

Visual guessing is anti-Bayesian

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Significance

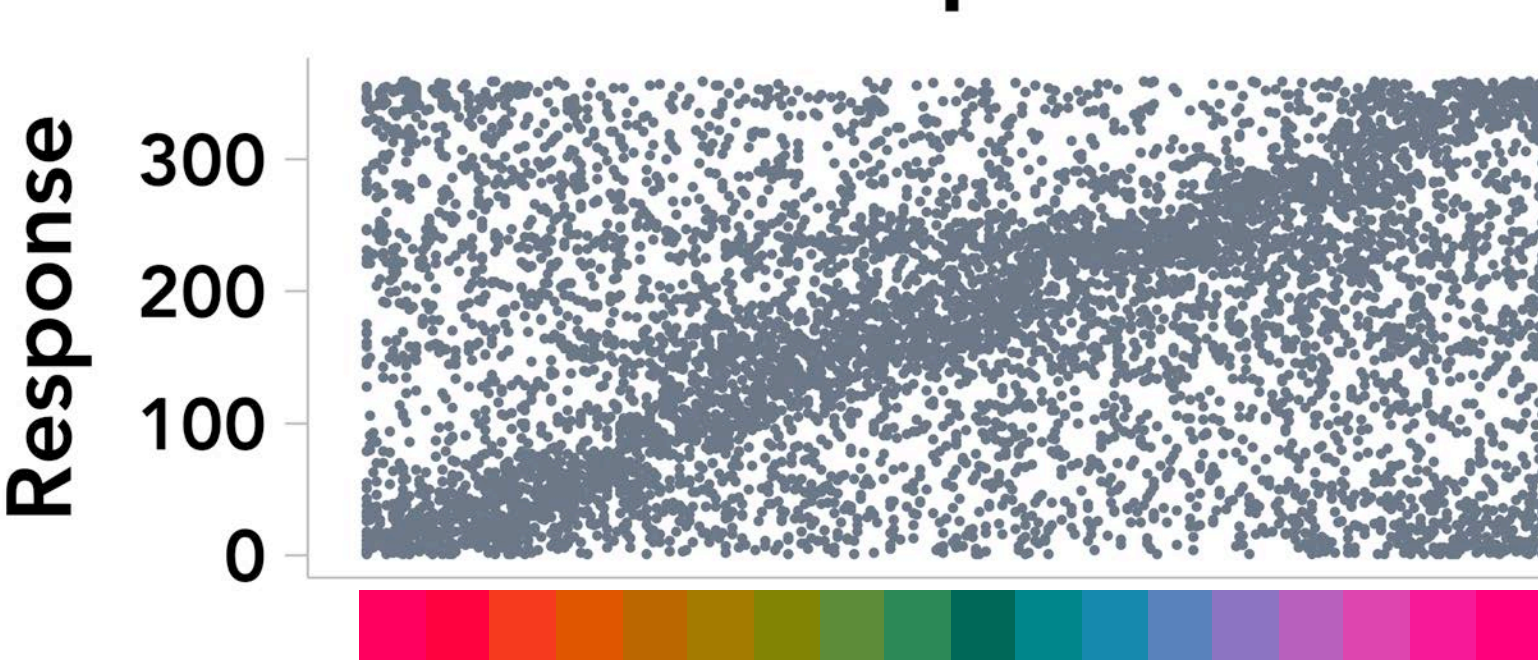
Theories of guessing:

Random
Bayesian
anti-Bayesian

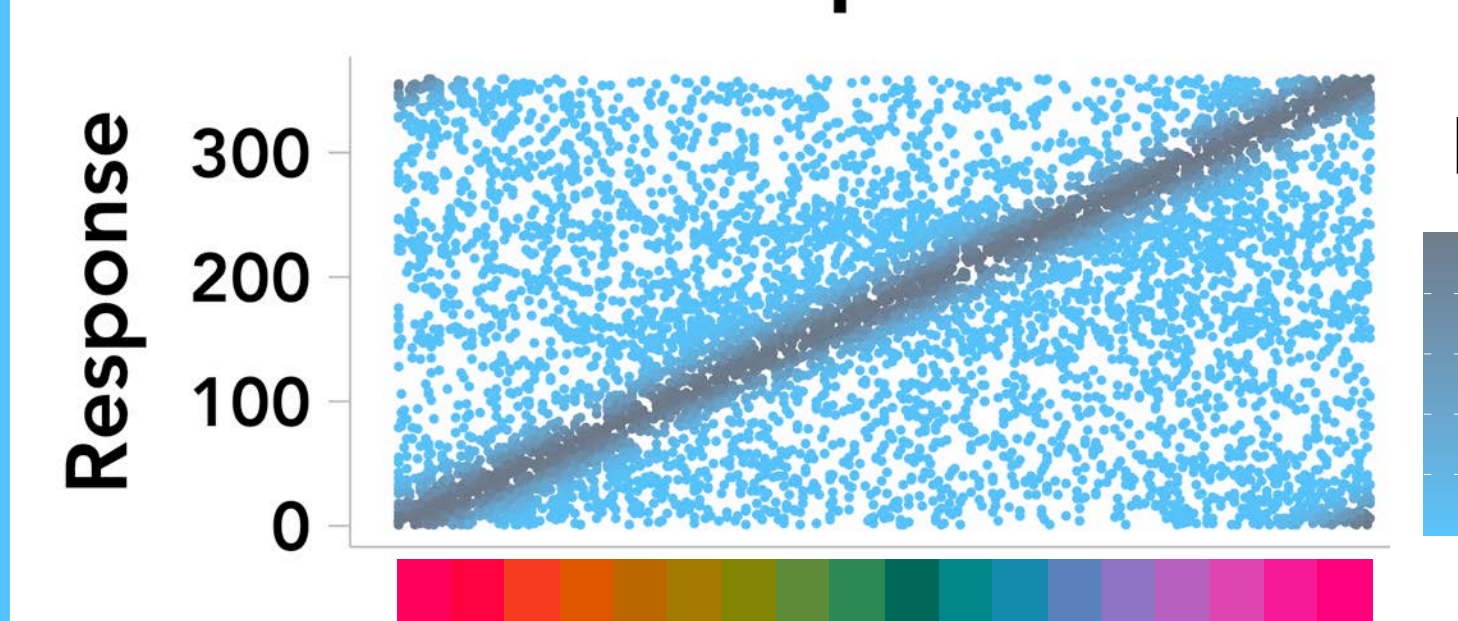
- Popular models of VWM precision do not account for the possibility of non-uniform guessing
- Failure to distinguish between strategic guessing and internal representations → mischaracterizations of perceptual precision

