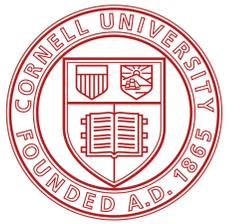


# Polysemous category assignment in mixed contexts

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## Research Question

Without explicit knowledge of categories, do people rely on **inherent bias** or on **context** to categorize items?

## Background

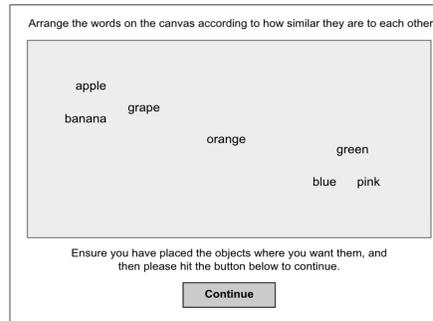
- **Polysemous words** (e.g., *orange*) belong to multiple potential categories (e.g., FRUIT, COLOR)
- **Shared features** influence how people assign categories [1]
- Previous work asks participants to list members of a category [2] or assign items to categories [3]

## Select References

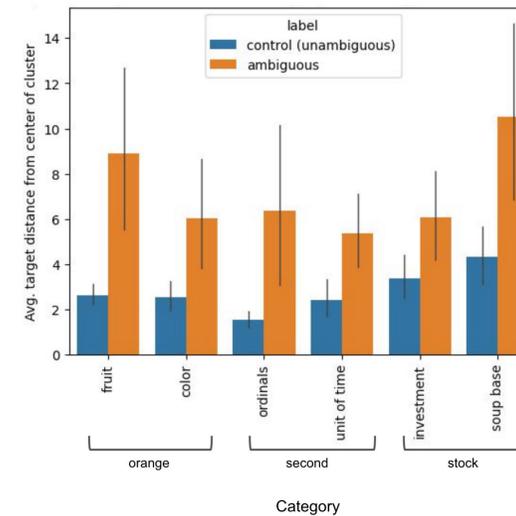
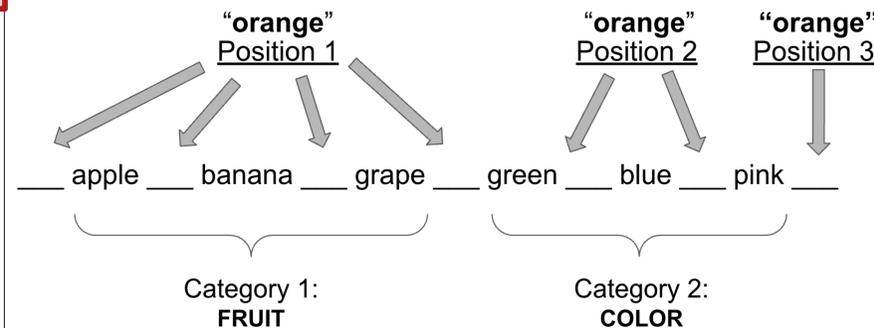
- [1] Jones (1983), *Psychological Bulletin*.  
[2] Battig & Montague (1969), *Journal of Experimental Psychology*.  
[3] Malt (1989), *Journal of Experimental Psychology: Learning, Memory, and Cognition*.  
[4] Starr et al. (2025), *Proceedings of the 47th Annual Conference of the Cognitive Science Society*.

## Experiment 1 (N=39)

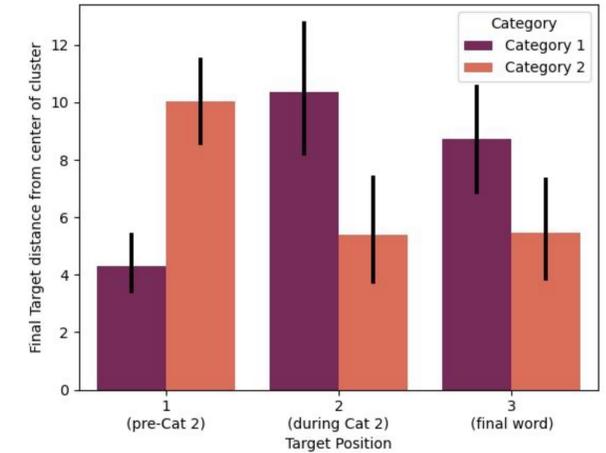
Participants are presented with 7 words, one at a time



Category 1: {apple, banana, grape}  
Category 2: {green, blue, pink}  
Target: orange



**Figure 1:** Target distance from cat. cluster, for select items  
 • Target is placed further from the center of a category in the **ambiguous contexts** than in the unambiguous control contexts  
 • Categorization is **sensitive to contextual ambiguity**



**Figure 2:** Target distance from cat. cluster, by Position  
 • When Target is presented before Cat. 2, it is placed much closer to Cat. 1  
 • When Target is presented during or after Cat. 2, it is placed closer to Cat. 2  
 • **Initial context** determines categorization

## Experiment 2 (N=60) Are shared features salient?

List recall:

- Present 20 words (4 words/second)
- 14 words **share** a feature ("red")
- 5 words **do not possess** the feature
- 1 word **might possess** the feature (e.g., red or green apple)

**In-list:** fire truck, wagon, strawberry, stop sign, cherry, exit sign, tomato, blood, rose, cardinal, lobster, ladybug, cranberry, lipstick (strong bias)

**Out-of-list:** trash can, gravel, street, cloud, cup (weak bias)

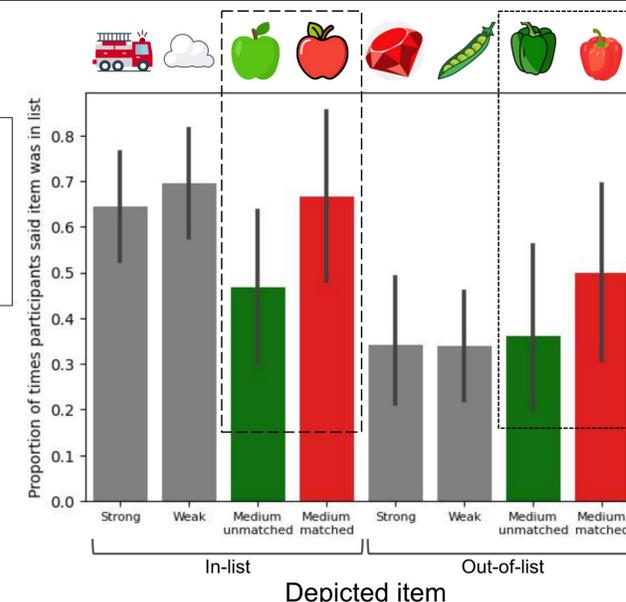
**apple** (medium bias)

"Was this item in the list you just saw?"

In-list: (correct answer: yes) or

Out-of-list: (correct answer: no) or

Strong bias      Weak bias      Medium bias



**Figure 3:** Proportion of times participants said item was in list  
 • Participants dismiss green apples  
 • Participants "remember" red bell peppers

## Discussion

- People do not update category assignment when new context is presented (Expt 1)
- Shared features are salient for recall, so could be used in categorization (Expt 2)

## Conclusion

Inherent bias plays a role, but **initial context** determines how people categorize words.