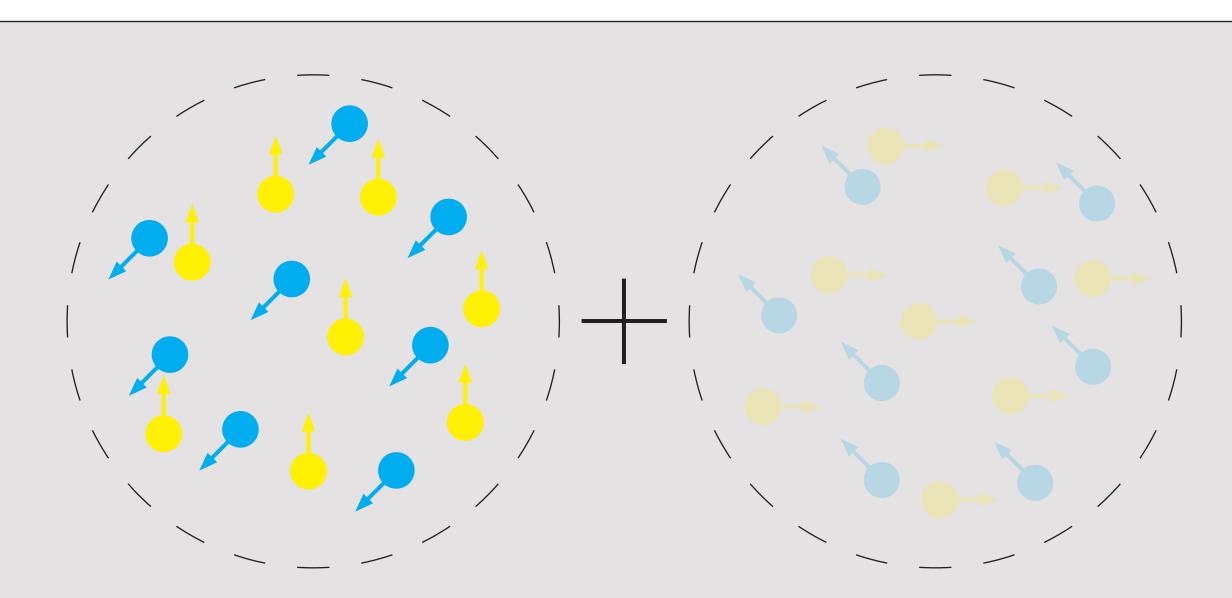
Putting spatial and feature-based attention on a shared perceptual metric

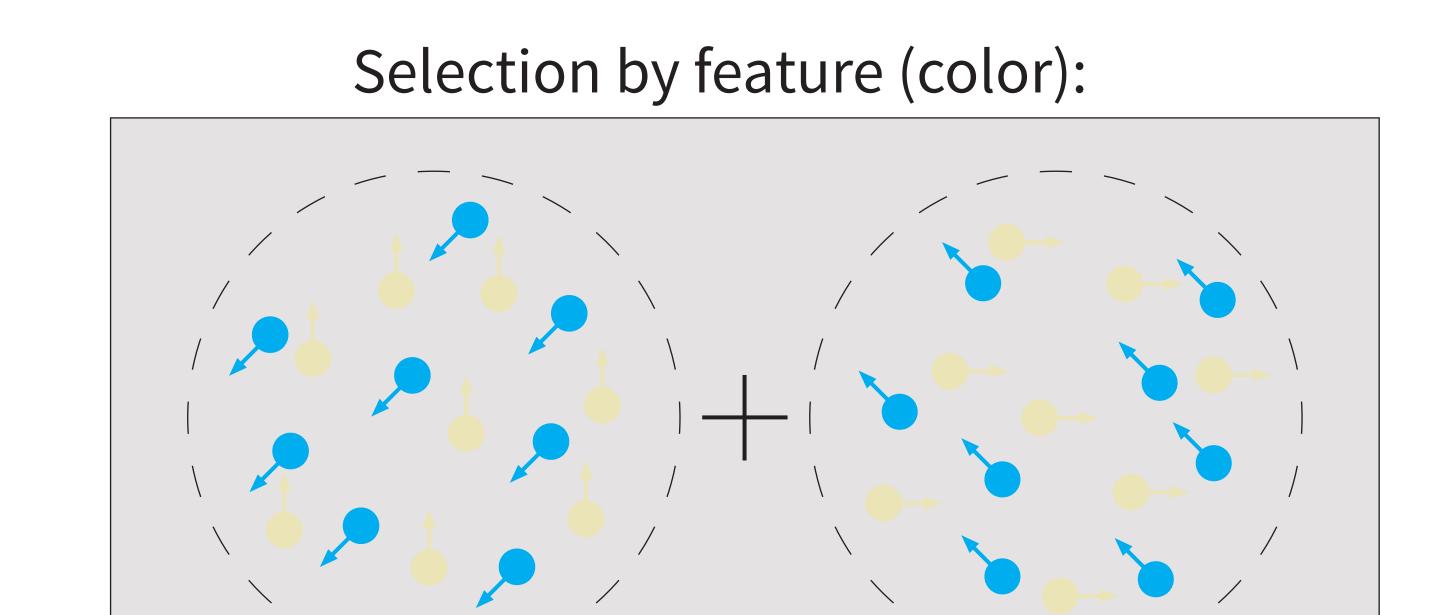
Daniel Birman, Justin L. Gardner danbirman@gmail.com