Model

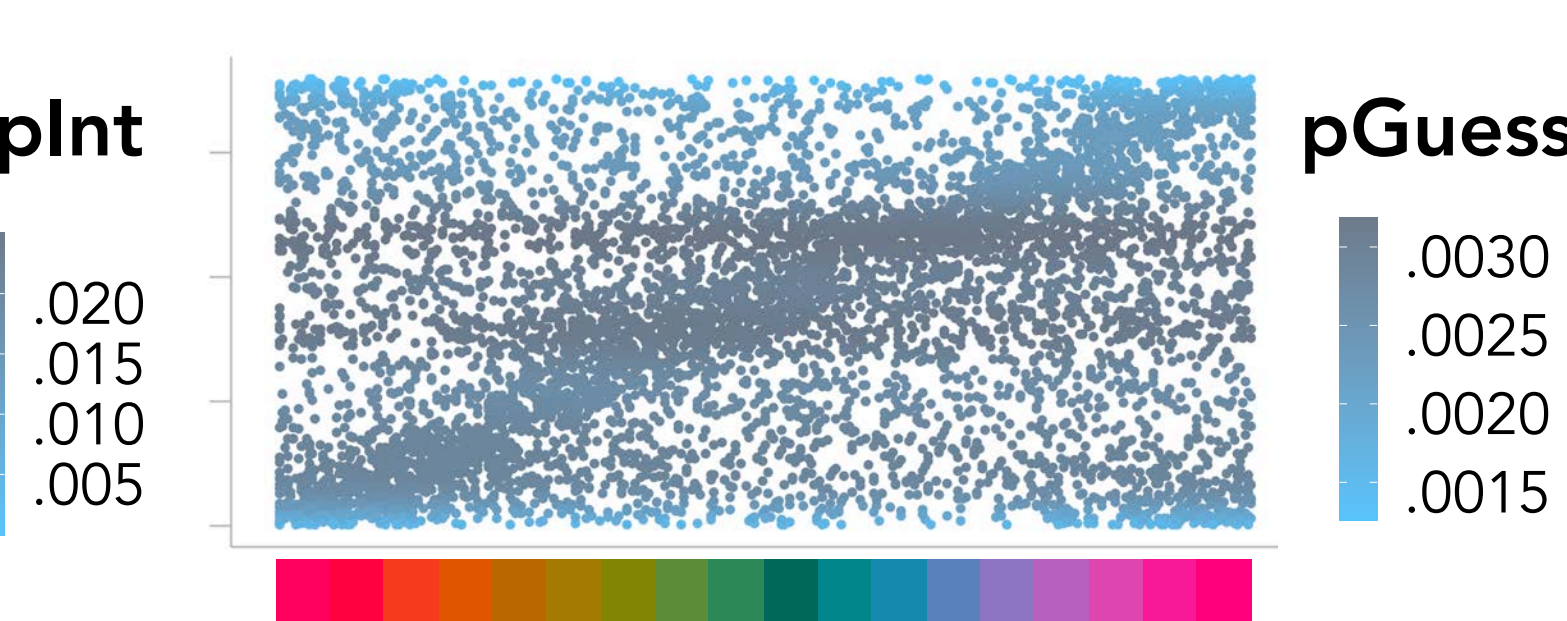
All responses



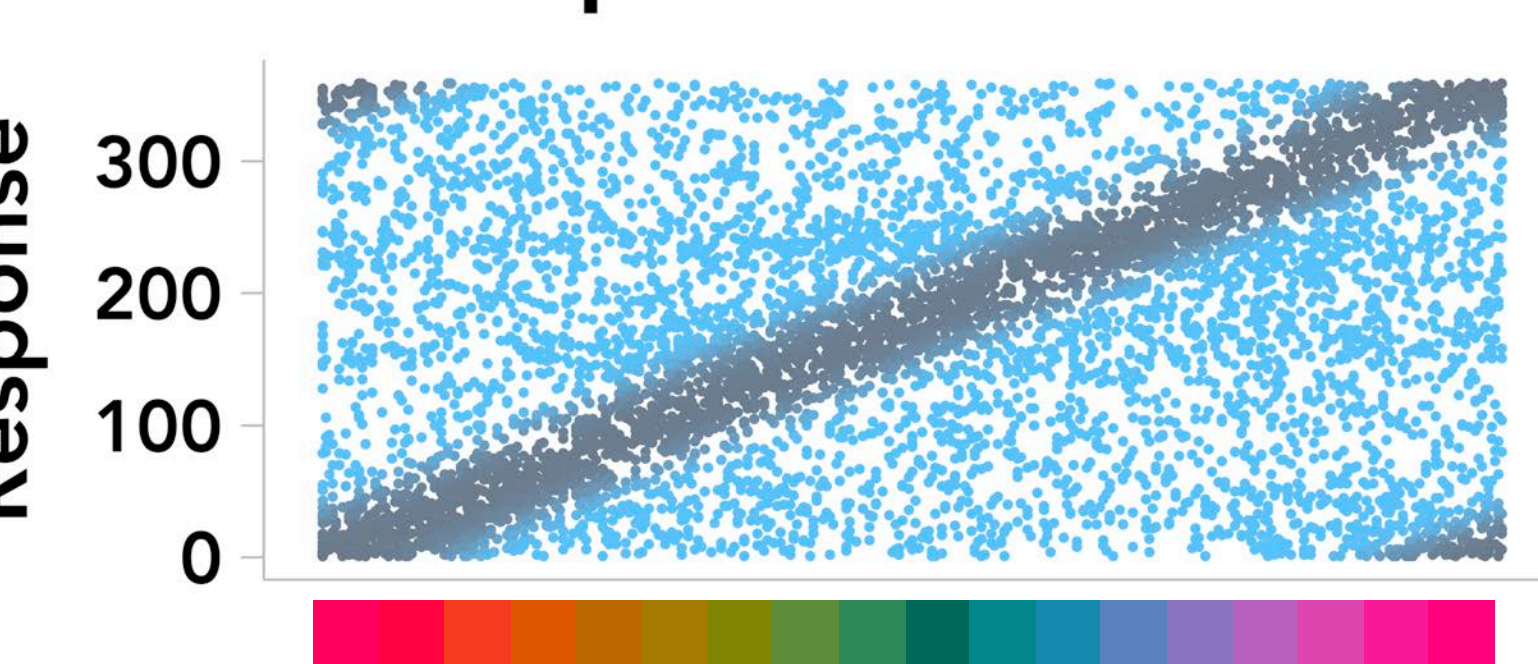
Internal representation



Guess model



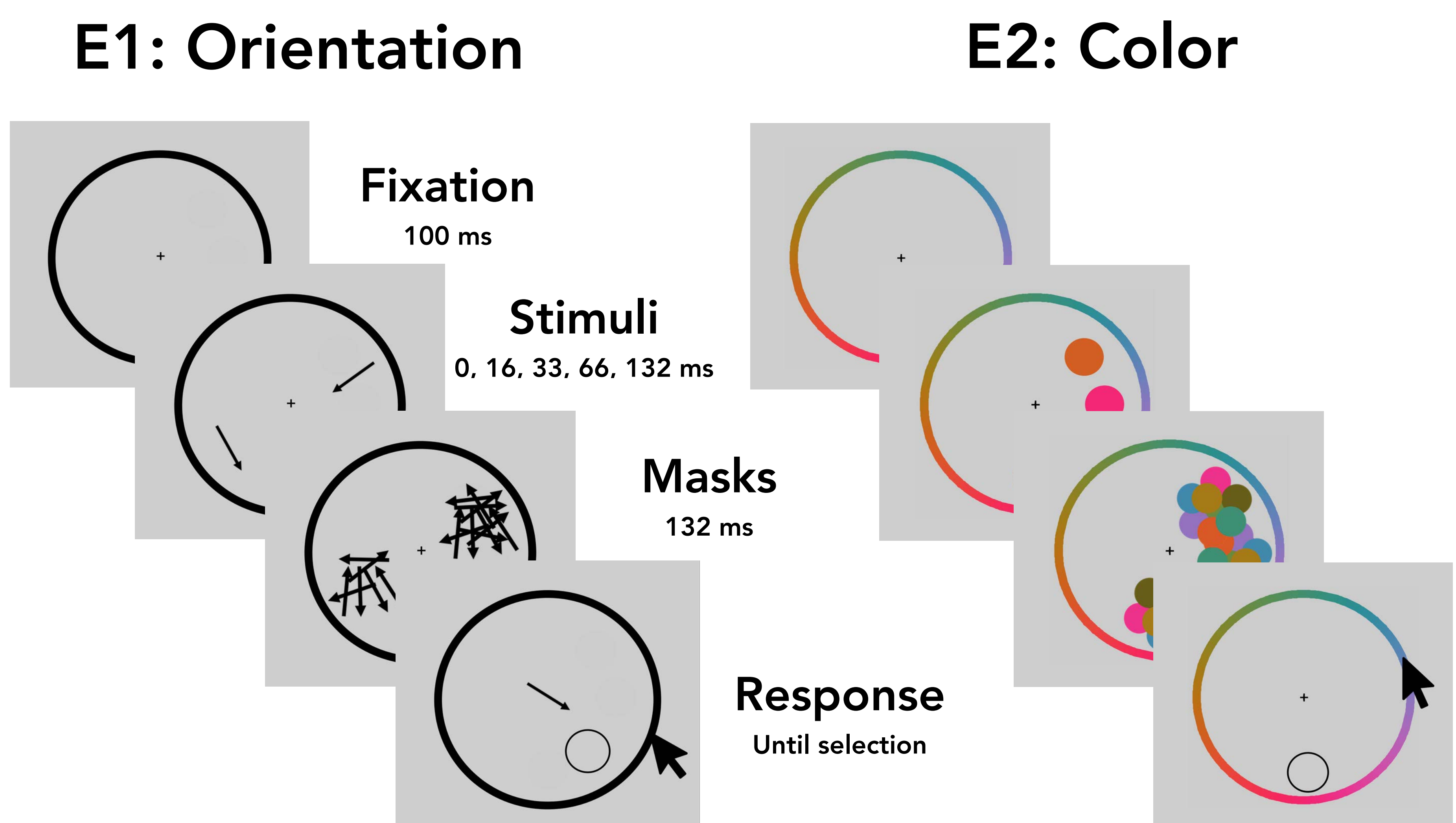
