

Preference for Color Pairs within Finely Sampled Color Space

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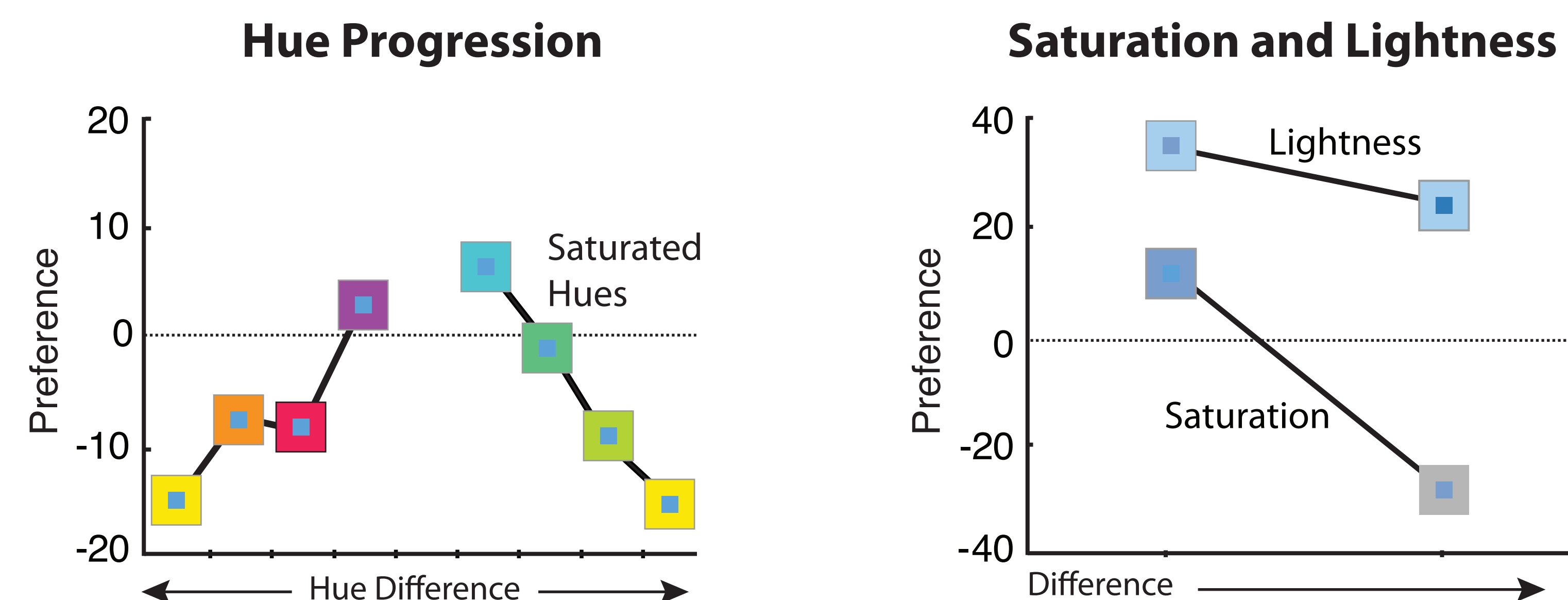
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Background

Previous studies in the Berkeley Color Project (BCP) tested preference for colors that were coarsely sampled in color space.

Preference for color pairs increases as similarity increases:

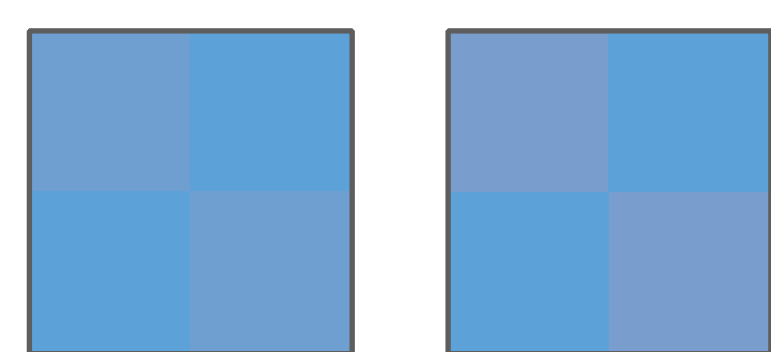


(Schloss & Palmer, VSS2007)

