

Knowing where is different from knowing what

Distinct response time profiles and accuracy effects for target location, orientation, and color probability

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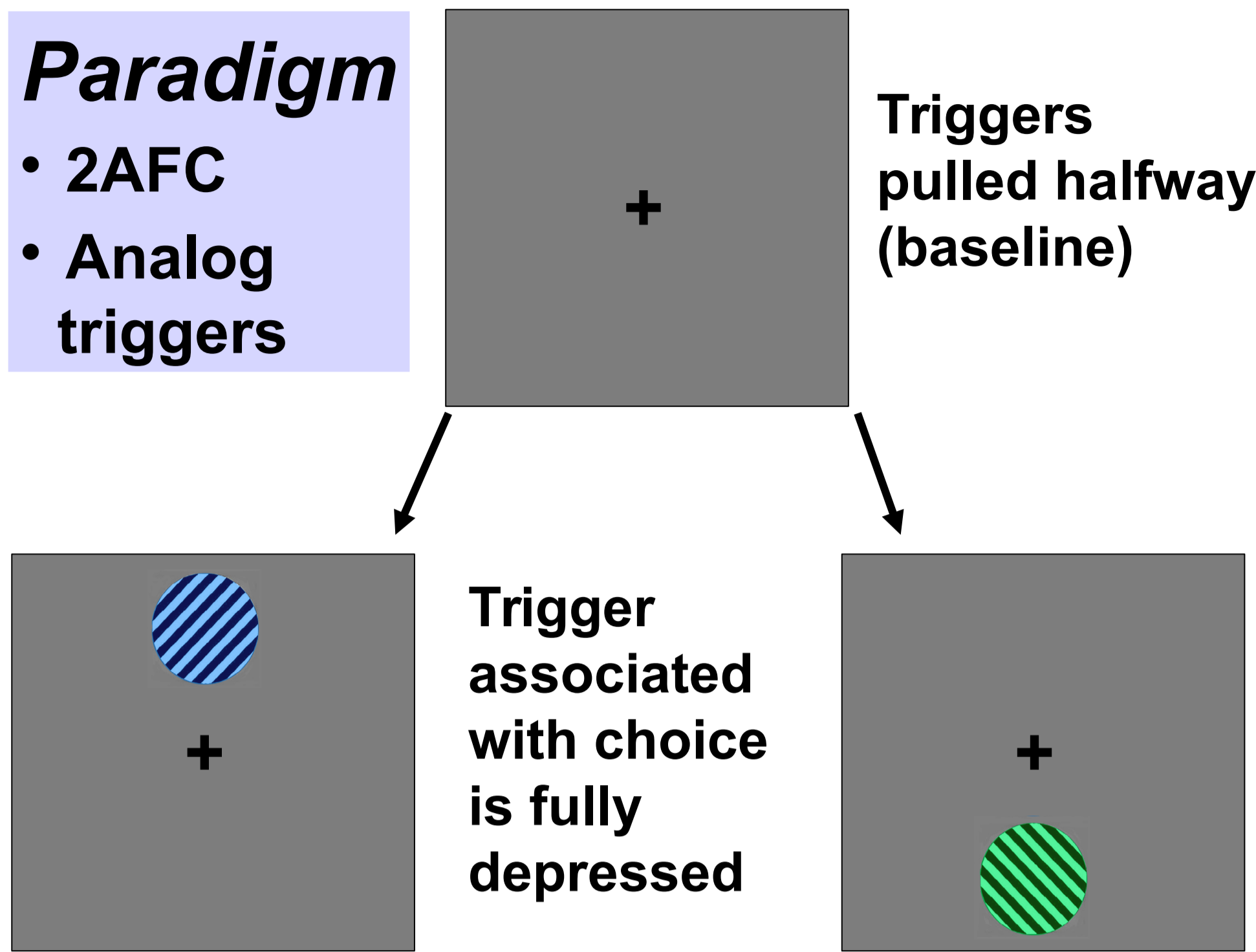
- Orientation probability affects precision
 - Spatial probability affects detection
- Jabar & Anderson (2017)^a

1) **When** does feature/spatial knowledge have an effect?

2) **What** are these feature/spatial effects?