1. Introduction







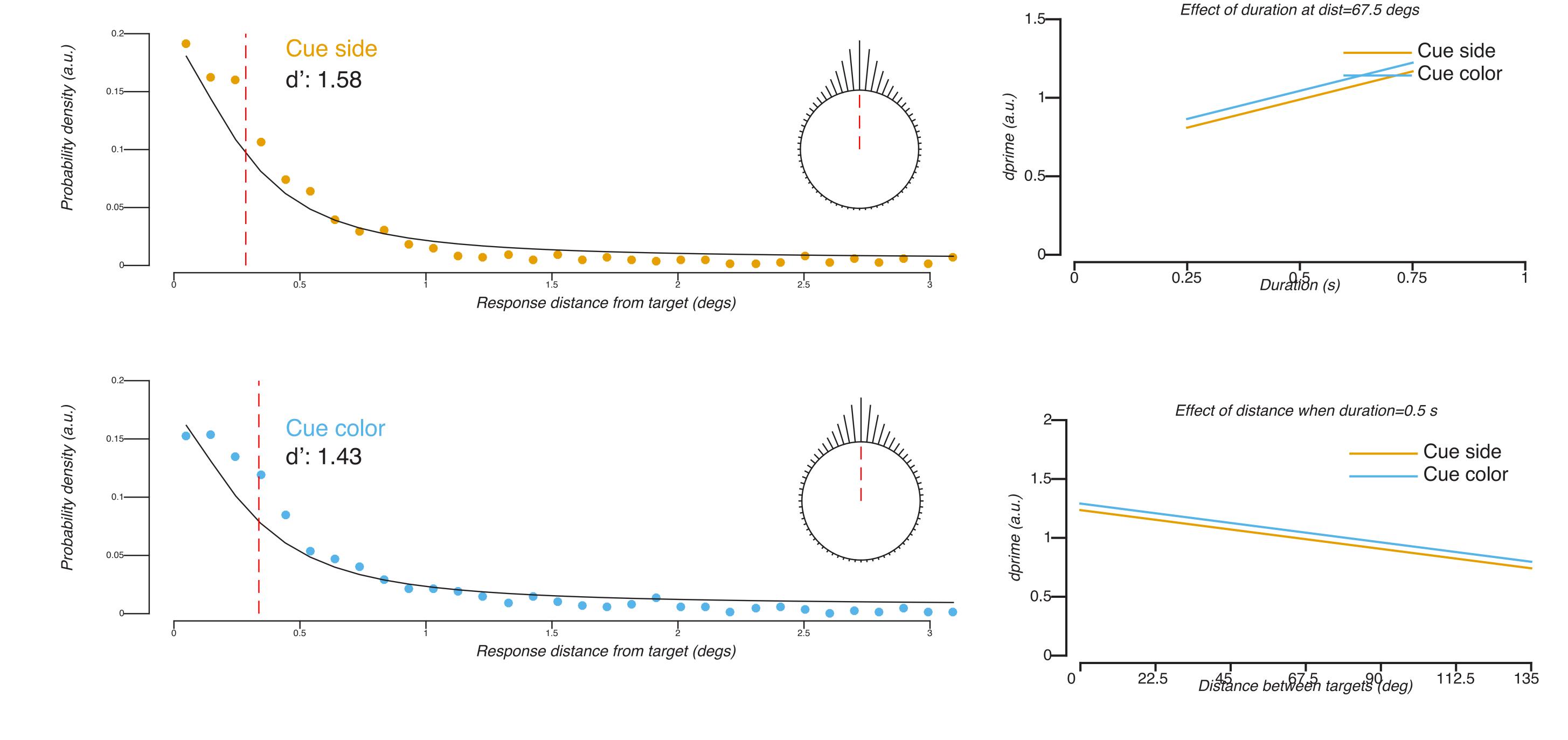
Are these forms of selection equivalent?

