

# Experimentally extracting implicit instruments

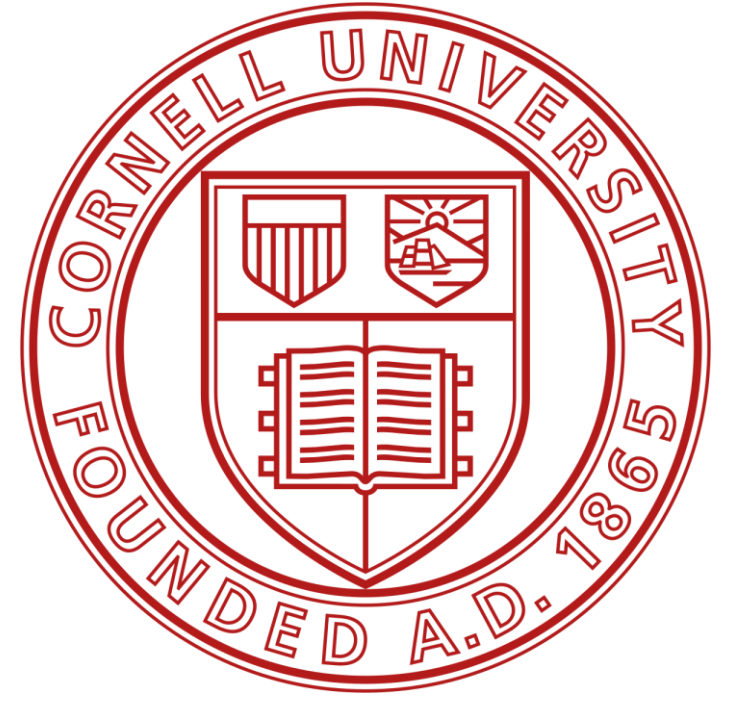
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## Research Question

To what extent do people represent **implicit instruments** during event processing?

## Background

“The chef chopped an onion.”

AGENT PATIENT

IMPLICIT INSTRUMENT: knife

- Event roles [1]:  
**Agents** initiate actions; **Patients** are acted upon; **Instruments** are used to carry out an action
- Instruments are **implied** in some events [2]
- While Agents and Patients are easy to distinguish, Instruments are not [3, 4]

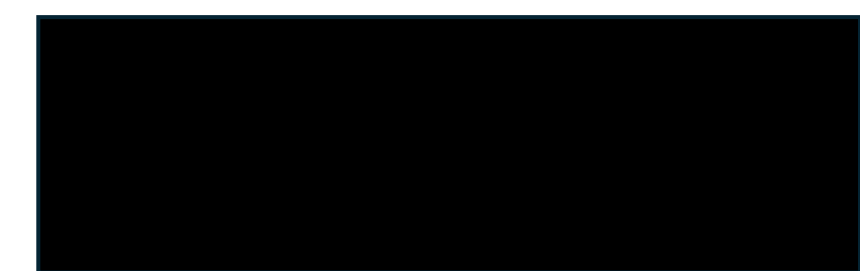
## Select References

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

## Design

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)

Note: The object (onion) is primed!

## Experiments

The chef chopped an onion.

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

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

**Experiment 1: with**

with & use prime  
instruments [4]; take  
does not

The chef chopped an onion.