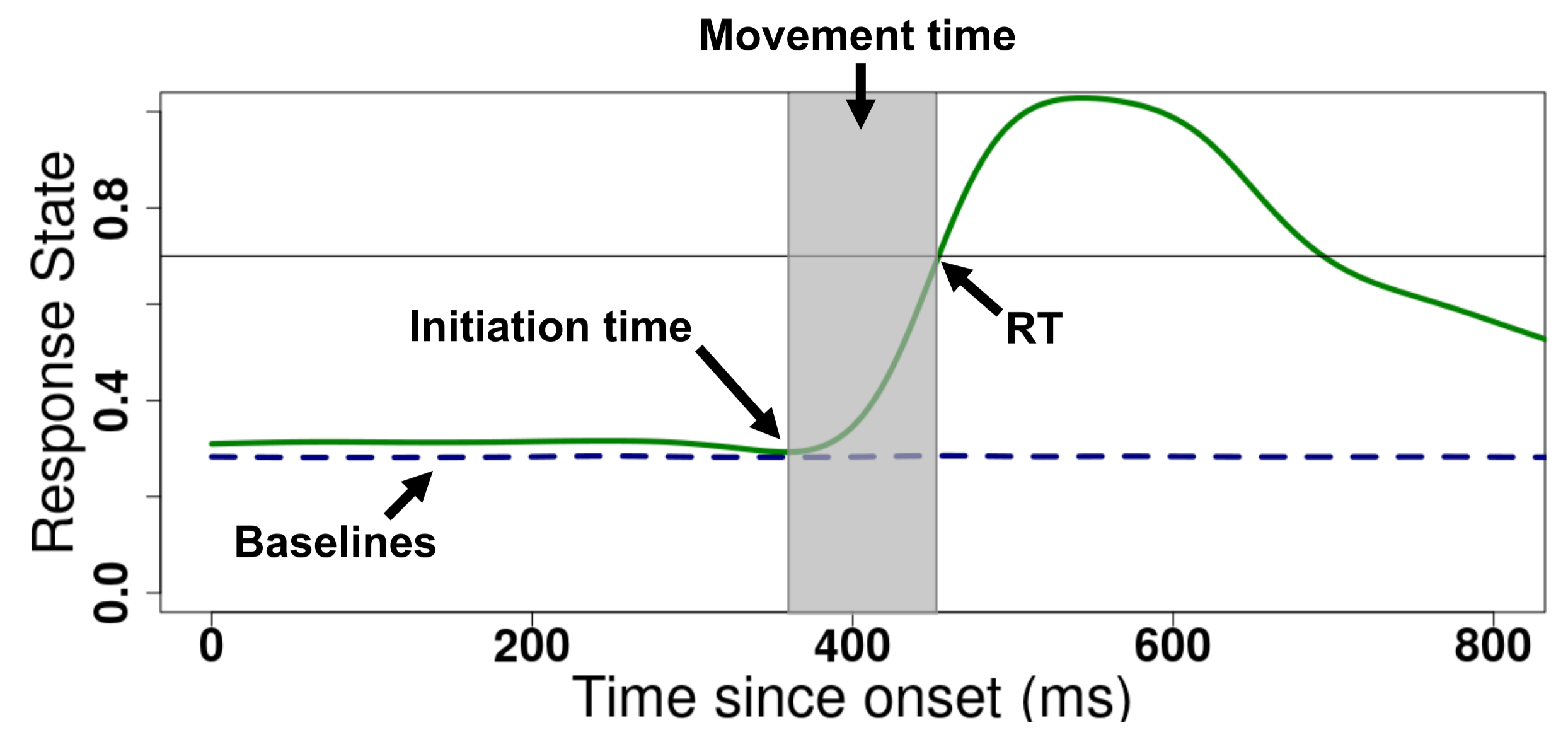
Paradigm

- 2AFC
- Analog triggers



Response Profiles

What are the sources of RT differences?
Baseline, initiation time, or movement time?



