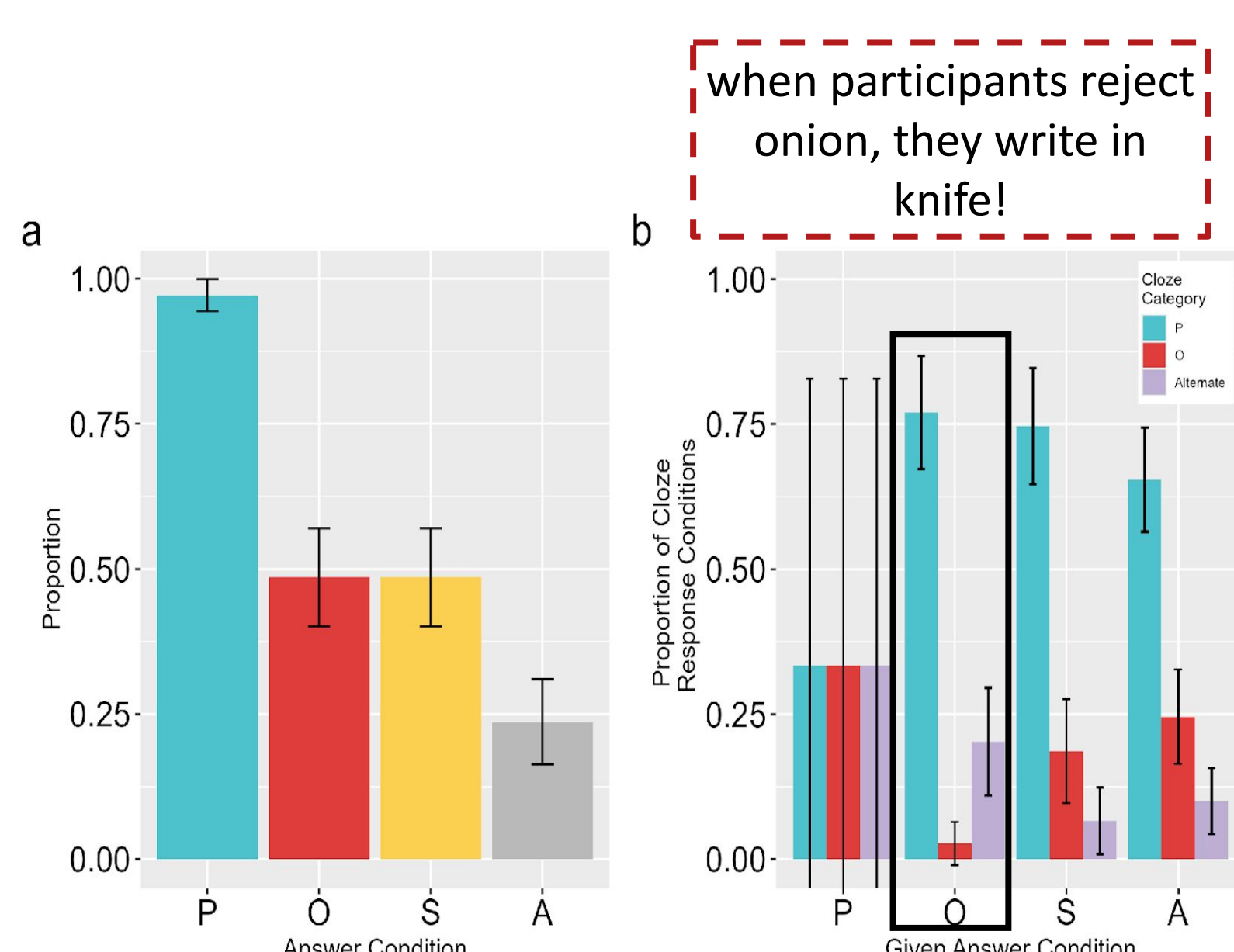blue bar (knife) is always high!

