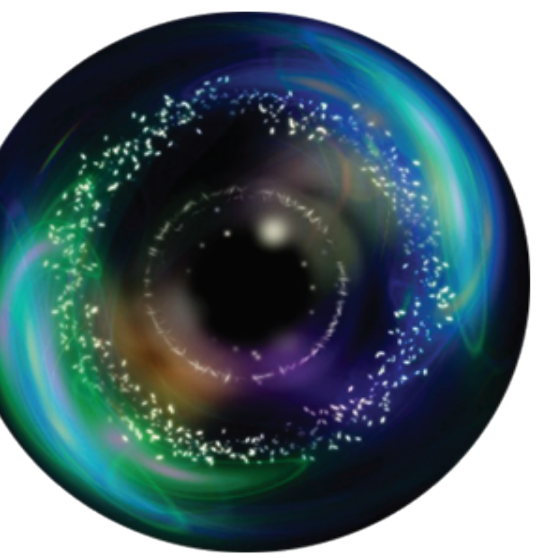




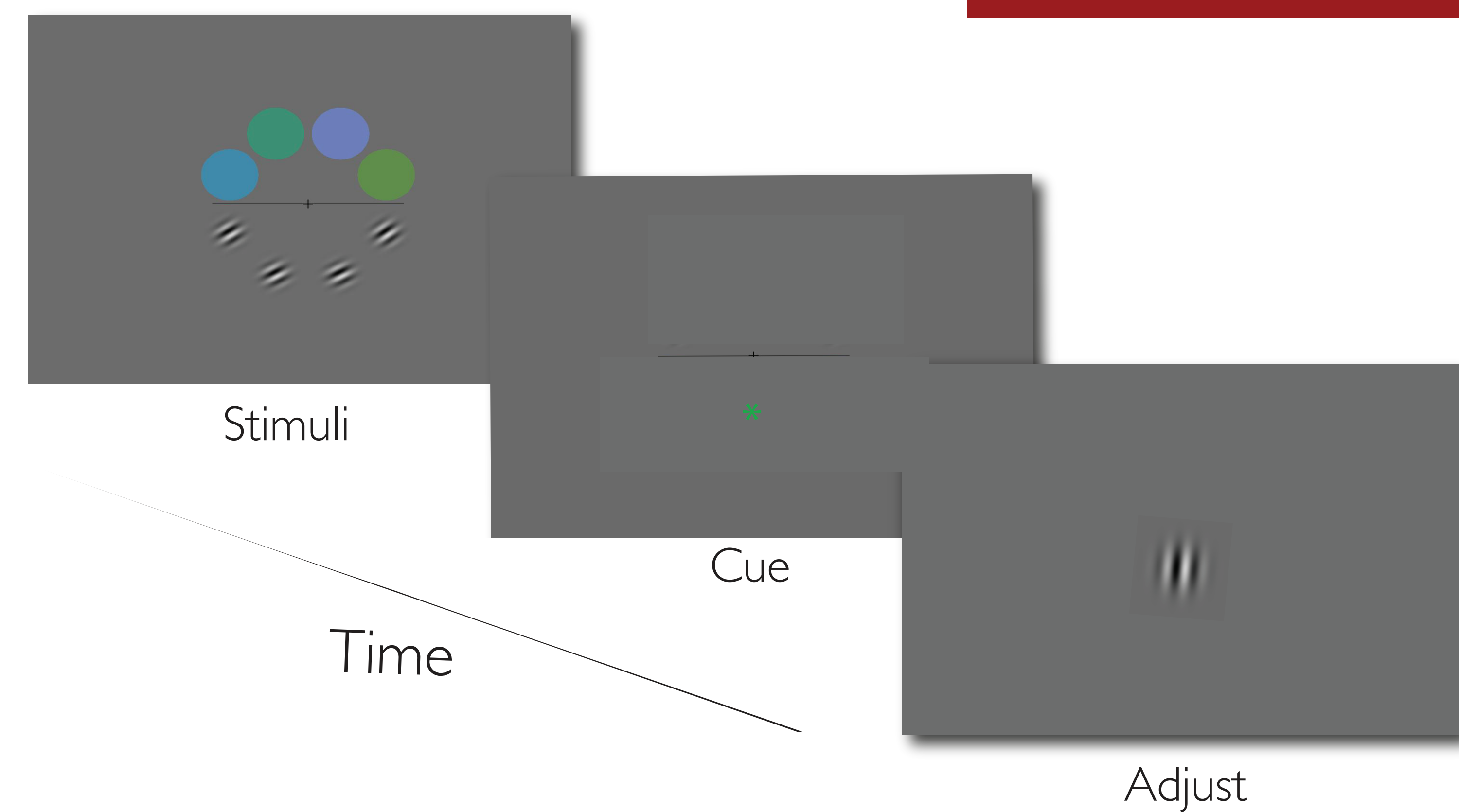
Attending to multiple ensembles across visual domains imposes no cost relative to multiple ensembles within a single visual domain