Output of the model



Task and trial sequence

Guess trials
0 ms

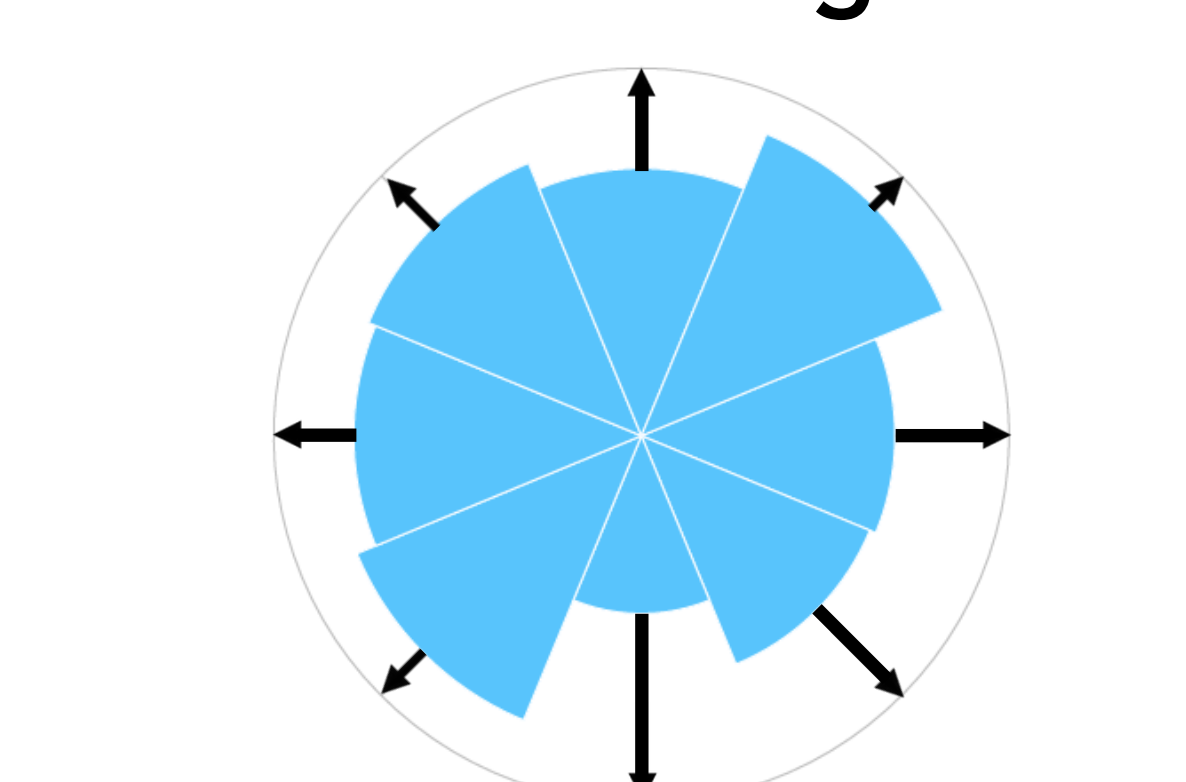
Non-guess trials
16, 33, 66, 132



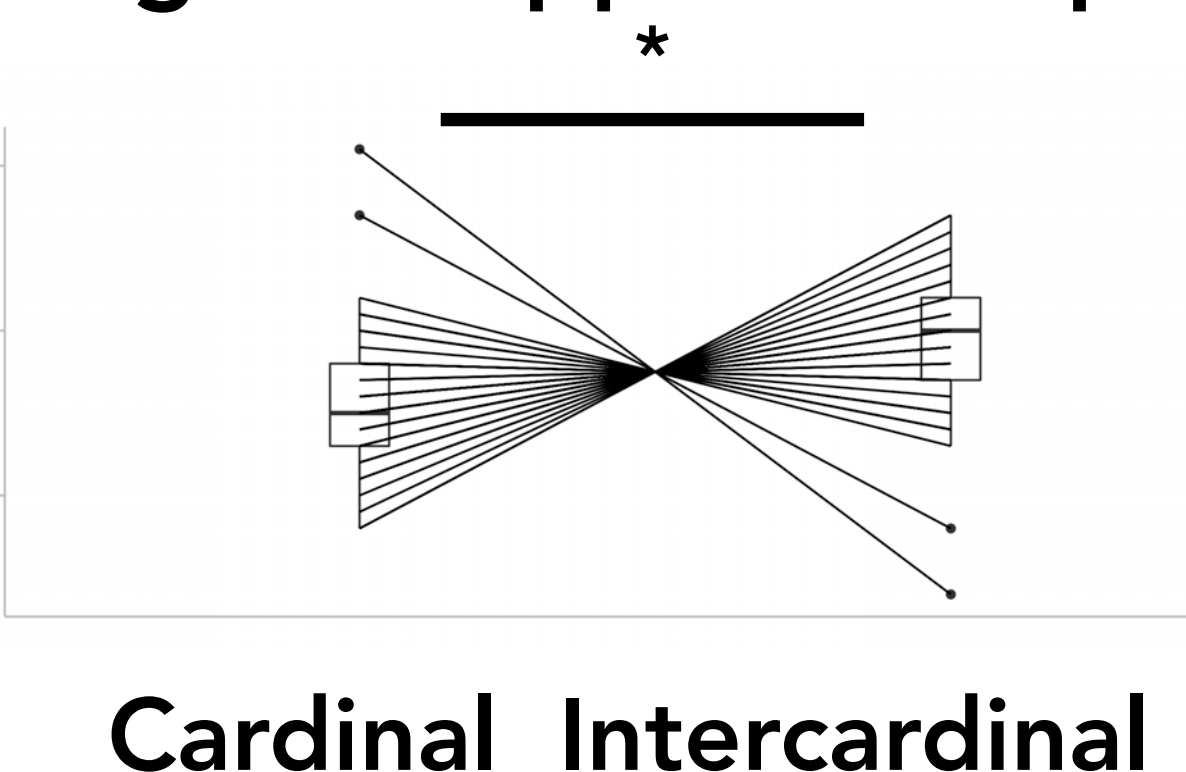
Guessing is non-uniform