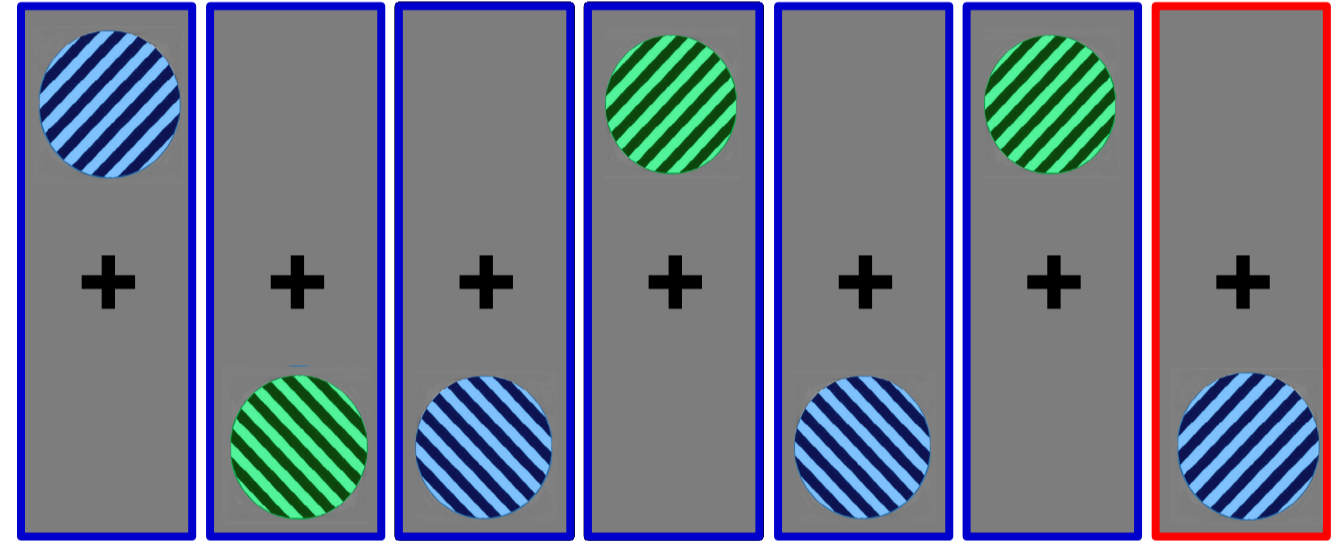
Task

Experiment 1:

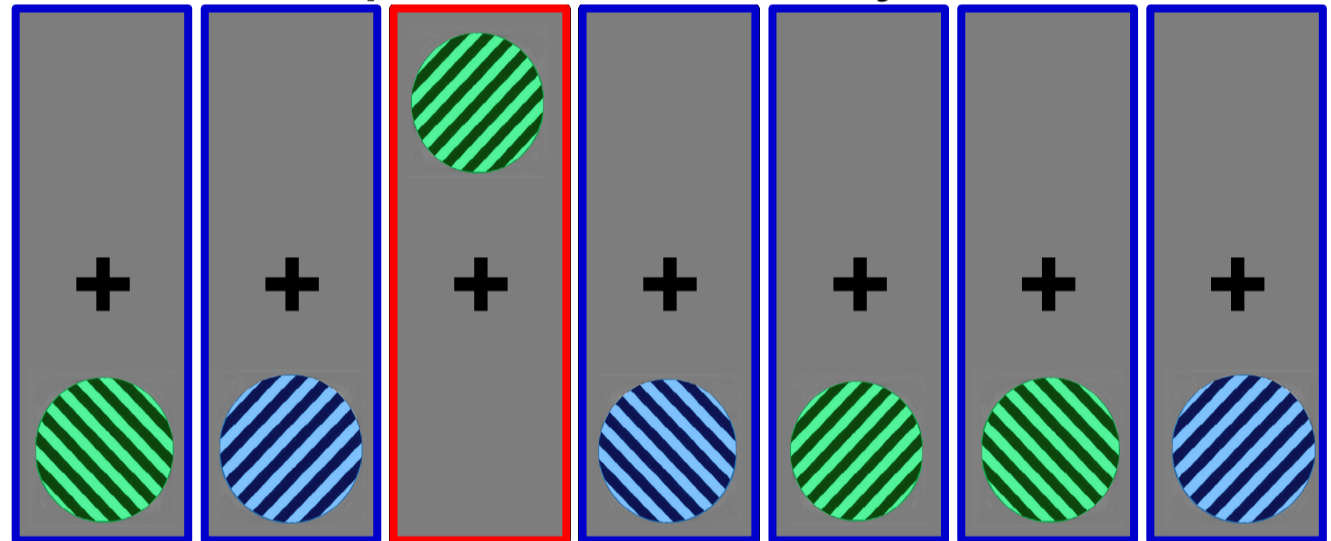
- discriminate orientation (Expt 1-ori)
- discriminate color (Expt 1-col)

High Prob (80%) Low Prob (20%)