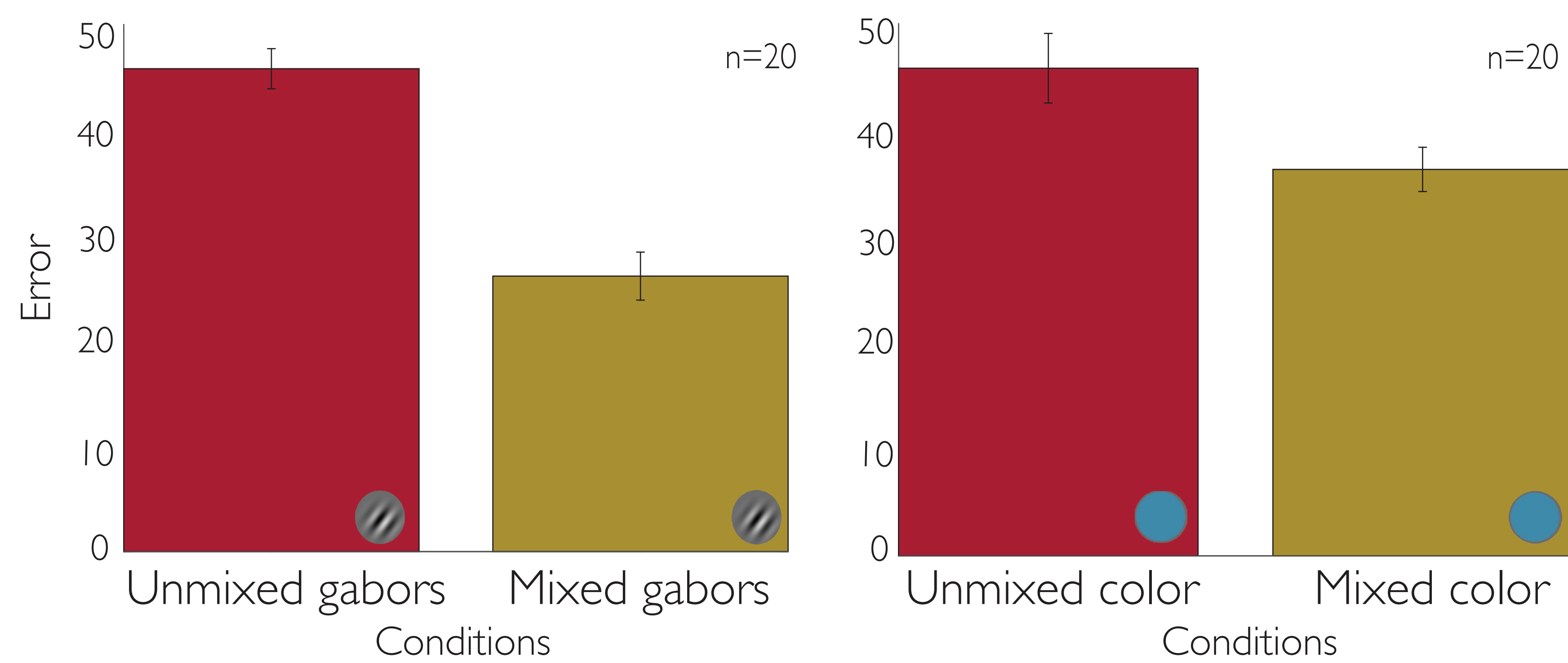
Hayden Schill & Jason Haberman
Visual Cognition Laboratory, Rhodes College

Introduction: Ensemble perception is our ability to derive summary statistics when viewing a group of similar items. It functions across both low level and high level visual domains. Here we explore whether stimulus domain (i.e., high or low level) interacts with the number of ensemble sets that may be represented simultaneously.