when participants reject onion, they write in knife!
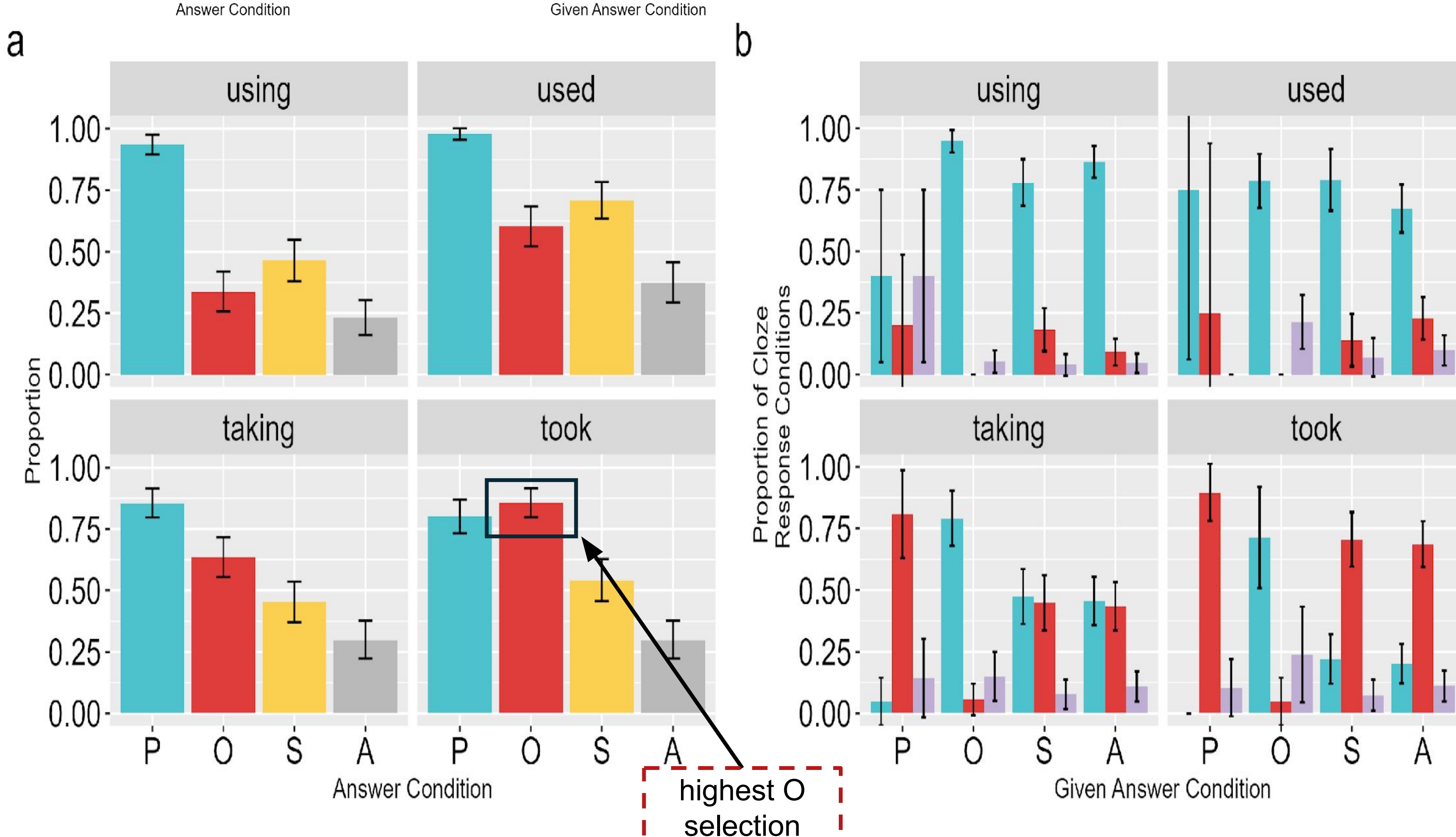

Figure 1: ←*with*
a. Proportion of answer choices selected over black box
b. Cloze response categorizations

Figure 2: ↓*use* vs. *take*
a. Proportion of answer choices selected over black box
b. Cloze response categorizations

highest O selection

Discussion

- *use* and *with* boost instrument selection
- Object selection <u>increases in the past tense</u>, when the instrument is less cognitively available [4]
- Object selection is highest in past-tense *take*
- When people reject the object or other choices, they <u>write in the instrument</u>

Conclusion
People represent implicit instruments **even though the object is primed**; this is modulated by verb and aspect.

Select References
[1] Fillmore (1968), *Foundations of Language*.
[2] Ferretti et al. (2001), *Journal of Memory & Language*.
[3] Schlesinger (1989), *Journal of Linguistics*.
[4] Zwaan & Radvansky (1998), *Psychological Bulletin*.
[5] Rissman & Majid (2019), *Psychonomic Bulletin & Review*.