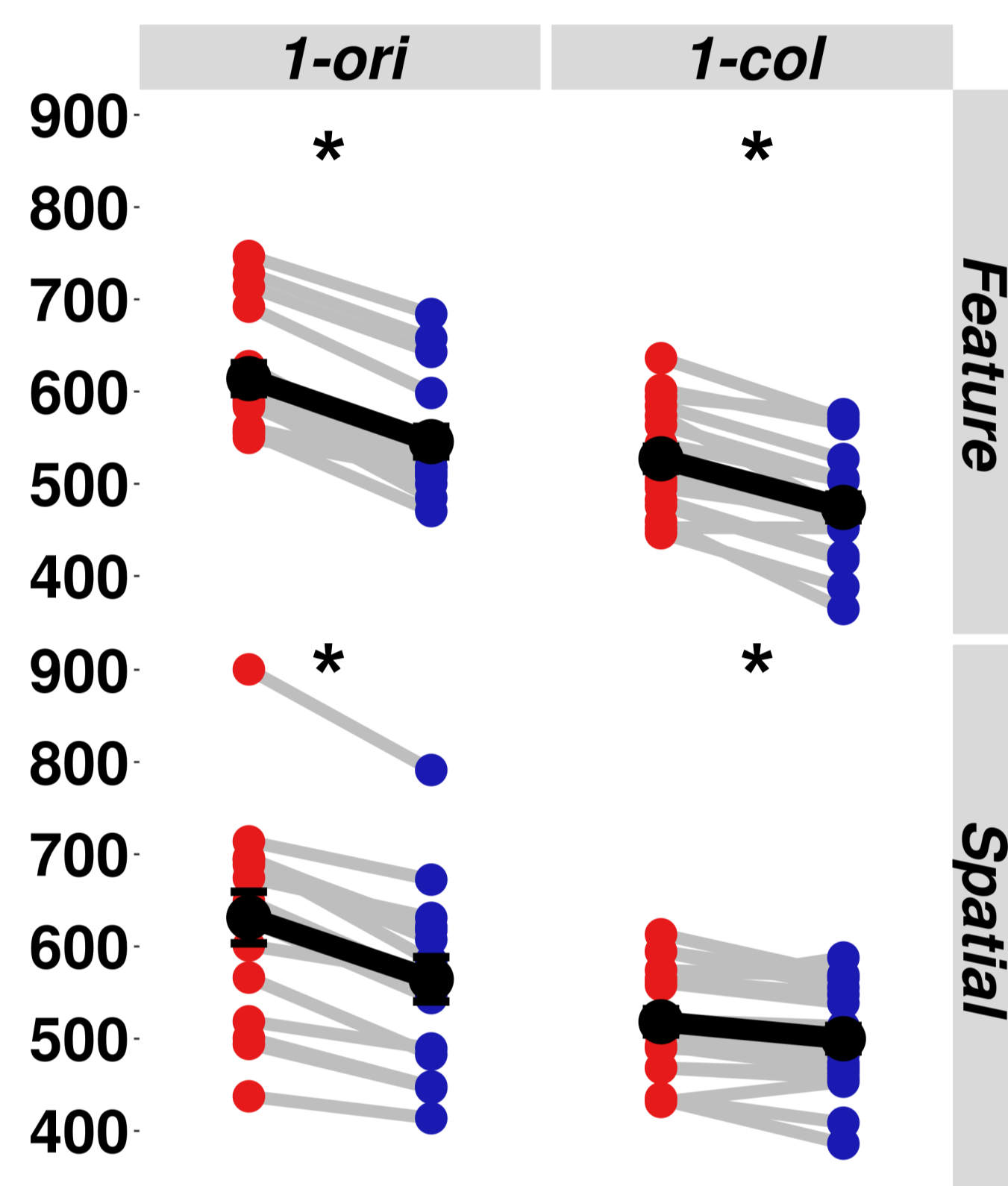
Block 1: Feature Probability (response-relevant)