2. A shared perceptual metric

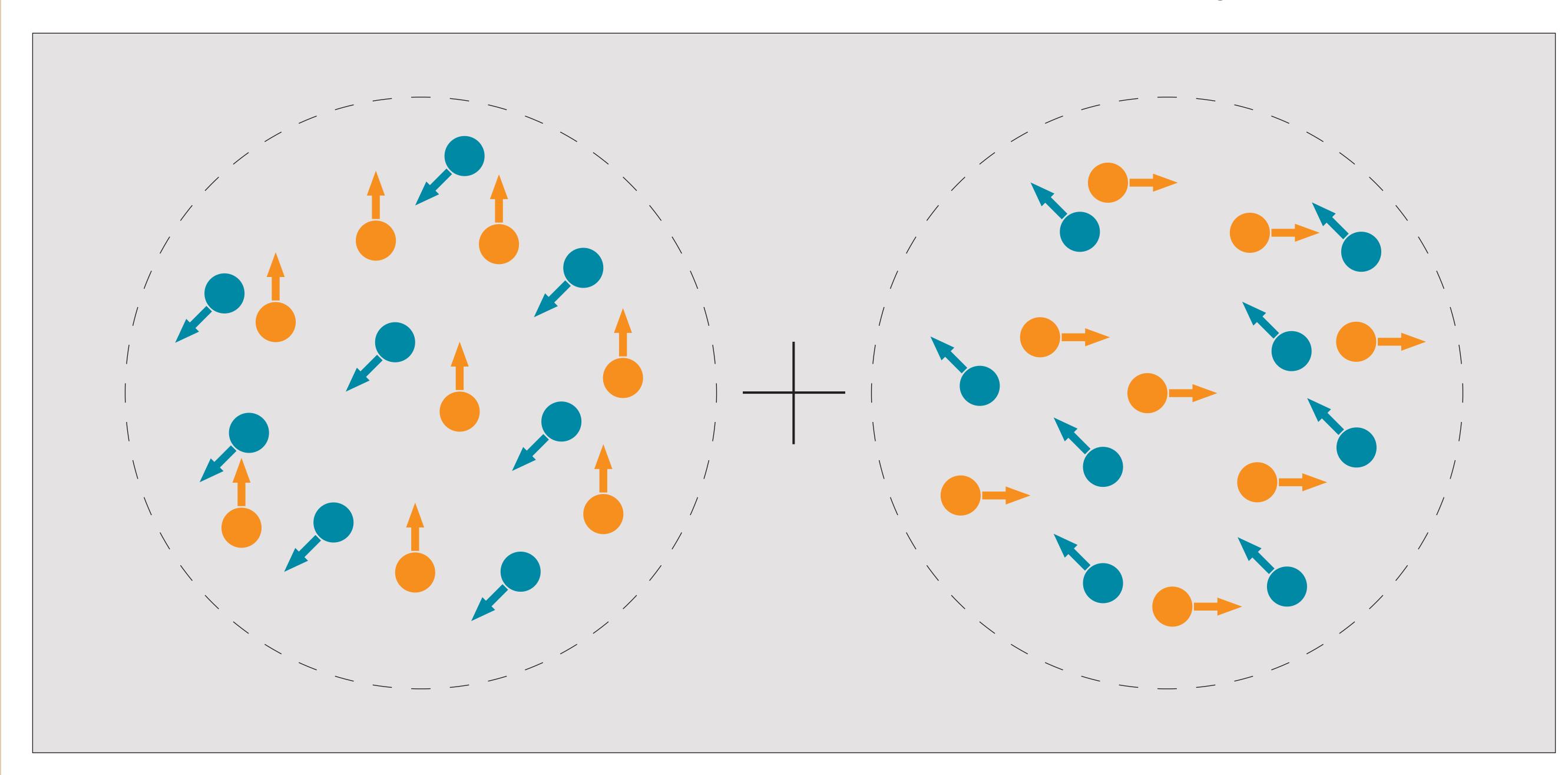
Observers (n=4) were asked to average the motion direction of two patches, selected by color or side. We fit their responses with a model with a single parameter (d').