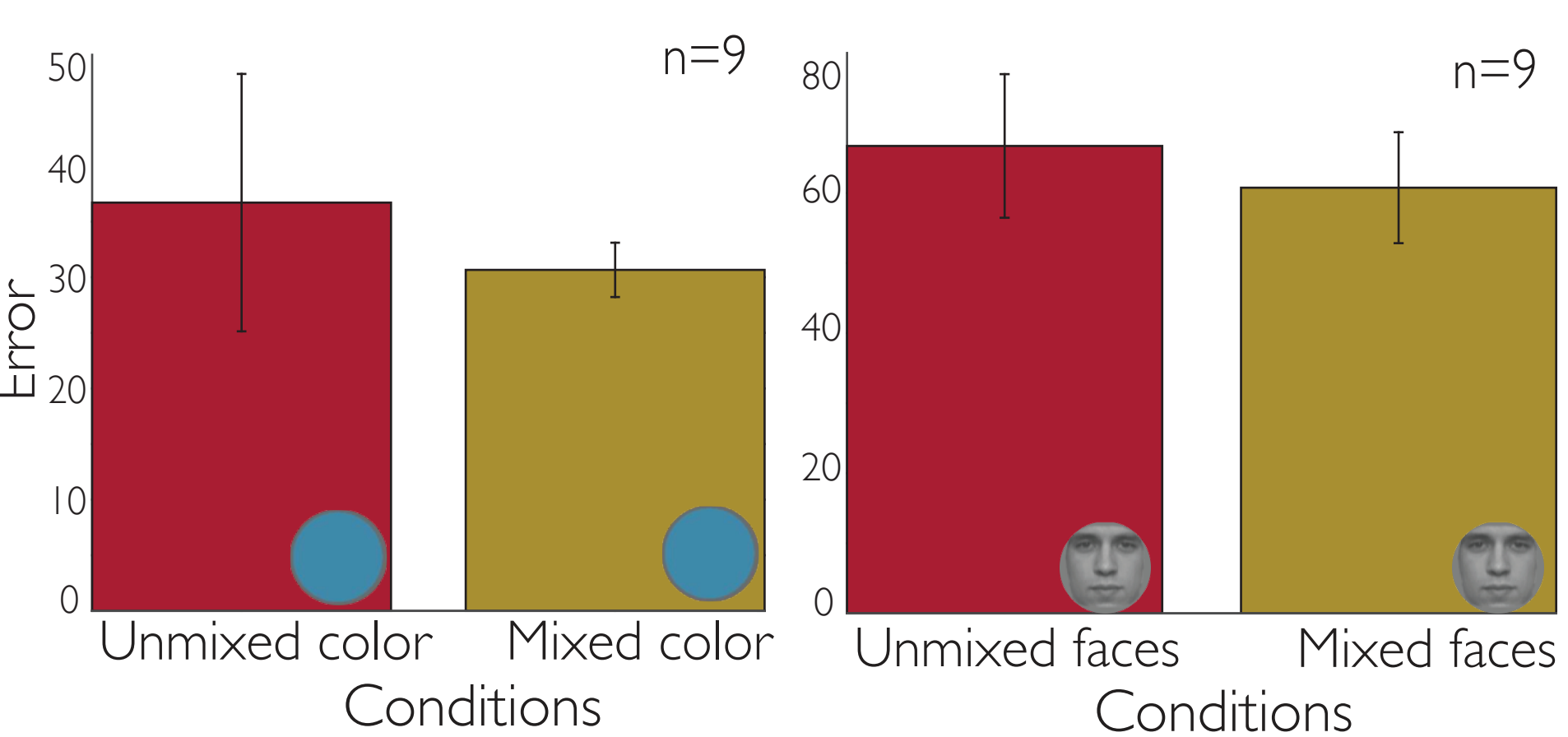
Experiments I-III Post-cue



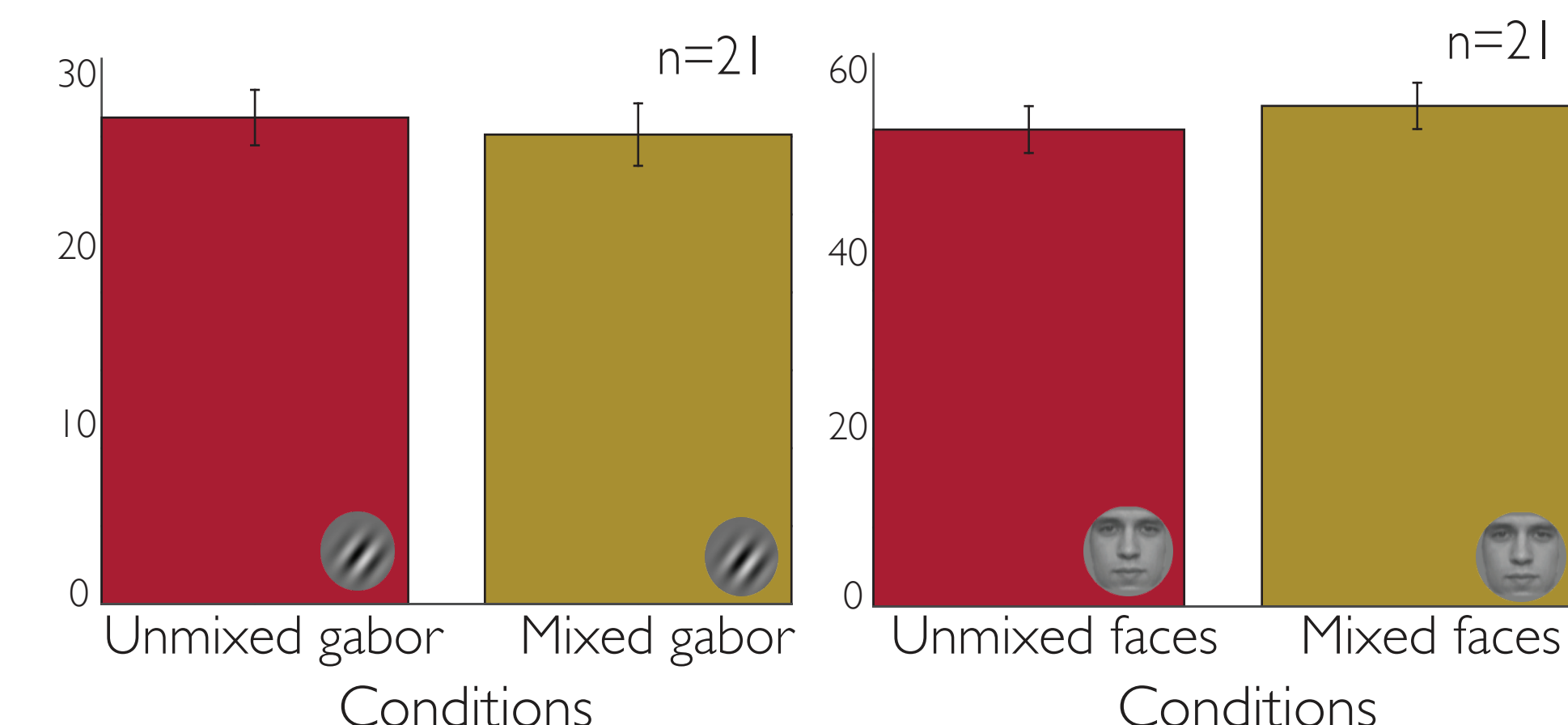
Color/Gabor



Color/Face

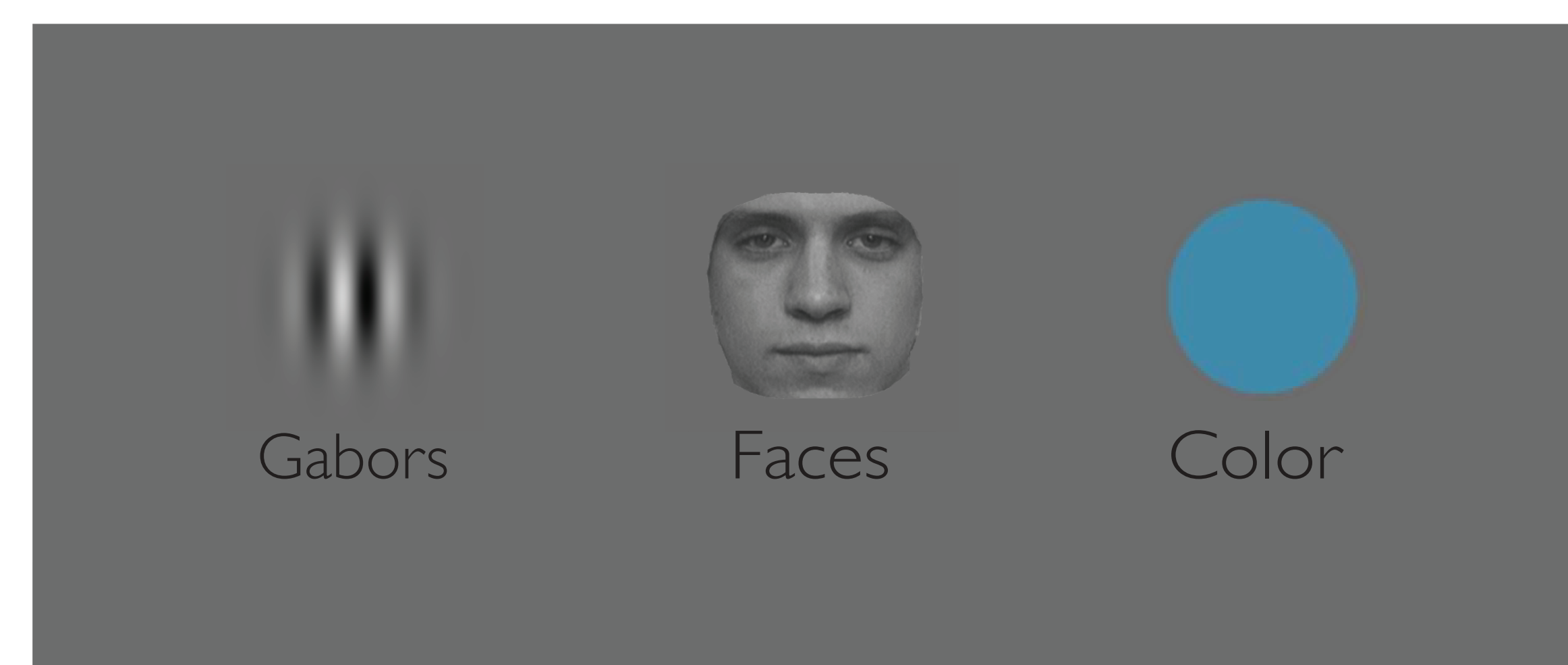


Gabor/Face