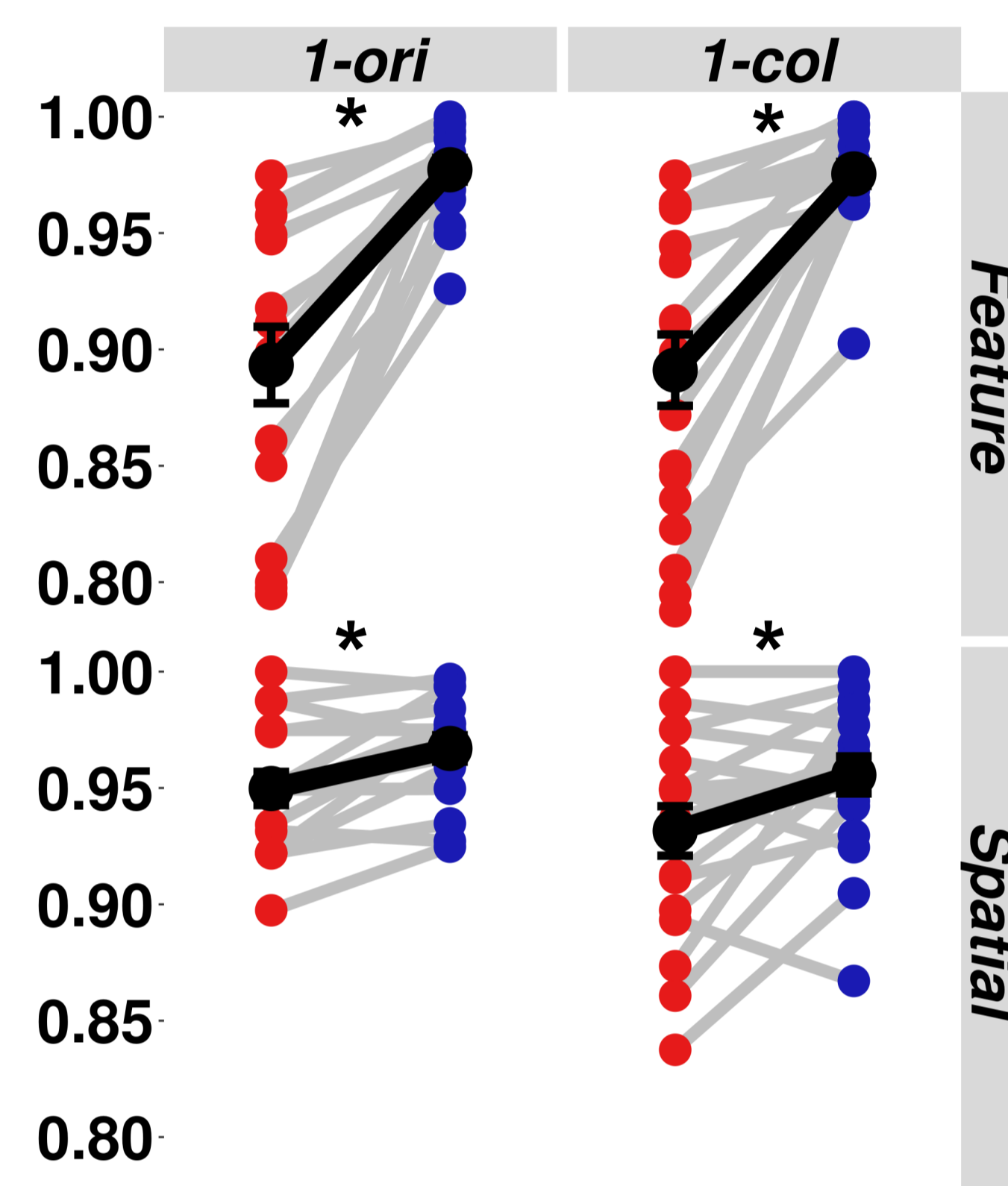
Block 2: Spatial Probability (counter-balanced)



Reaction Time (ms)



Accuracy



Summary

Knowledge acquired under different domains acts differently

Feature probability

- Similar effects for orientation and color
- Causes only domain-specific effects
- Affects perceptual precision
- Affects initiation and movement times

Spatial probability

- Causes domain-general effects
- Affects detection, not precision
- Affects initiation times only