Todo-task figure

Cueing by side and feature were similar:



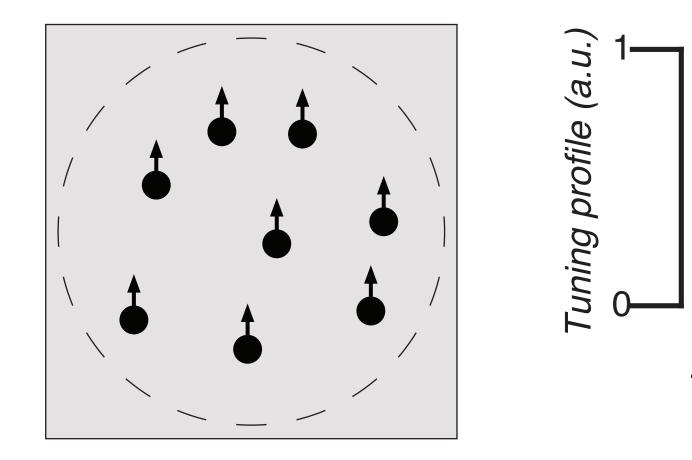
How can we compare different forms of sensory selection?

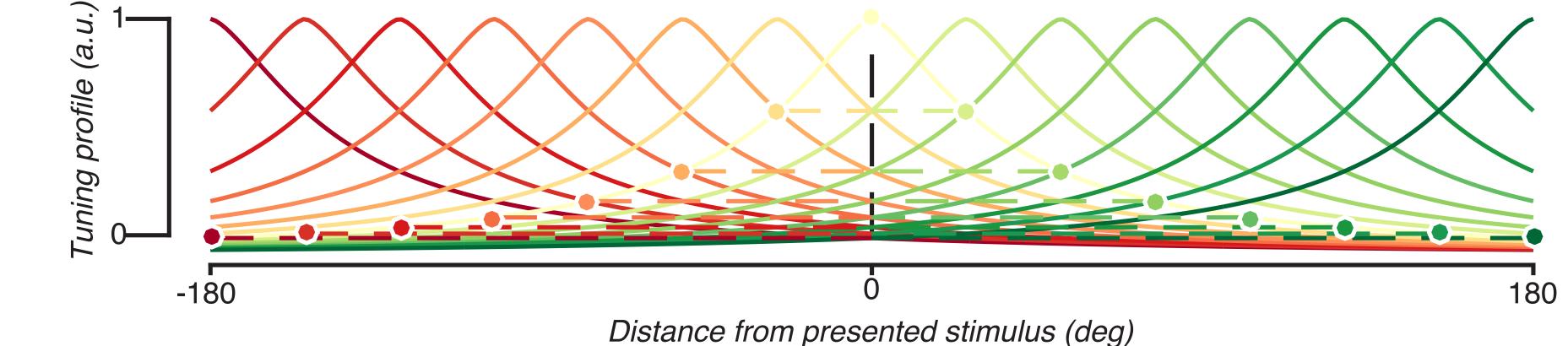


We built a simple task which shows that selection by location, color, and motion direction are all similar.