Research Questions

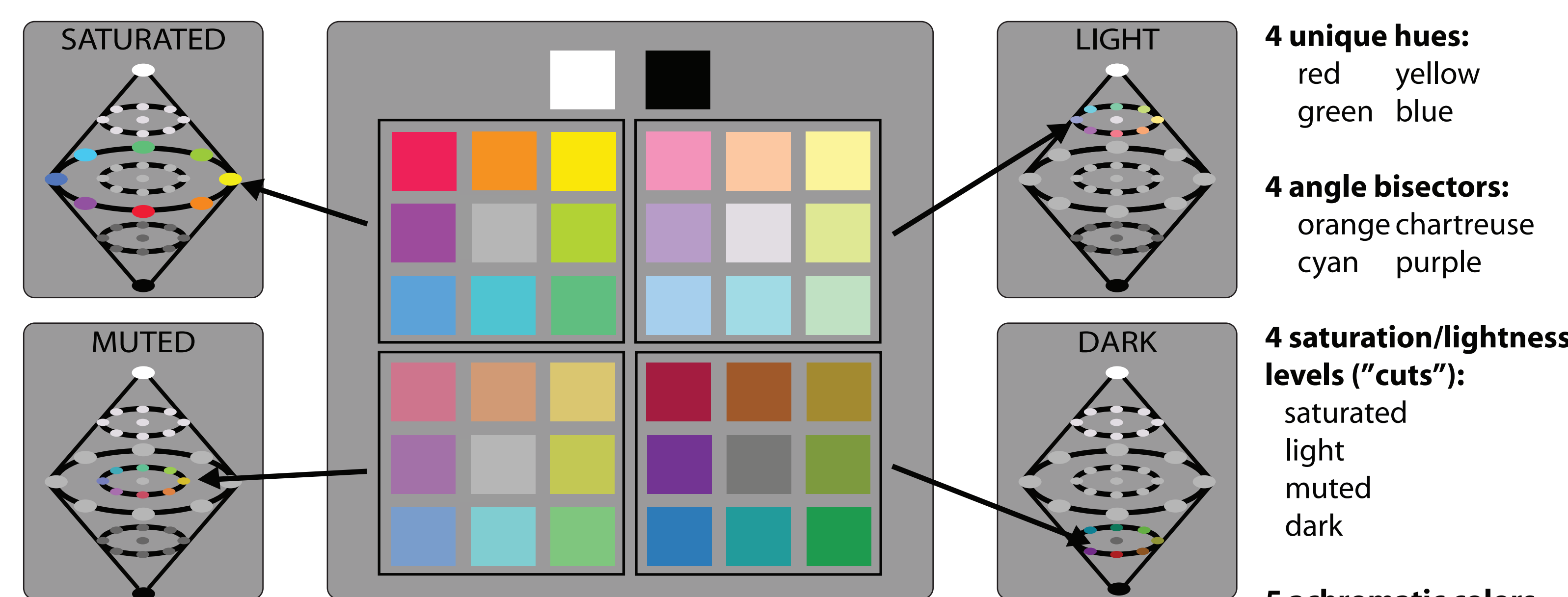
When colors are sampled more finely in color space, does pair preference still increase as color similarity increases?

Or, do highly similar colors “clash”?