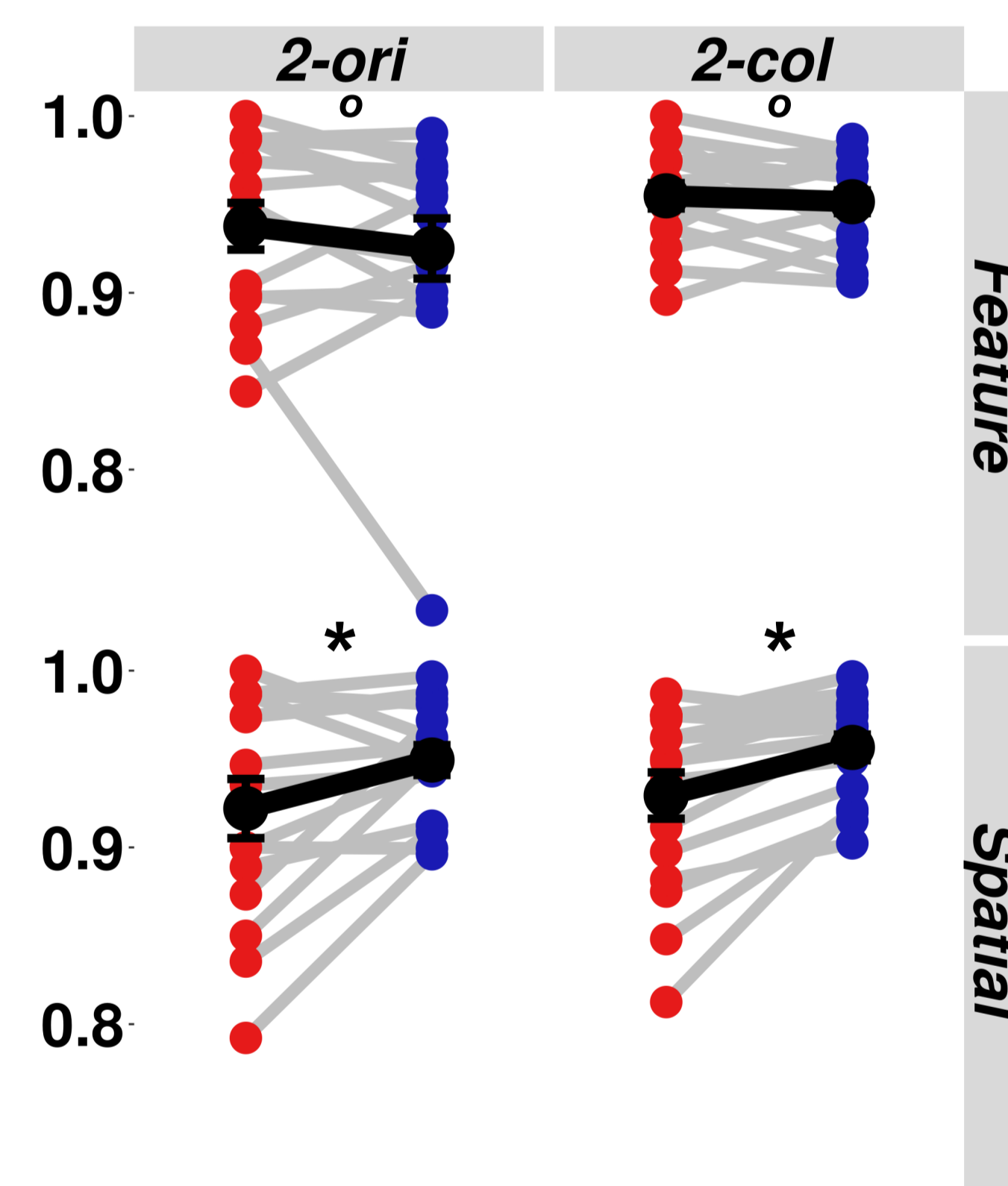
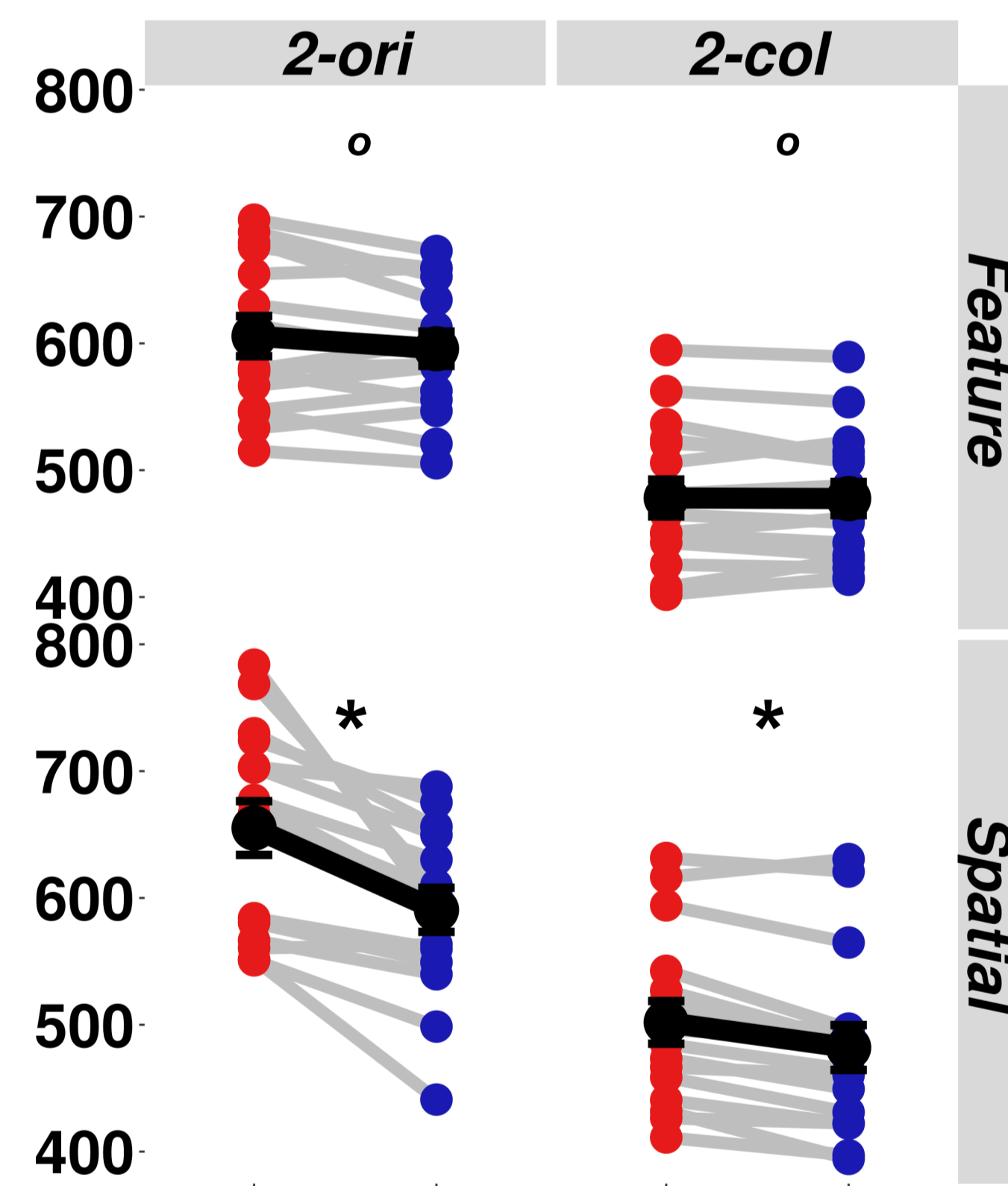
Experiment 2:

- discriminate orientation (Expt 2-ori)
- discriminate color (Expt 2-col)

• Feature probability manipulation was **response-irrelevant**

- Expt 2-ori manipulated color probability
- Expt 2-col manipulated orientation probability

• Spatial probability manipulation same as Expt 1



Experiment 3:

• similar to Expt 1-ori

• discriminate orientation:

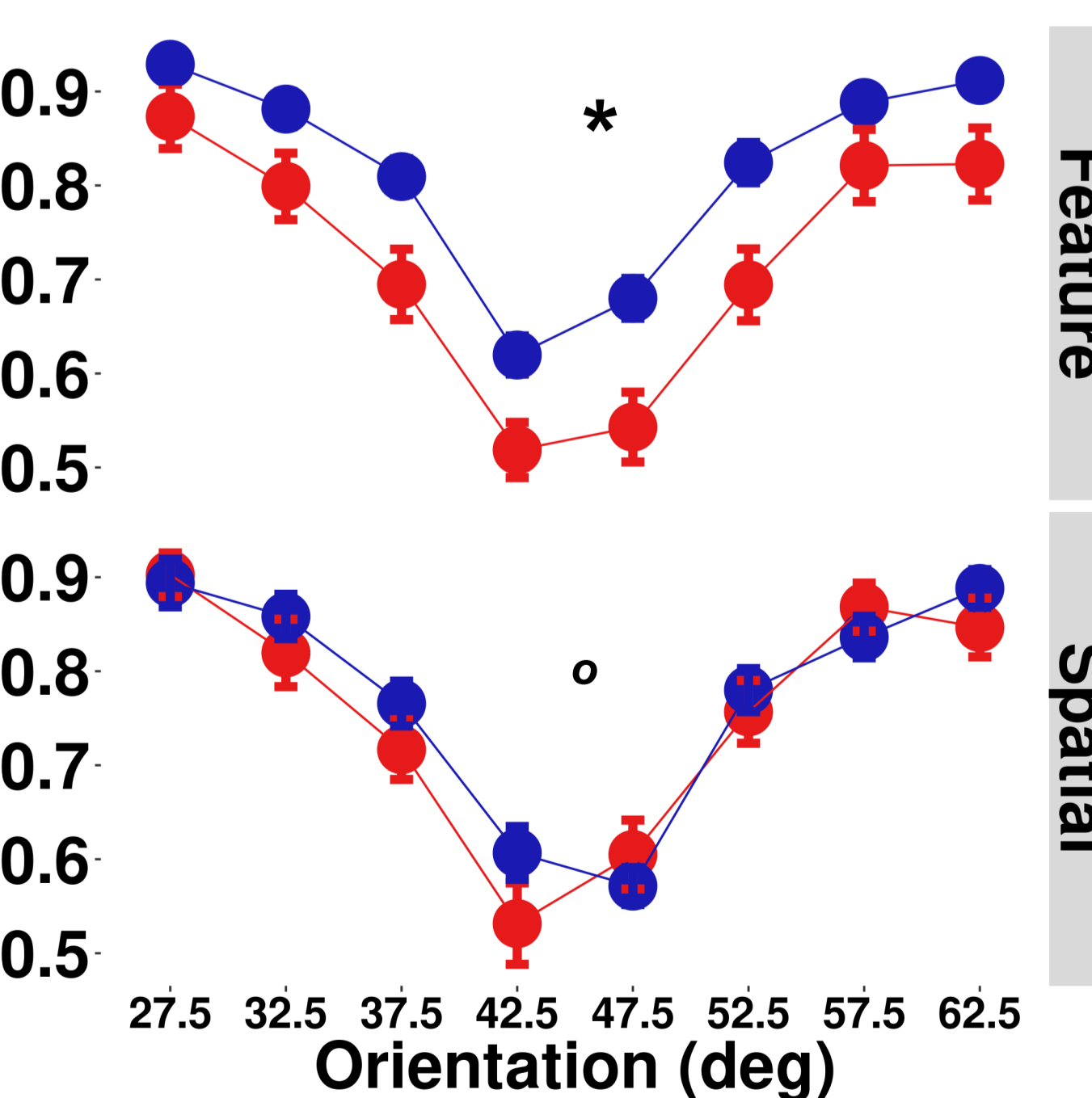
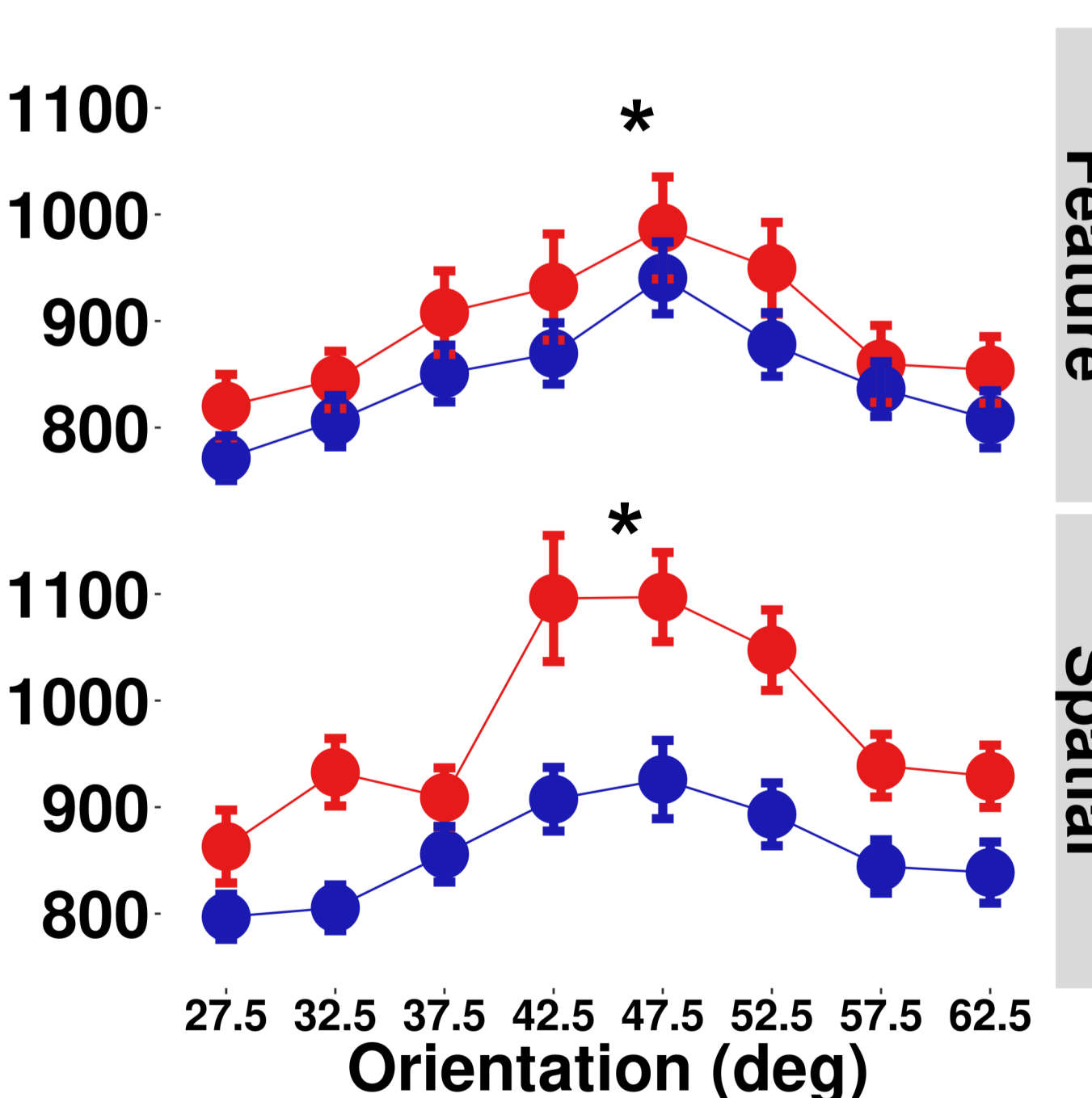
Clockwise / Anti-clockwise from 45 deg

• Feature Probability

- Either above or below 45 degrees was probable

• Spatial probability

manipulation same as Expt 1



Feature and spatial probabilities affect separate mechanisms

Neural tuning or neural gain? ^b

Effect of probability: * $p < .05$, ^o $p > .05$

^a Jabar, S. B., & Anderson, B. Not all probabilities are equivalent: Evidence from orientation versus spatial probability learning. *JEP:HPP*.

^b Jabar, S. B., Filipowicz, A., & Anderson, B. Tuned by experience: How orientation probability modulates early perceptual processing. *Vision Research*.

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