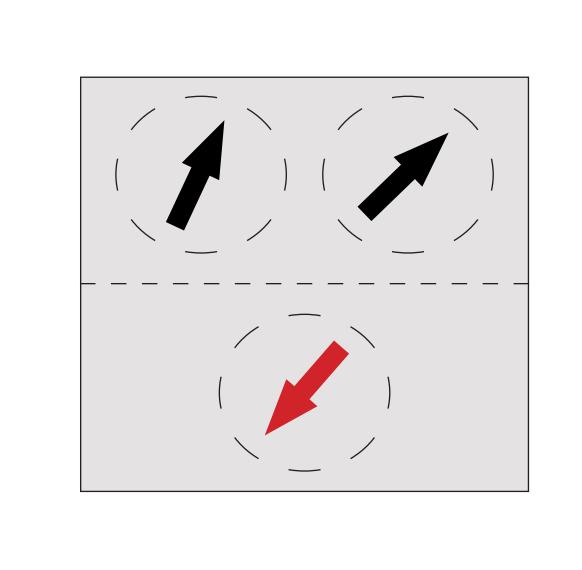
3. Model details

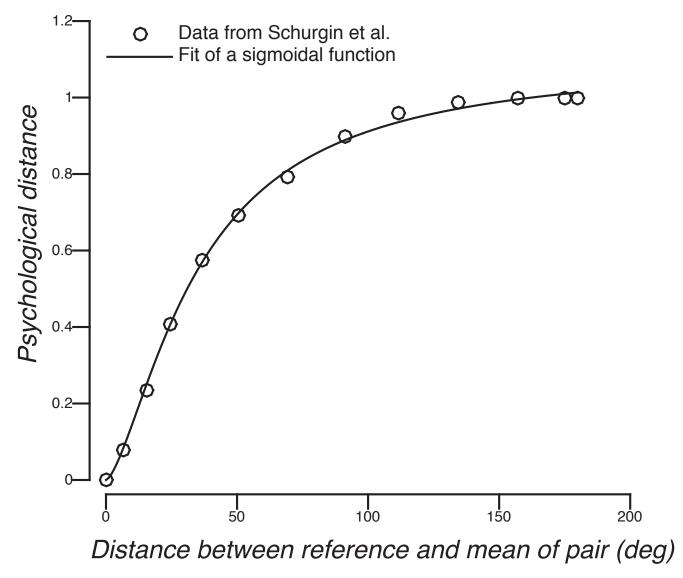
Our model of behavior assumes that a stimulus is encoded by many independent "channels" tuned to the stimulus properties¹.



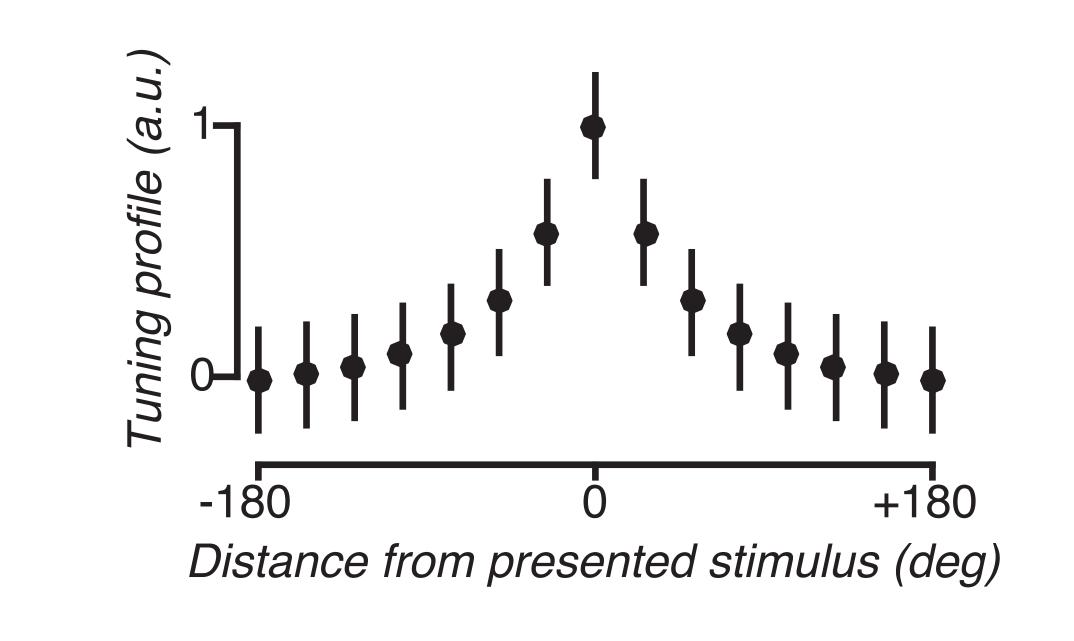


The tuning profile of each channel is empirically derived from a psychological distance function.