E1: Orientation

Distribution of guesses

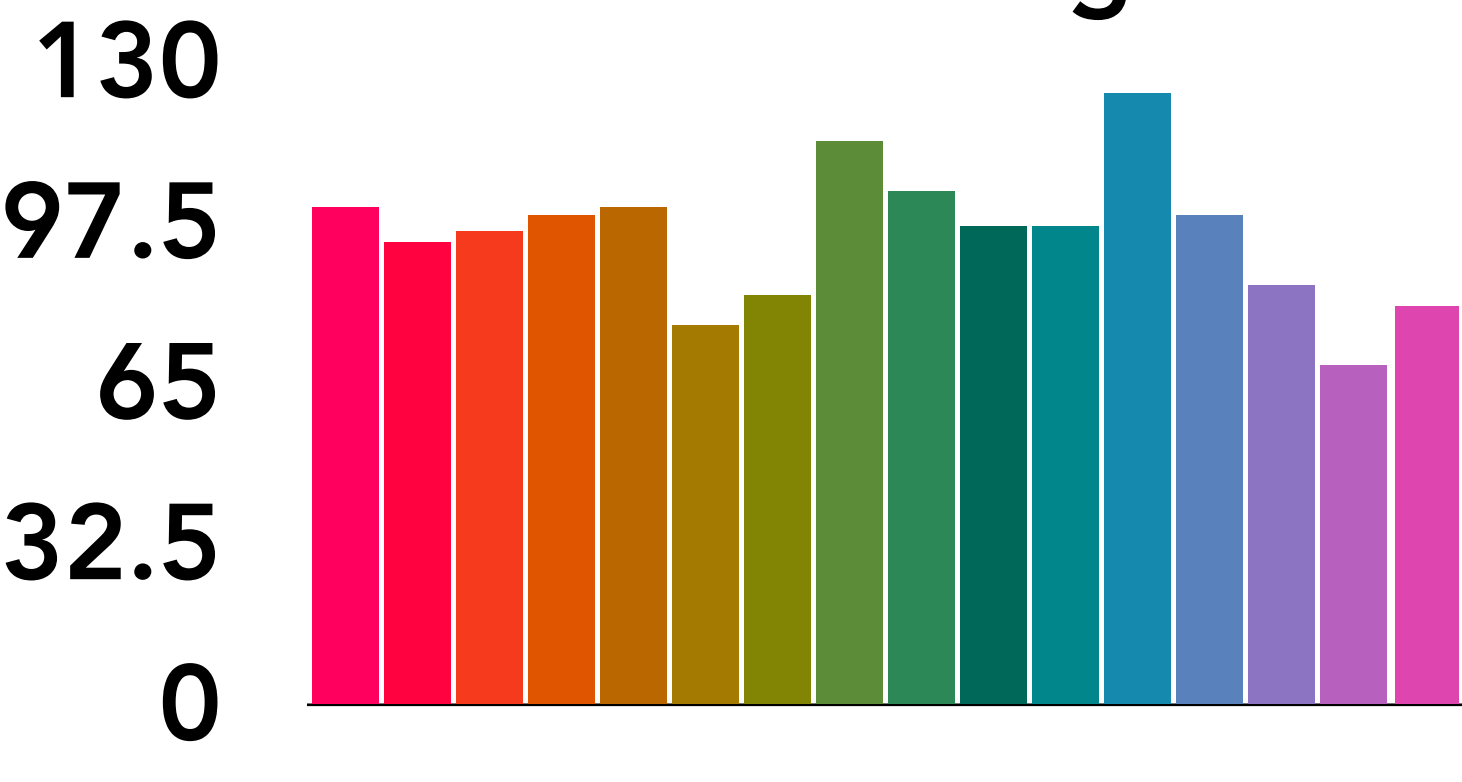


Guessing: the opposite of precision

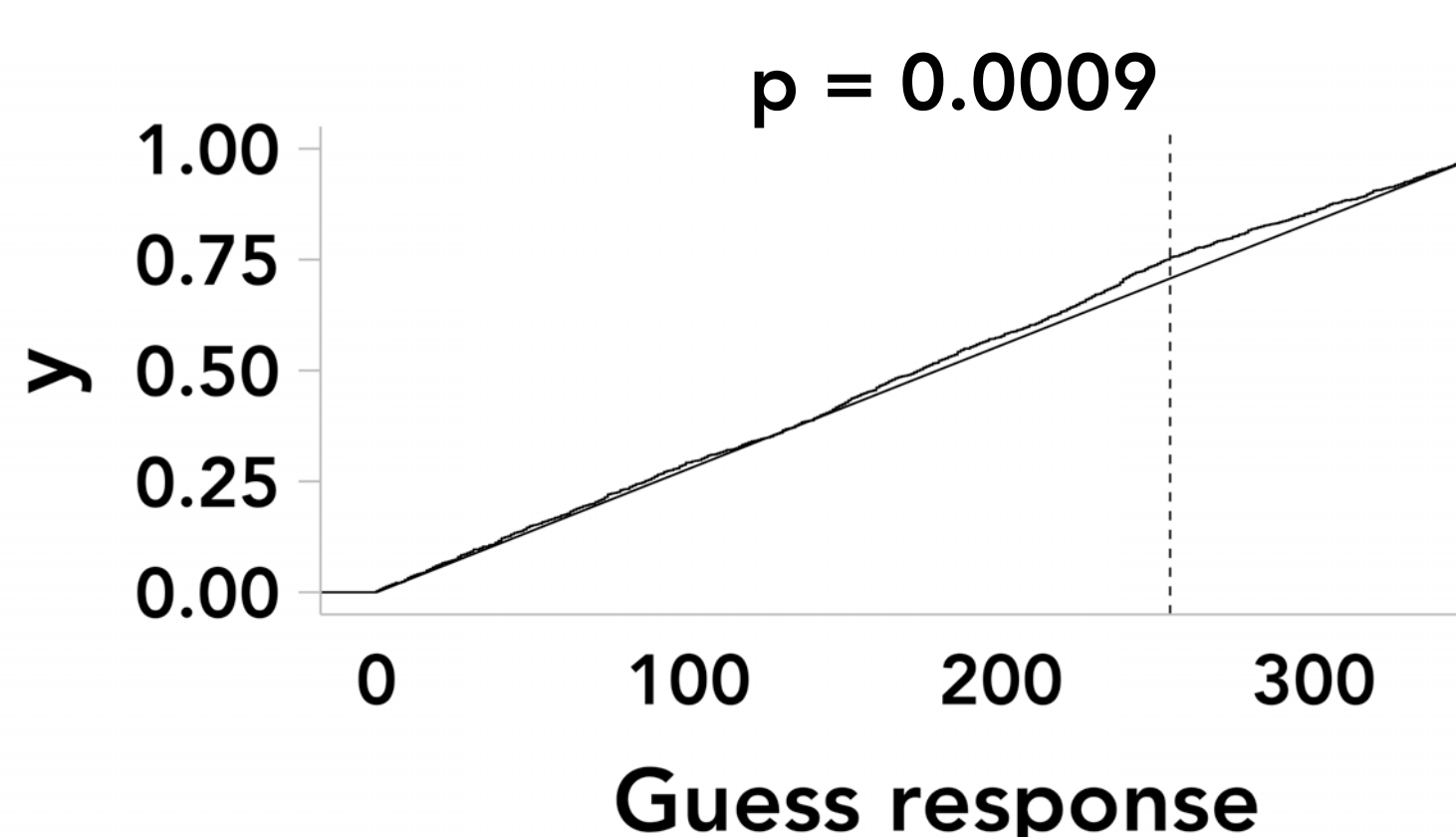


E2: Color

Distribution of guesses