Then, the chef used  
the chef took  
using  
taking

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

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

## Results: People always represent instruments

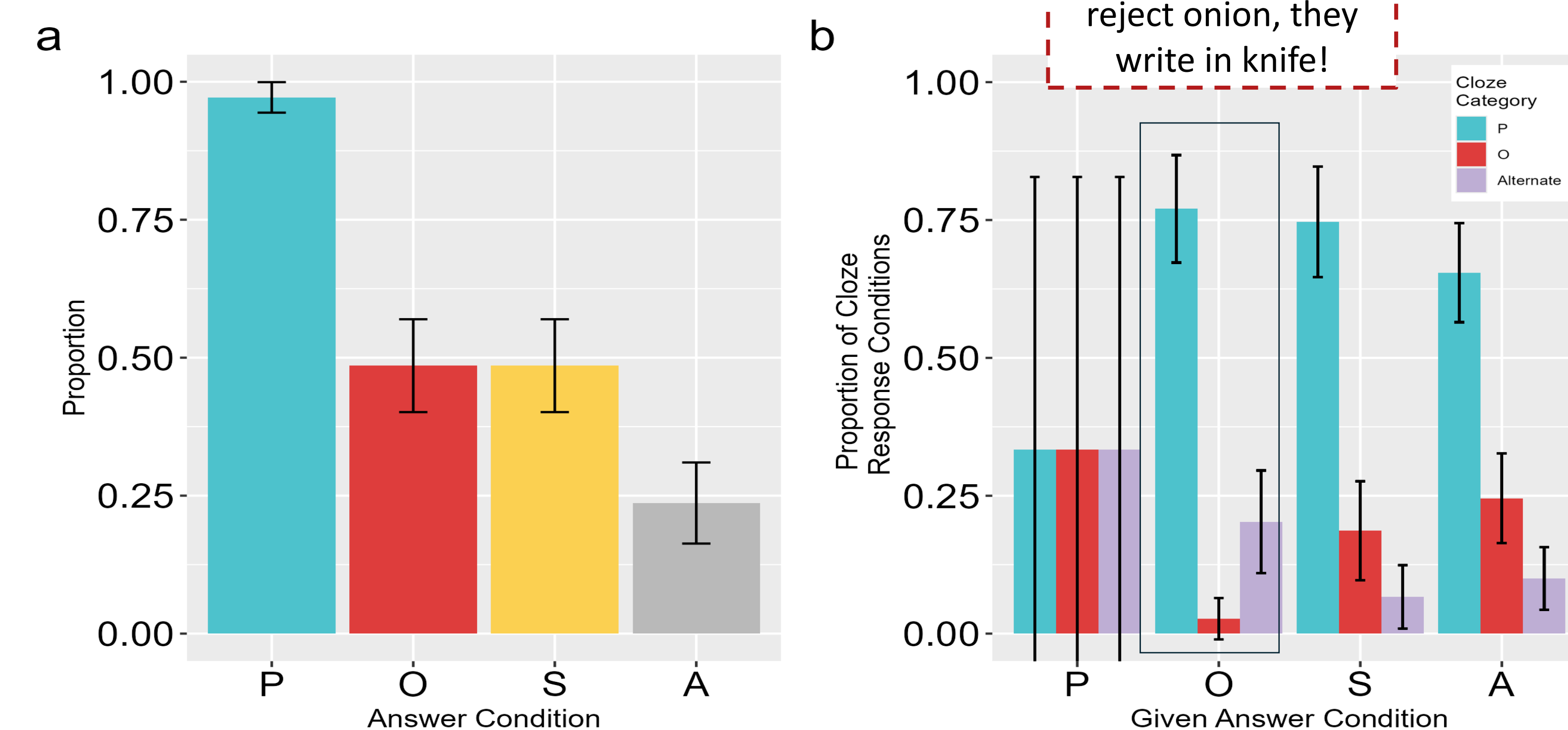


Figure 1:

*with*

- a. Proportion of answer choices selected over black box
- b. Cloze response categorizations

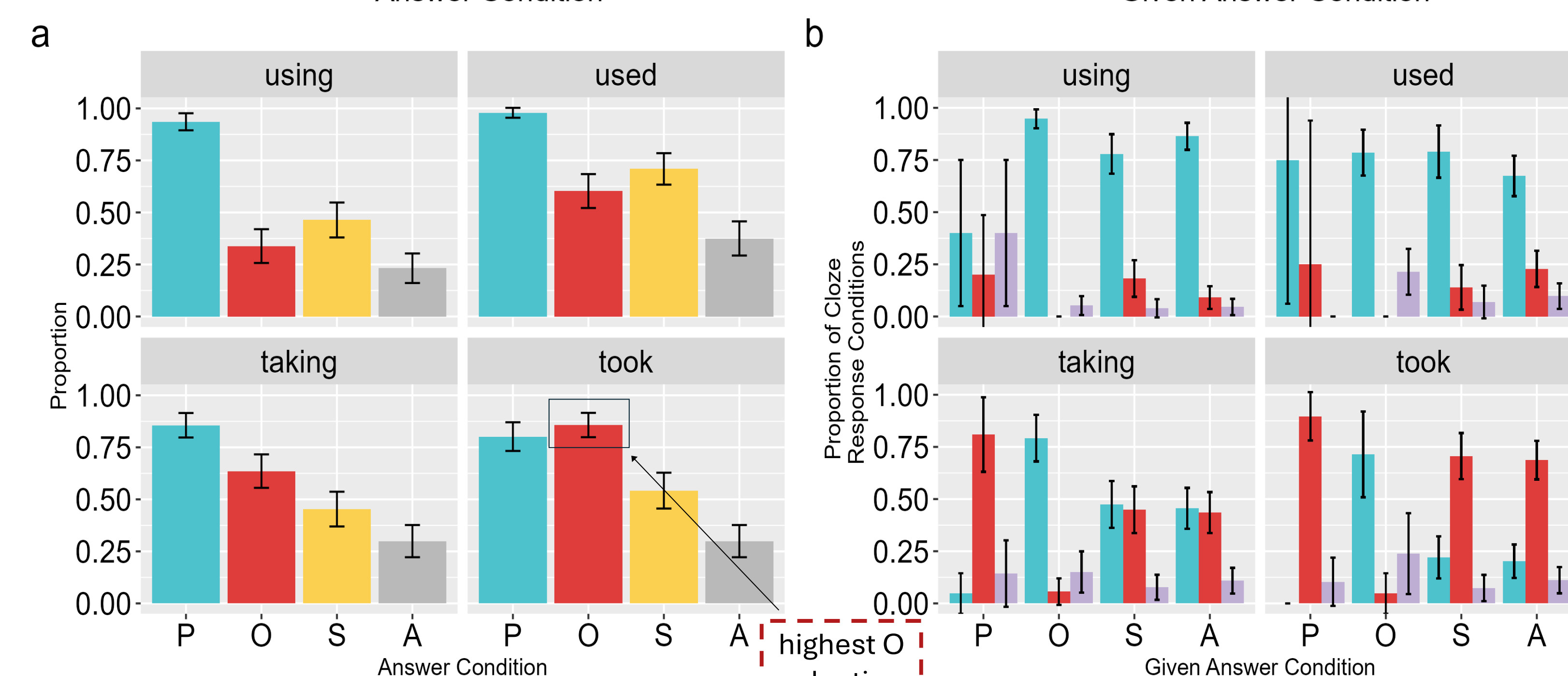


Figure 2:

*use vs. take*

- a. Proportion of answer choices selected over black box
- b. Cloze response categorizations

## Discussion

- Instrument selection increases when introduced by use or with
- Instrument selection decreases in the past tense, when the instrument is less cognitively available [5]
- Object selection increases in past-tense *take*
- When people reject the object or other choices, they write in the instrument

## Conclusion

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