Conclusion: Subjects were better (i.e., less error) at perceiving the mean when presented with ensembles of mixed domains. Under no circumstances did mixing domains reduce overall ensemble representation precision.

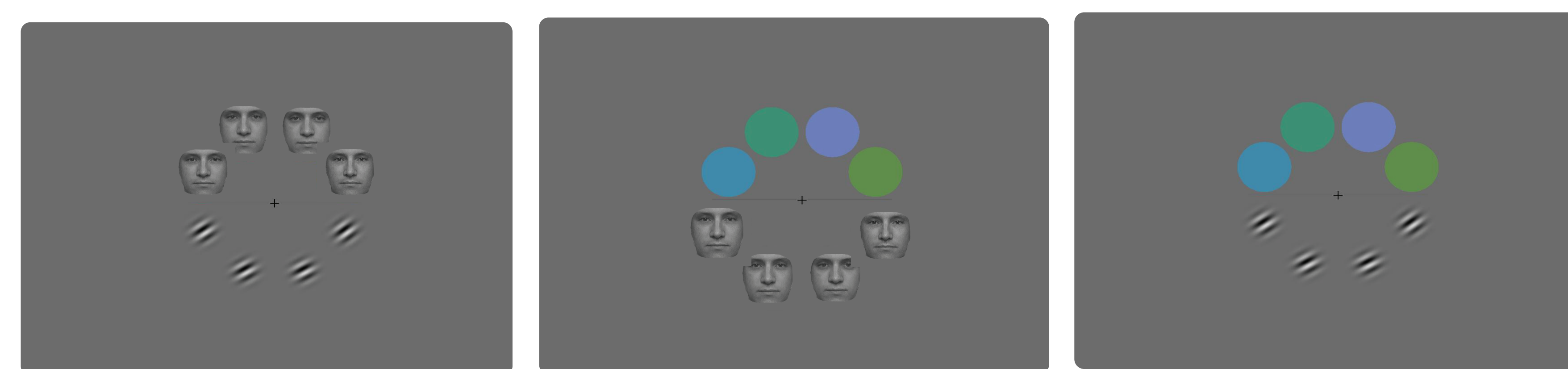
Ensemble Stimuli



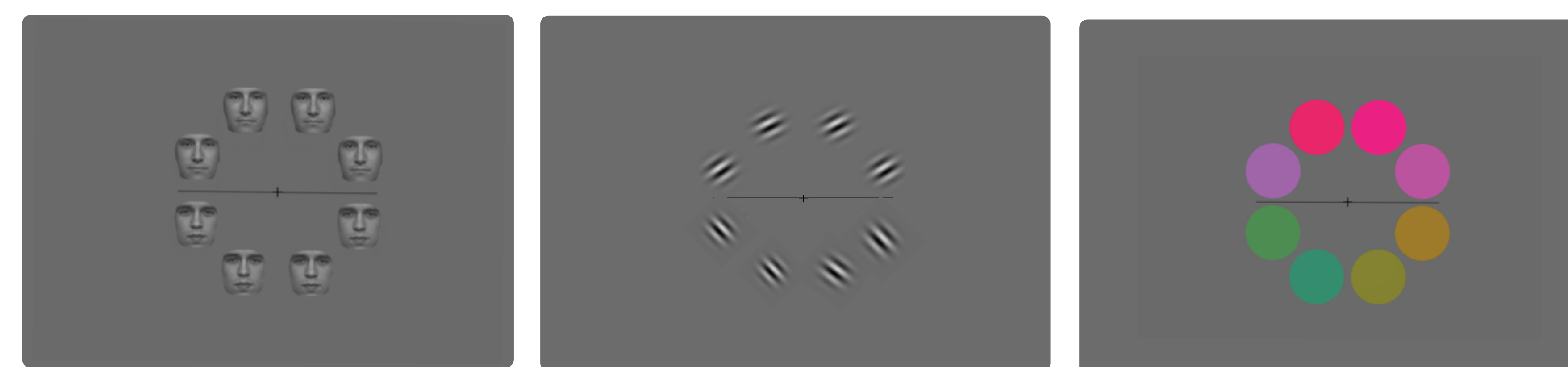
Question:

How may visual domain be used to understand the capacity limitations of ensemble perception?

