



The Sequential Dynamics of Visual Short-Term Memory



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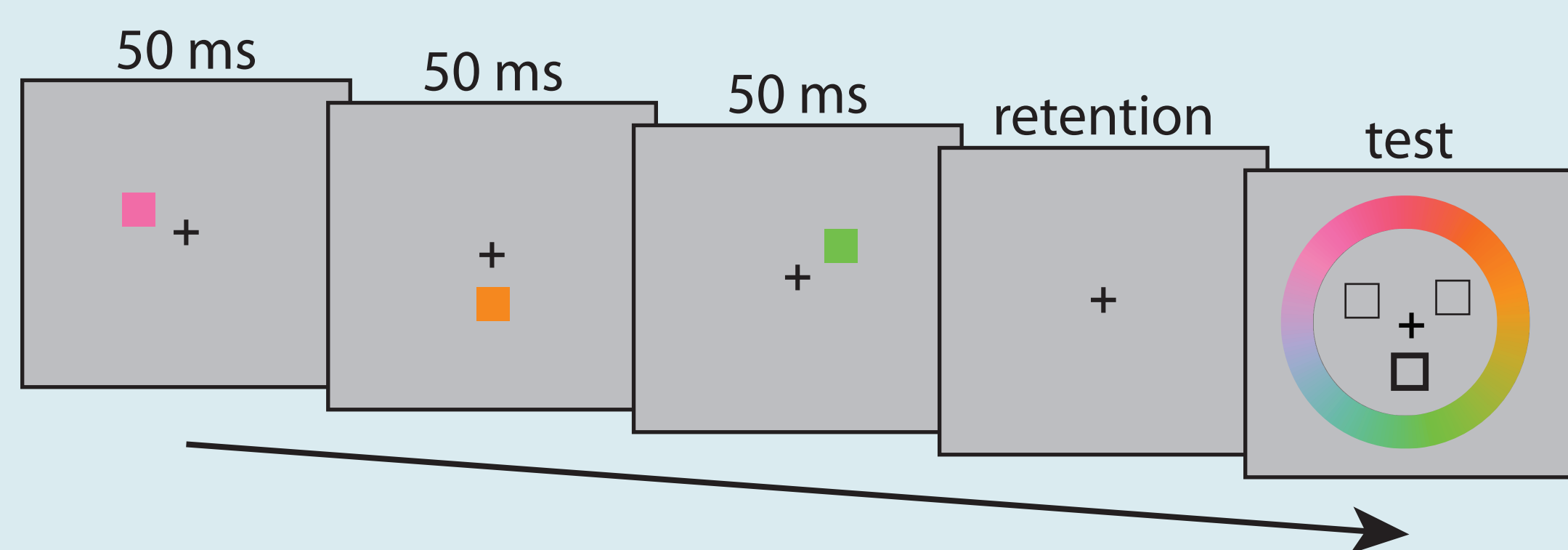
Introduction

Visual input is constantly in flux, as a result of eye movements, self-motion, and object motion

Visual short-term memory (VSTM) may help to bridge across these changes

How does VSTM cope with dynamic input?