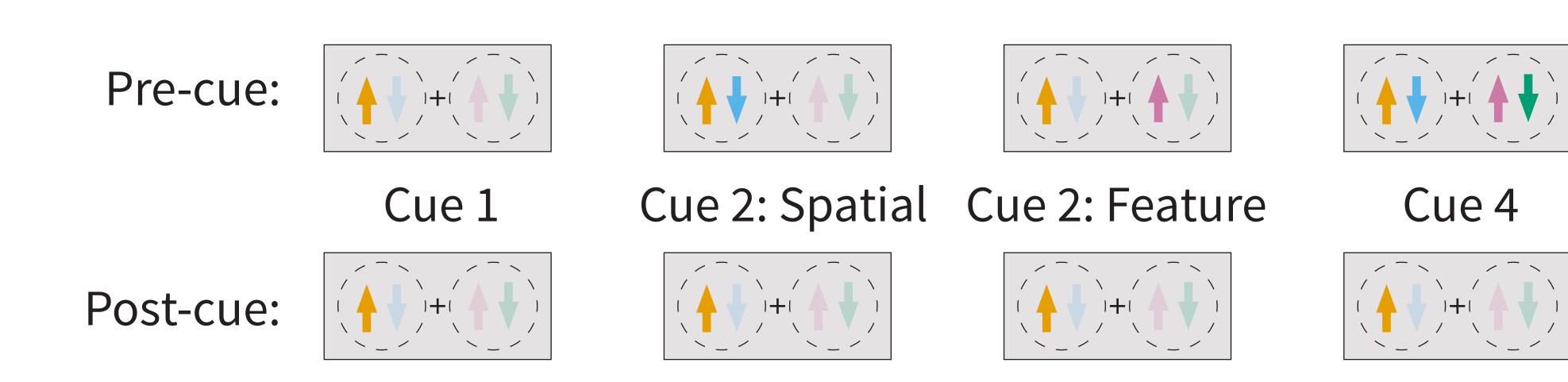


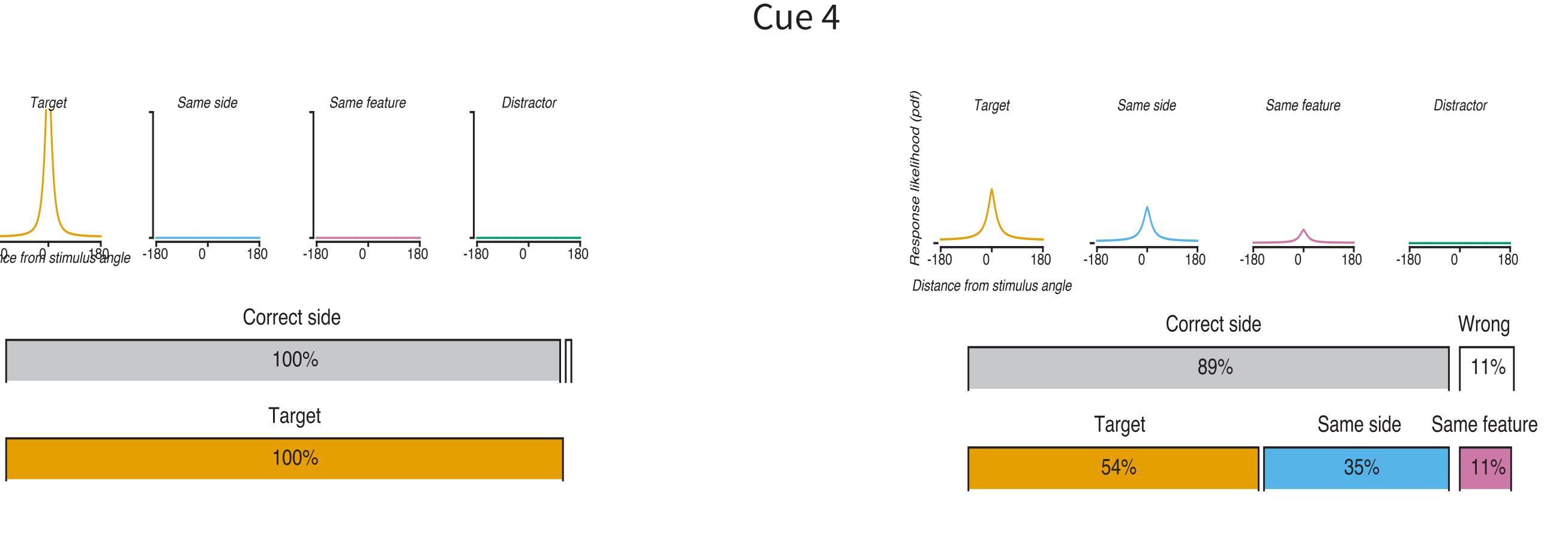
At the time of readout, the channel with maximum activation is reported. Noise in the channels leads to response variability.