Mixed Conditions



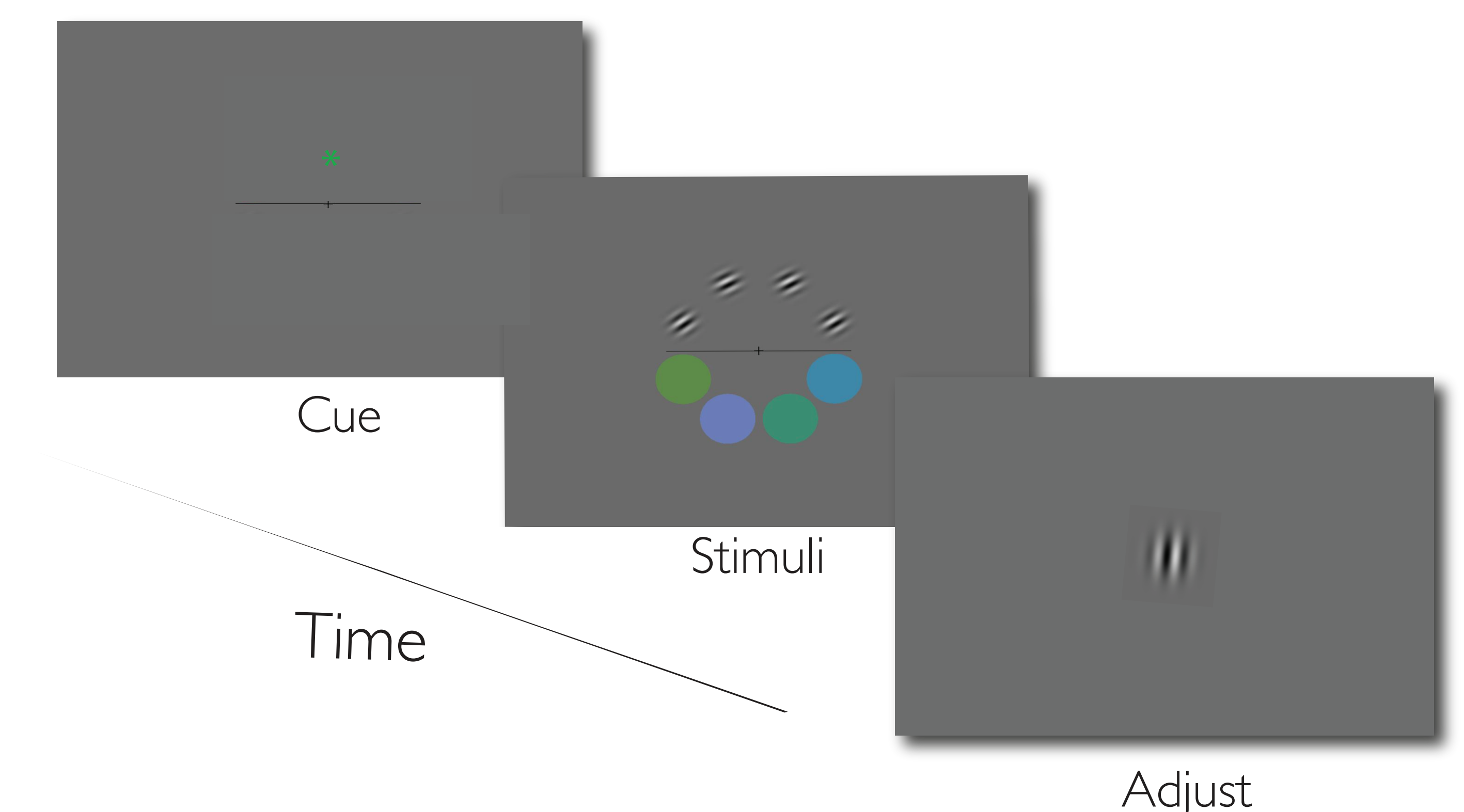
Unmixed Conditions



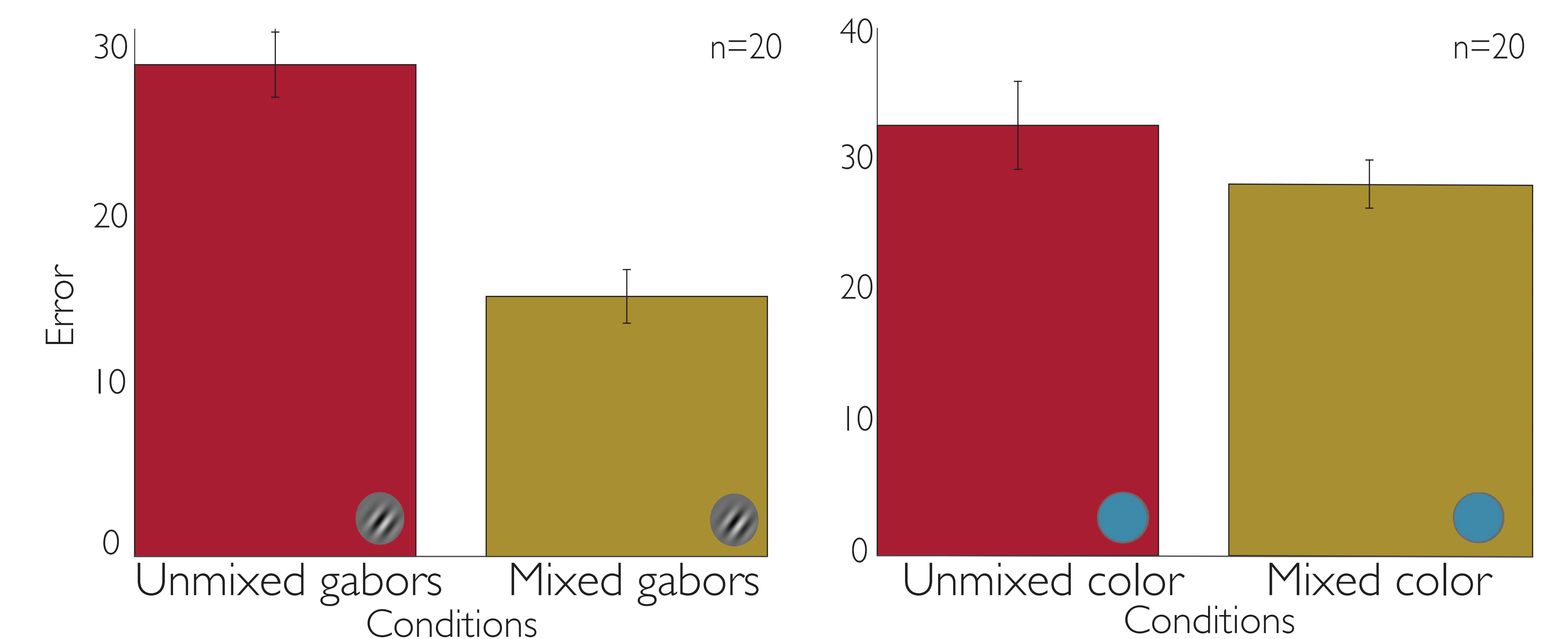
General Conclusion: The capacity limitations of ensemble perception depend on visual domain. In both post and pre-cue conditions, mixing ensemble domains resulted in a release of competition relative to unmixed domains. Even though processing ensembles is a fast and efficient process, ensemble perception is subject to capacity limitations.

References:
Haberman, J., Brady, T.F., & Alvarez, G.A. (2015). Individual differences in ensemble perception reveal multiple, independent levels of ensemble representation. *Journal of Experimental Psychology: General*, 144(2), 432-446.
Cohen, M.A., Konkle, T., Rhee, J., Nakayama, K., and Alvarez, G.A. (2014) Processing multiple visual objects is limited by overlap in neural channels. *Proceedings of the National Academy of Sciences USA*, 111, 24, 8955-8960.
Emmanouil, T.A., & Treisman, A. (2008). Dividing attention across feature dimensions in statistical processing of perceptual groups. *Perception & Psychophysics*, 70(6), 946-954.