Methods



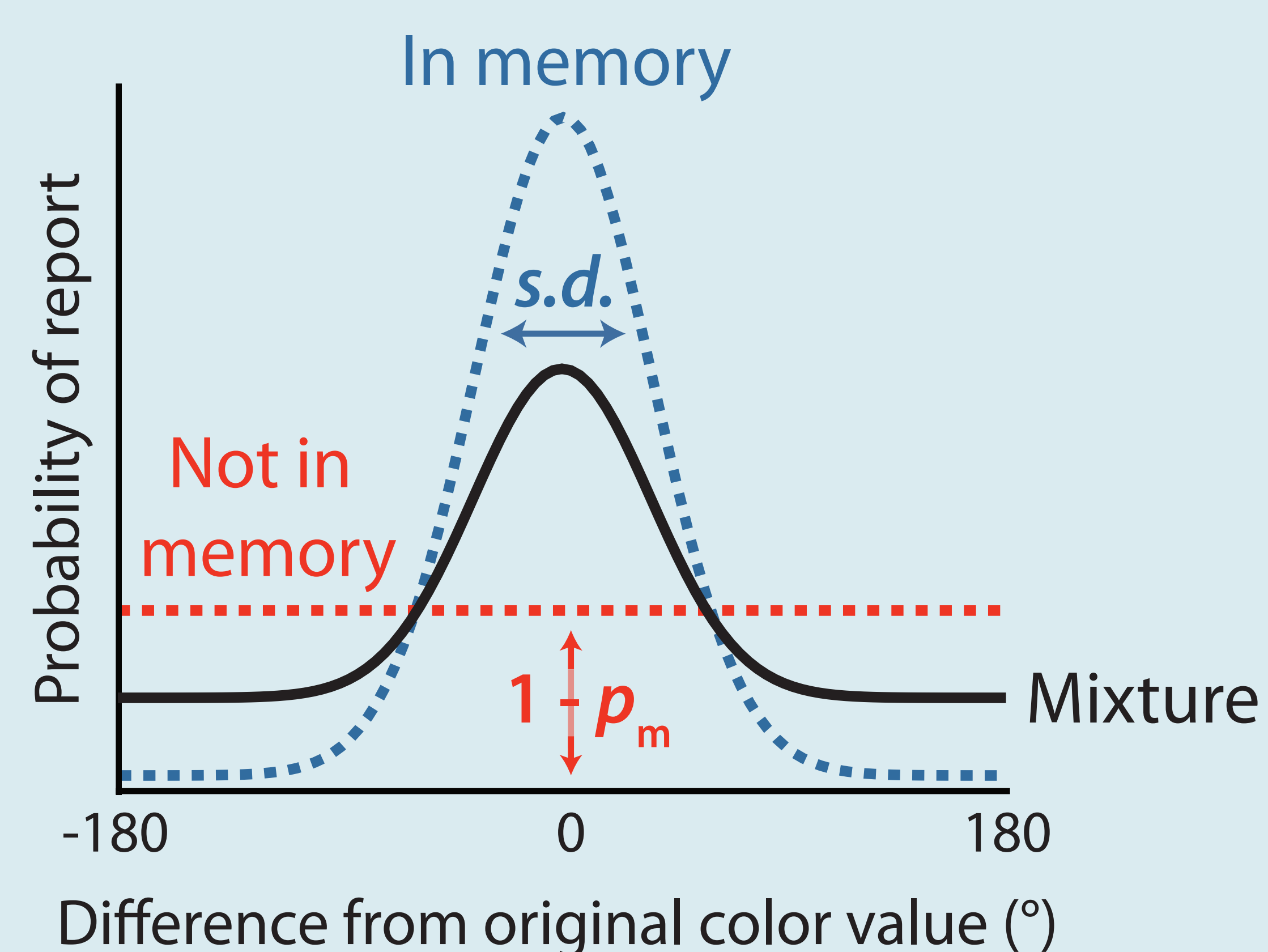
Adapted continuous VSTM task for sequences (Zhang & Luck, 2008, *Nature*)

Retention interval equated for all serial positions

Participants responded by clicking at a location on color wheel ($L = 70$, $a = 20$, $b = 38$, $r = 60$)

Set sizes: **3** ($n = 10$), **4** ($n = 19$), and **5** ($n = 10$)