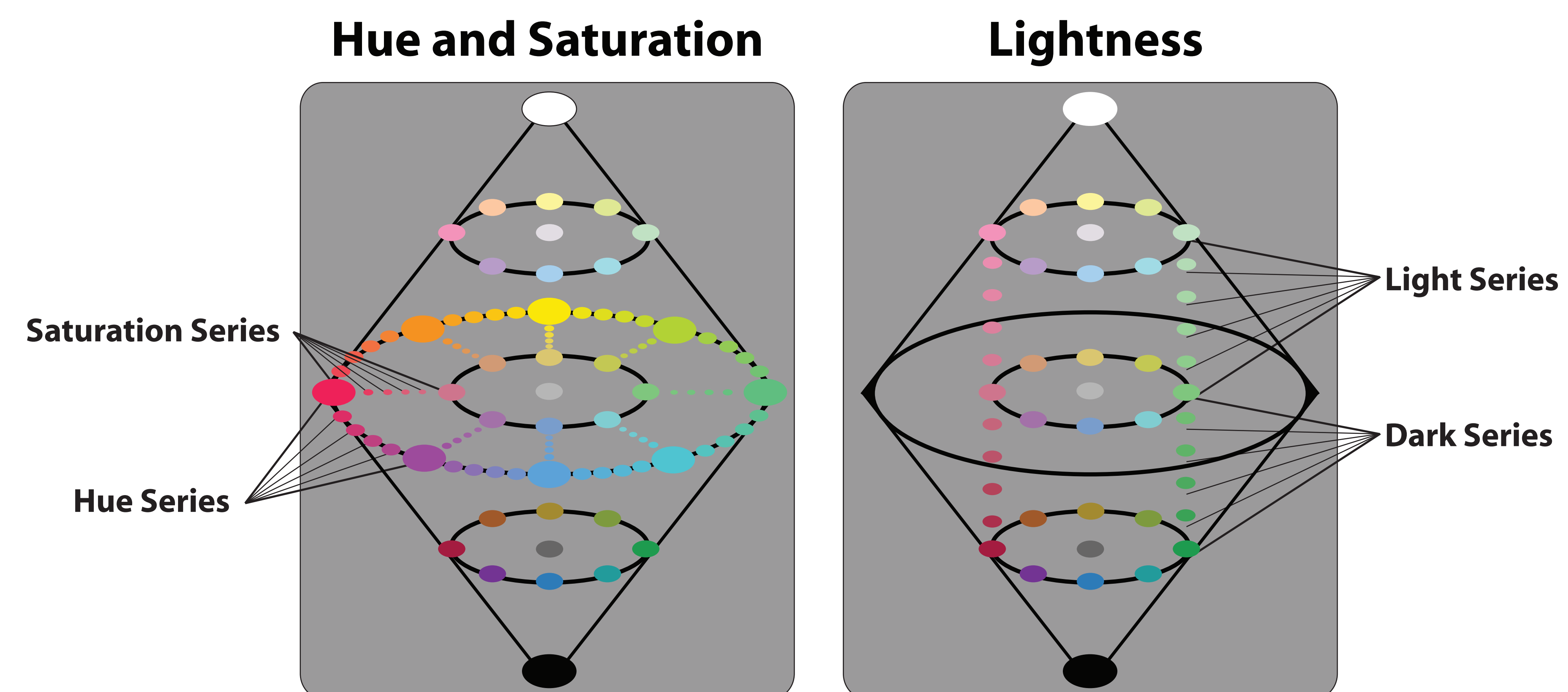
Is preference for finely sampled color pairs related to their discriminability?