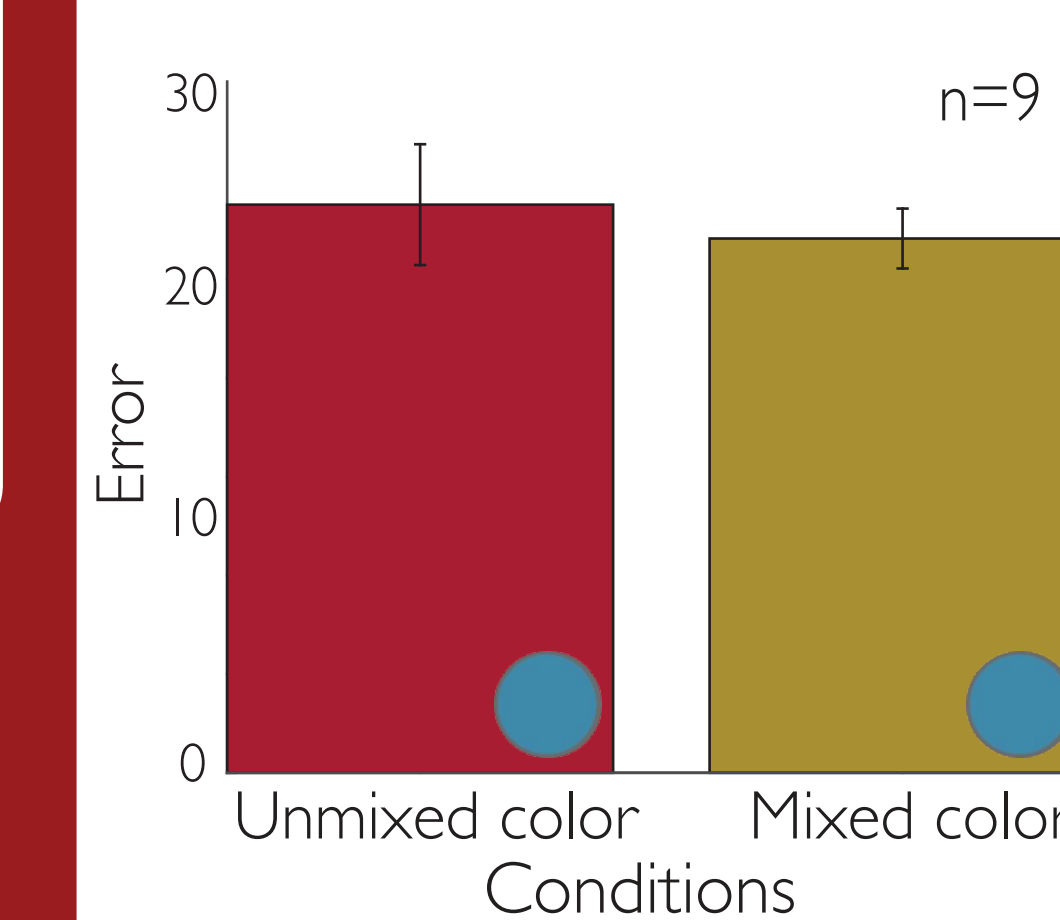
Experiment III-VI Pre-cue



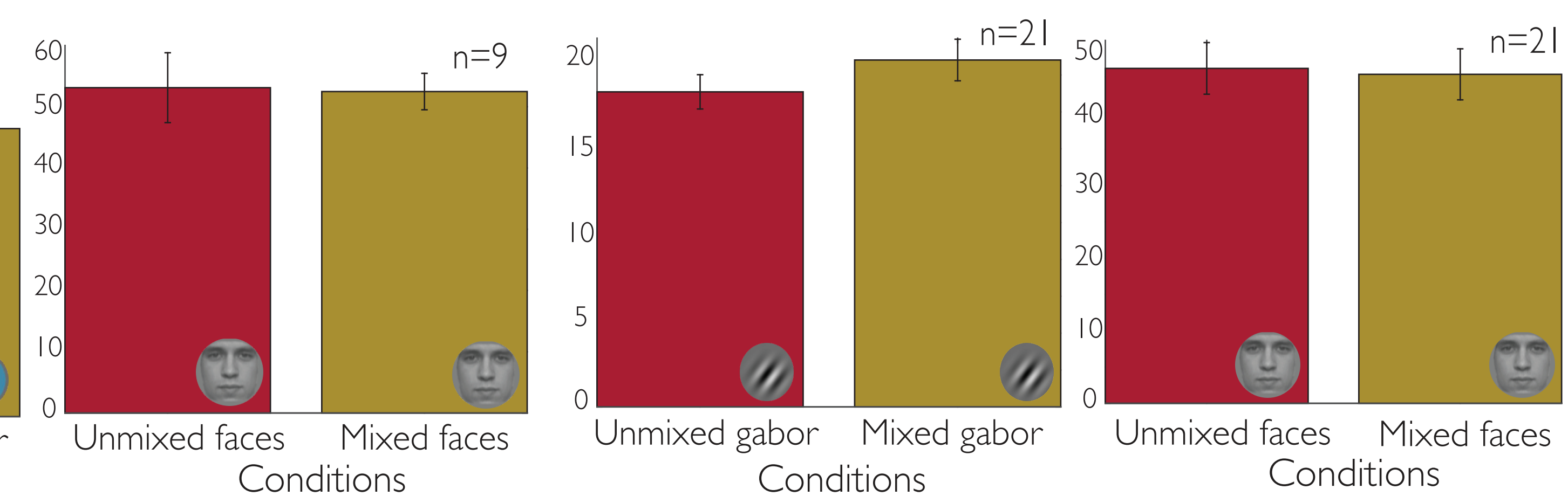
Color/Gabor



Color/Face



Gabor/Face



Conclusion: Similar to our finding in experiments I-III, subjects were better at perceiving the mean in the mixed condition relative to the unmixed condition. Although having a pre-cue reduced ensemble representation error overall, the continued presence of a mixed effect suggests that observers were unable to ignore the presence of the unattended set of items.