Estimating memory parameters



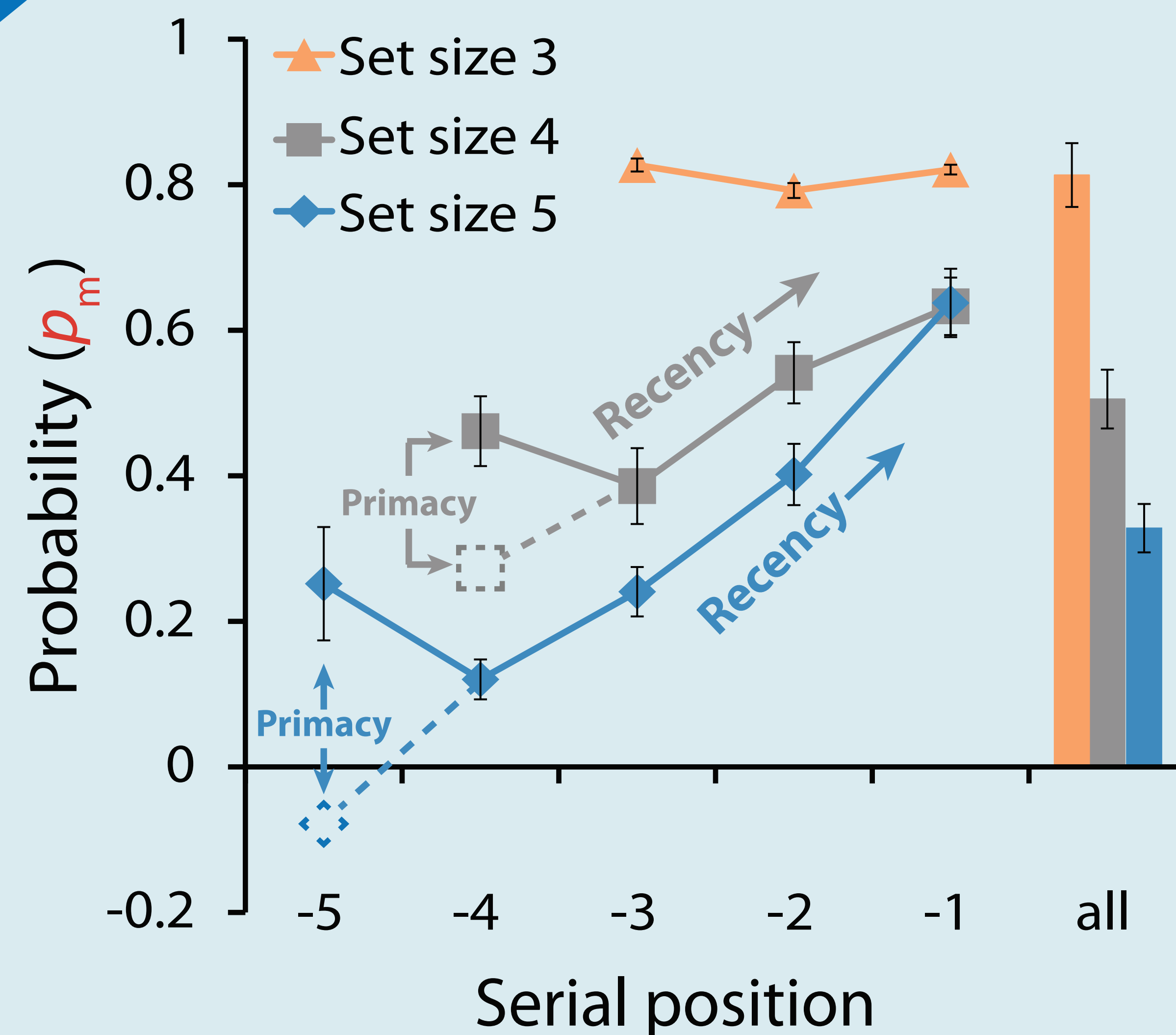
For each participant and serial position, estimate:

1. Probability of storing item p_m
2. Precision of stored item $s.d.$

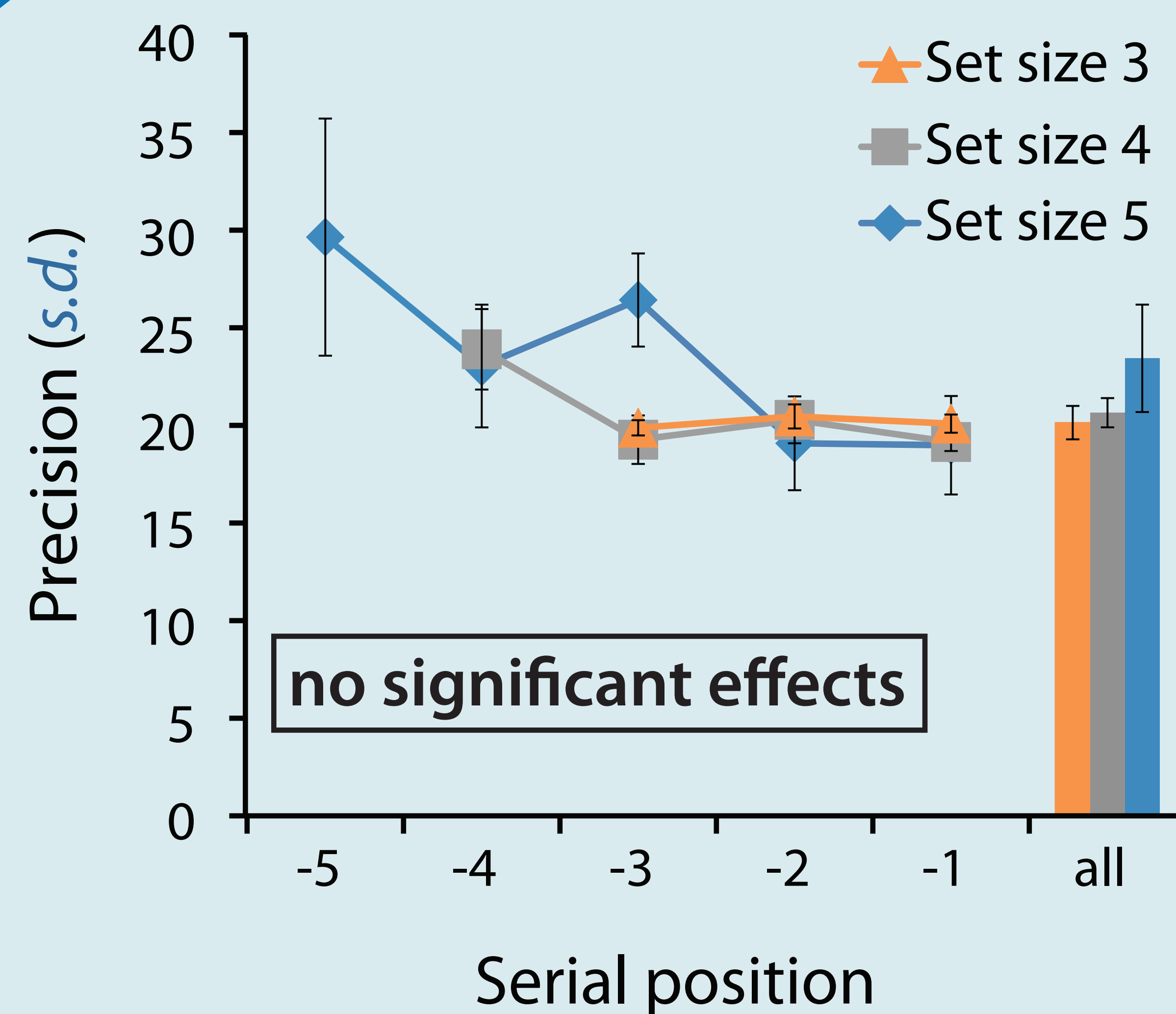
Mixture probability density function = $(1-p_m) \times U(-180,180) + p_m \times \text{von Mises}(s.d.)$

To avoid local optima, iterated over each model and selected fit with maximal log-likelihood

