RSVP Search: Typicality effects in an atypical visual search task

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Stages of Search

- Search Initiation
  - Target Latency
  - Target Verification

Search Time

Keep this target in mind.
Target Typicality and Visual Search

• Template (e.g., 🌌) cues are more effective than categorical (e.g., “table”) cues \(^1,^2\).

• Target typicality impacts target verification \(^3,^4,^5\) and target latency \(^4,^5\) in categorical searches.

\(^1\) Yang & Zelinsky, 2009
\(^2\) Vickery, King, & Jiang, 2005
\(^3\) Castelhano, Pollastek, & Cave, 2008
\(^4\) Maxfield, Cave, & Zelinsky, 2014
\(^5\) Robbins & Hout, 2015
Memory for Distractors

• Incidental memory for non-target distractors \(^1,\ 2\).
• Better memory during multiple-target search \(^3,\ 4\).
• Deeper encoding?

\(^1\) Williams, Henderson, & Zacks, 2005
\(^2\) Williams, 2010
\(^3\) Hout & Goldinger, 2010
\(^4\) Hout & Goldinger, 2011
The Present Study

1. How typicality influences performance in a task when guidance and verification are not allowed to vary (e.g., during RSVP search)?
RSVP Search

Was the target present?
The Present Study

1. How typicality influences performance in a task when guidance and verification are not allowed to vary (e.g., during RSVP search)?

2. Do the imprecise features of a categorical cue benefit memory for distractor features?
MDS database

1 Hout, Goldinger, & Brady, 2014
Method

• Two groups (Template vs Categorical)
• Target typicality was manipulated within-subjects.
  • Atypical
  • Semi-typical
  • Typical
Sample Trial

Was the target present?
Method Cont...

- Surprise memory test (2-AFC) for the **distractor objects** at the end.
  - MDS distances were used to assess difficulty of the test:
    - Difficult
    - Medium
    - Easy
Search Accuracy

![Chart showing search accuracy for Typical, Semi-typical, and Atypical cases. The y-axis represents Search Accuracy (% Correct) ranging from 0.7 to 1.0. The bars for Template and Categorical are compared. The Typical case shows the highest accuracy, followed by the Semi-typical and then the Atypical case.]
Distractor Recognition

$p = .056$
Conclusions

- Typicality did not impact target detection, perhaps for different reasons:
  - Search performance was high.
  - Object array vs RSVP?
  - Stimuli used?
- Ps had good memory for distractors.
  - Recognition was better for categorical searches.
Future Directions

- Attentional blink paradigm.
- Eye-tracking and pupillometry.
- Different typicality measures.

Heim, Benasich, & Keil, 2013
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Questions?