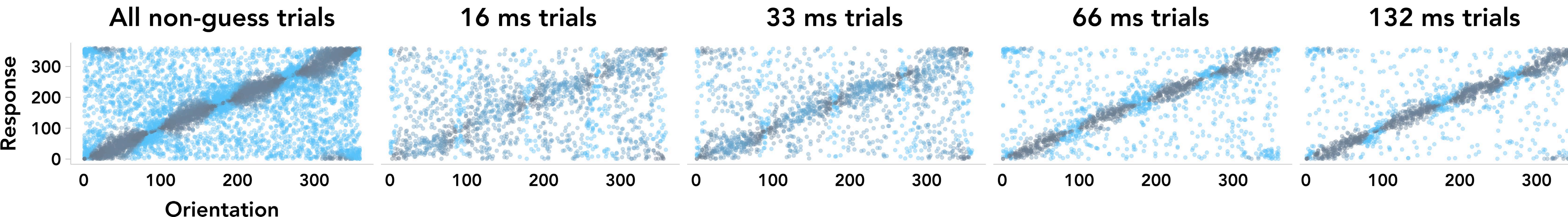


ECDF and theoretical CDF

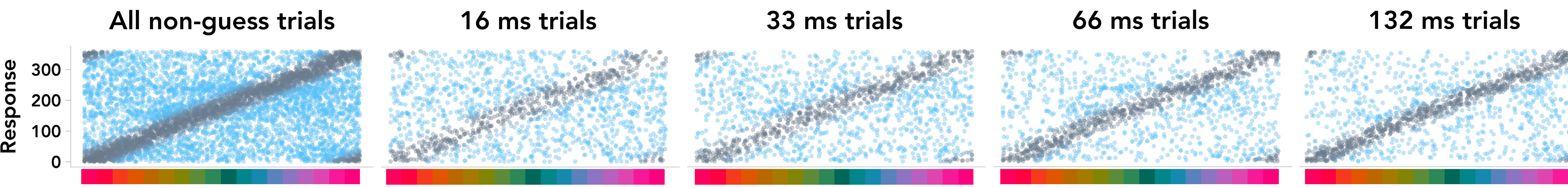


Precision across display times

E1: Orientation



E2: Color