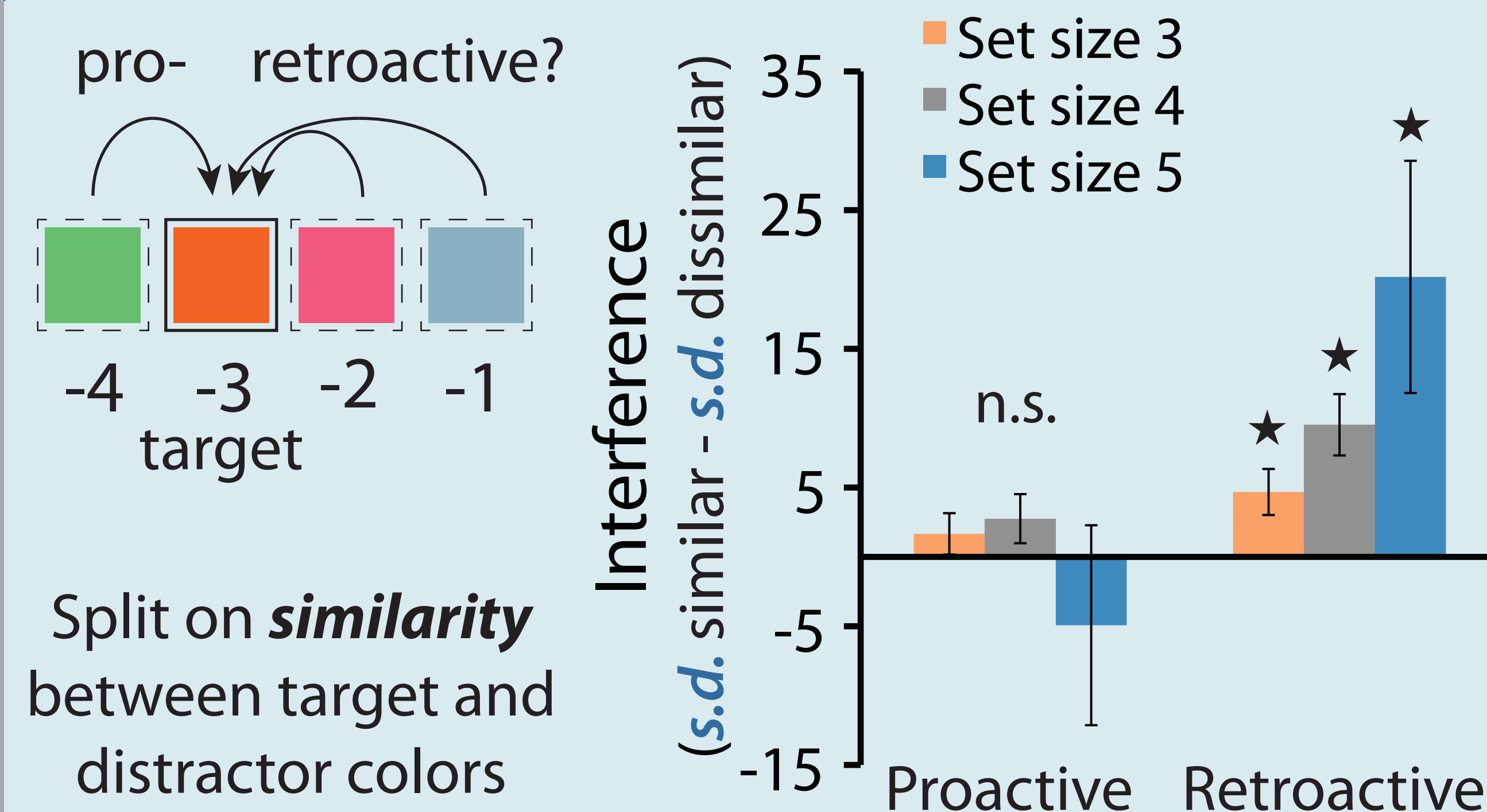
Probability of memory



Precision of storage



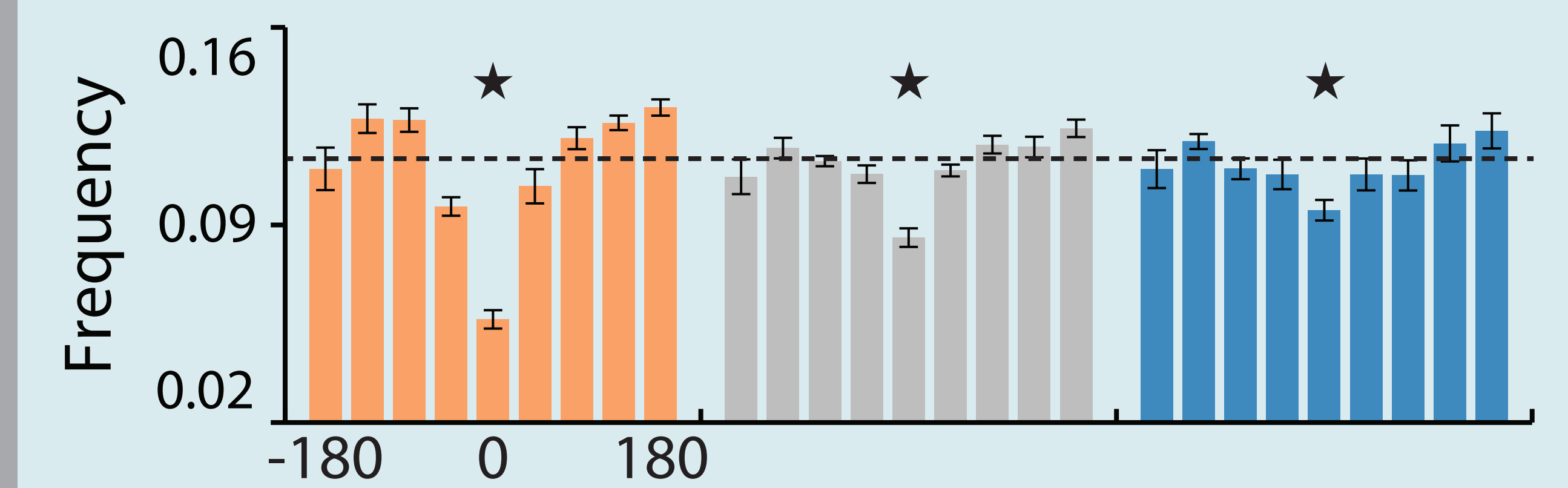
Color interference



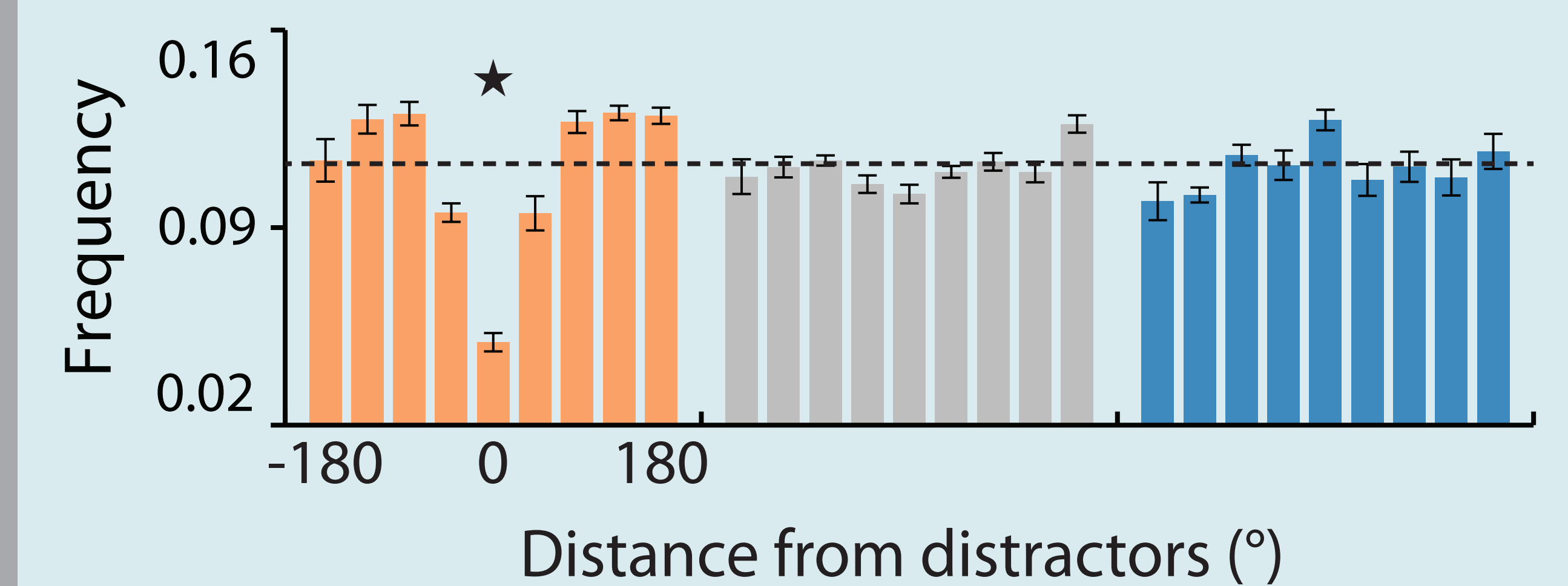
Distractor suppression