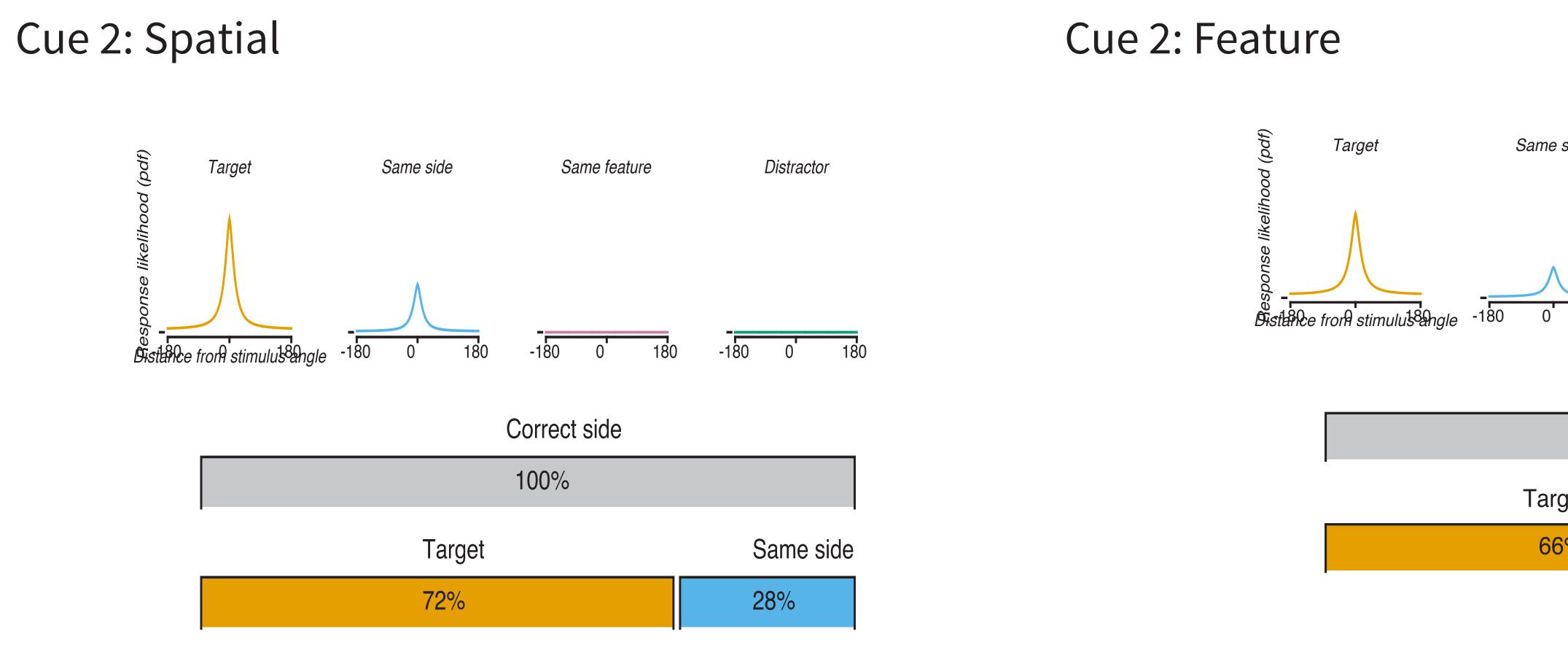


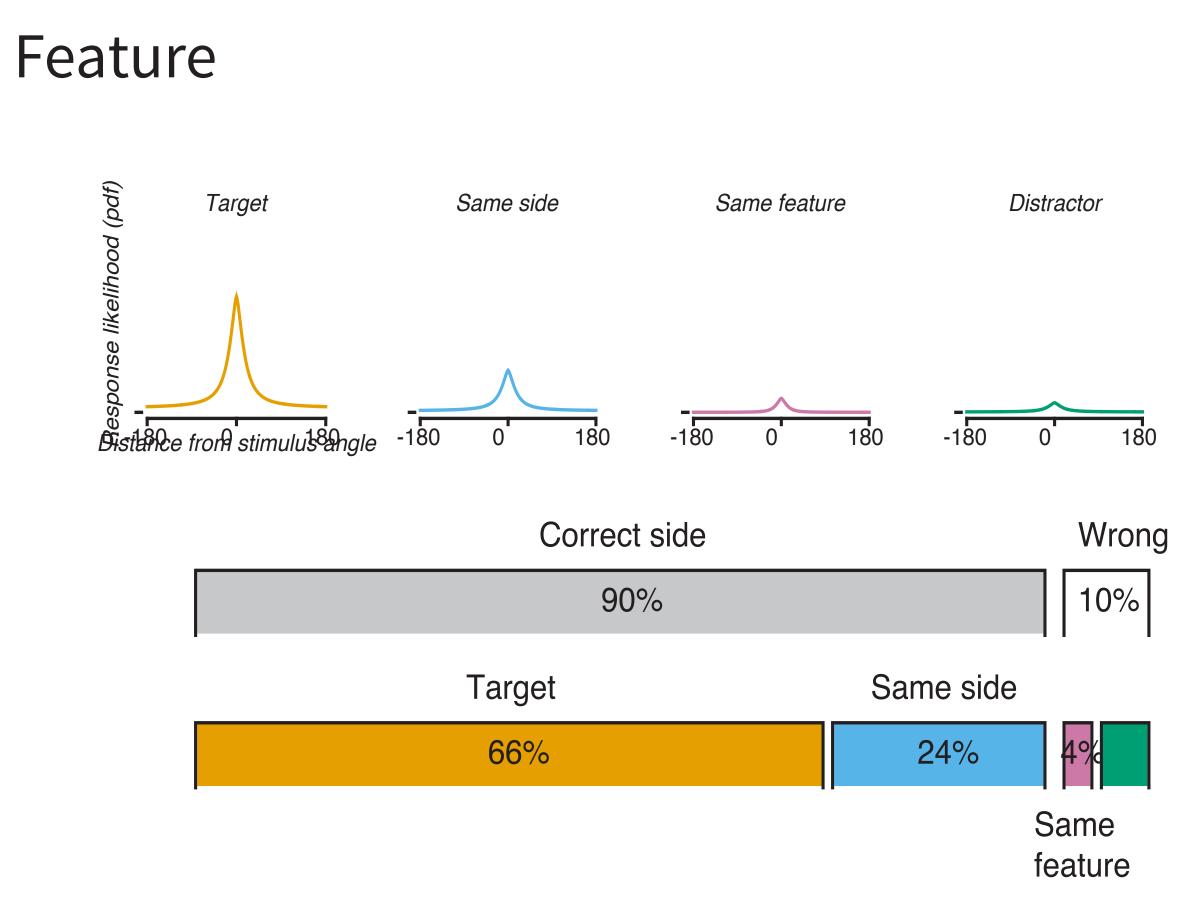
4. Spatial selection exerts a small bias

Observers (n=5) were asked to recall the color of a single patch. We varied what information was cued in advance to control sensory selection. (data from 250 ms duration)









5. Similar selection hints at similar implementation

• •

Cue 1