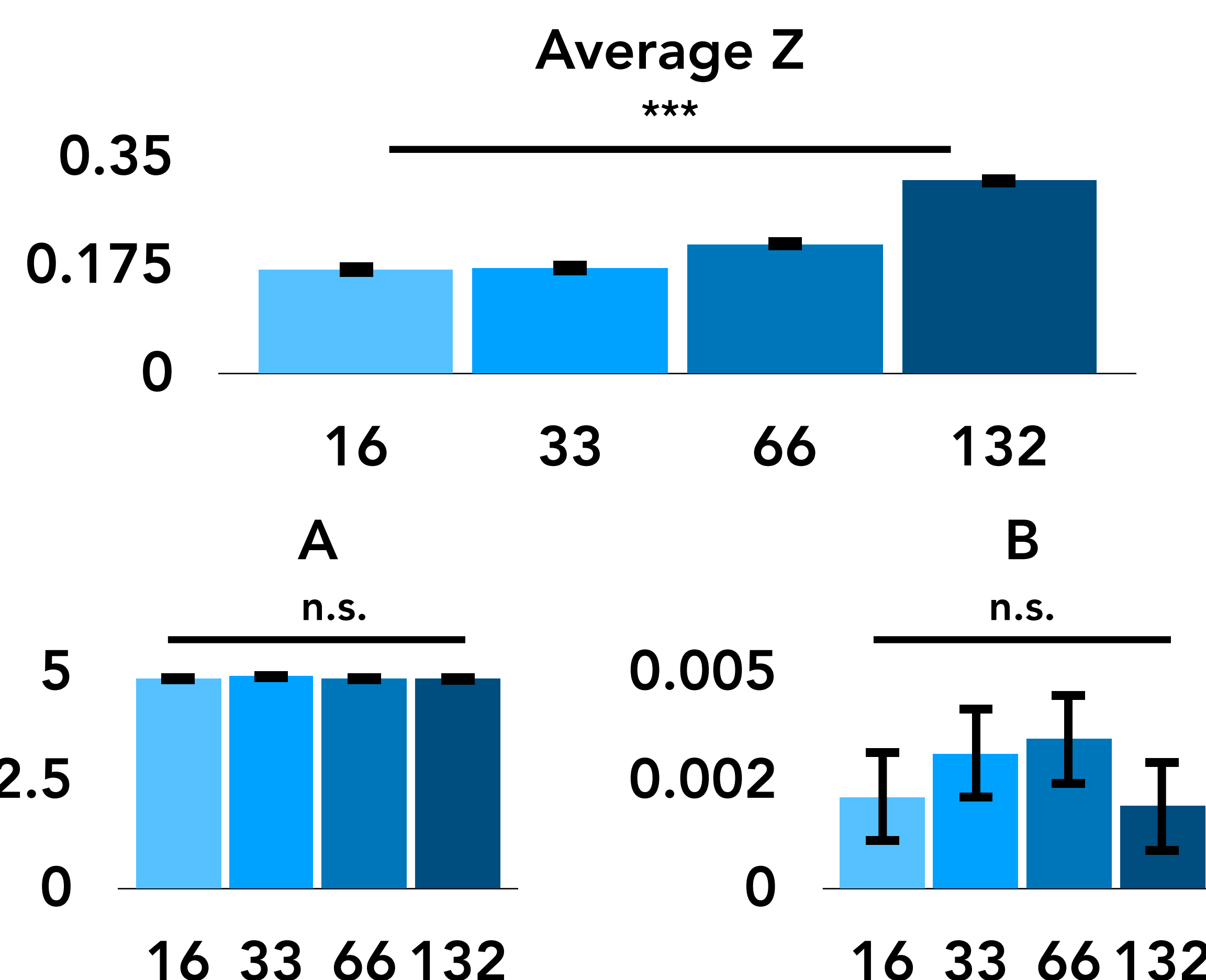


Conclusions

- Guessing is **not** random nor uniformly distributed
- Guessing forms the **complement** of precision, reflecting metacognitive awareness
- Changes in probability of responding based on the internal representation may account for purported differences in representational precision across display time

Fixed or flexible?

E1: Orientation



E2: Color