Center target responses around **distractor** locations

Distractors before target

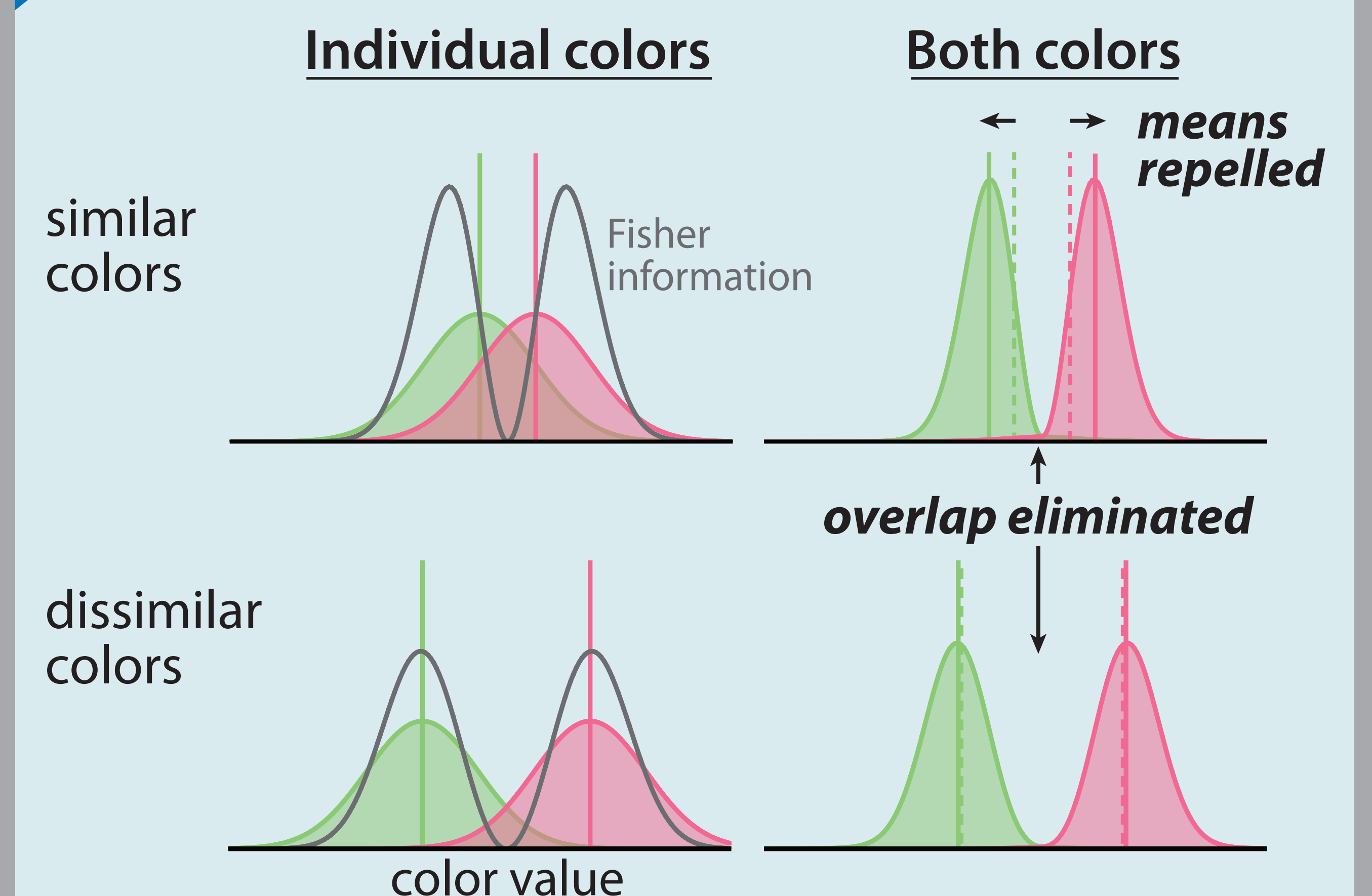


Distractors after target



Theoretical account

Consider two colors (red, green) in VSTM



Discussion

Recency bias — updated *first-in-first-out* (+ primacy)

Feature similarity causes retroactive interference

Distractors suppressed when responding to target

Representations in VSTM interact over time

Contact and reprint

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