Berkeley Color Project (BCP) 37



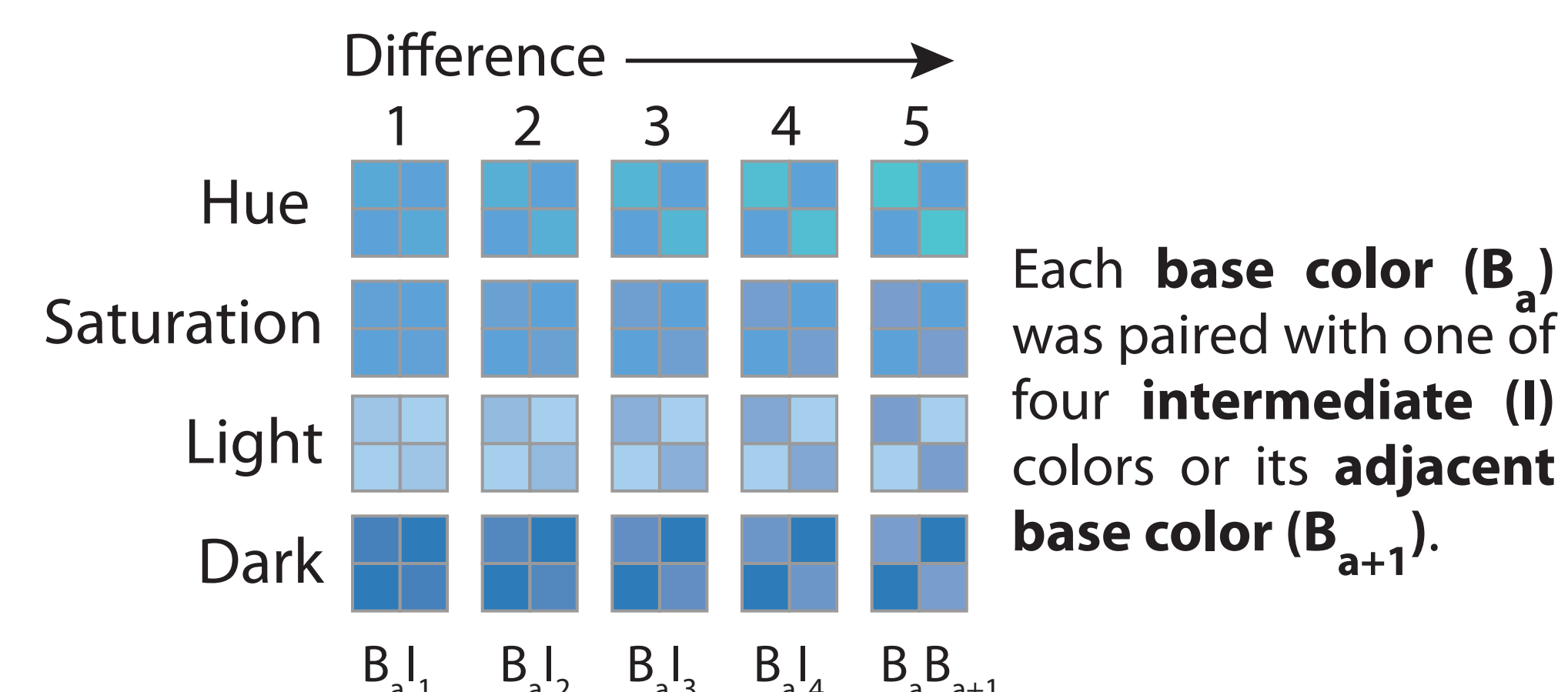
The coarsely sampled BCP-37 colors will be referred to as **base colors**.

Fine Sampling between Adjacent BCP-37 Colors

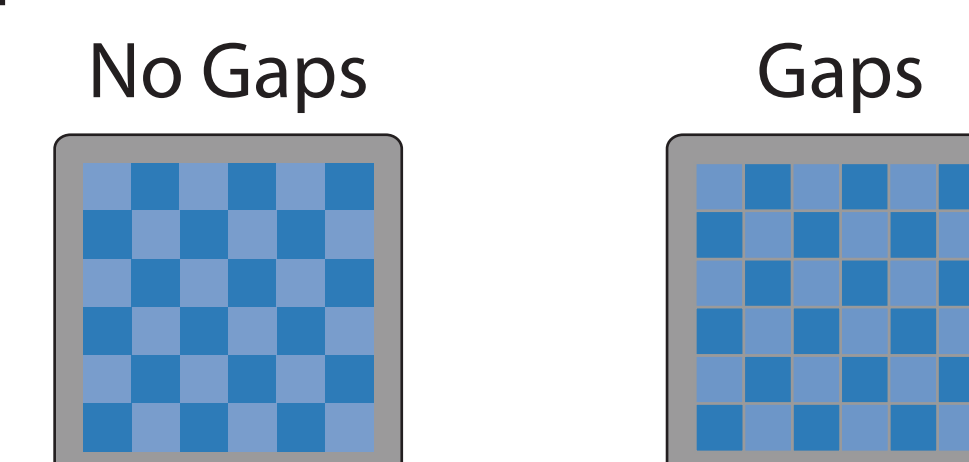


Experiment 1: Preference for Color Combinations

Four Types of Color Pair Progressions



Two Types of Checkerboard Displays

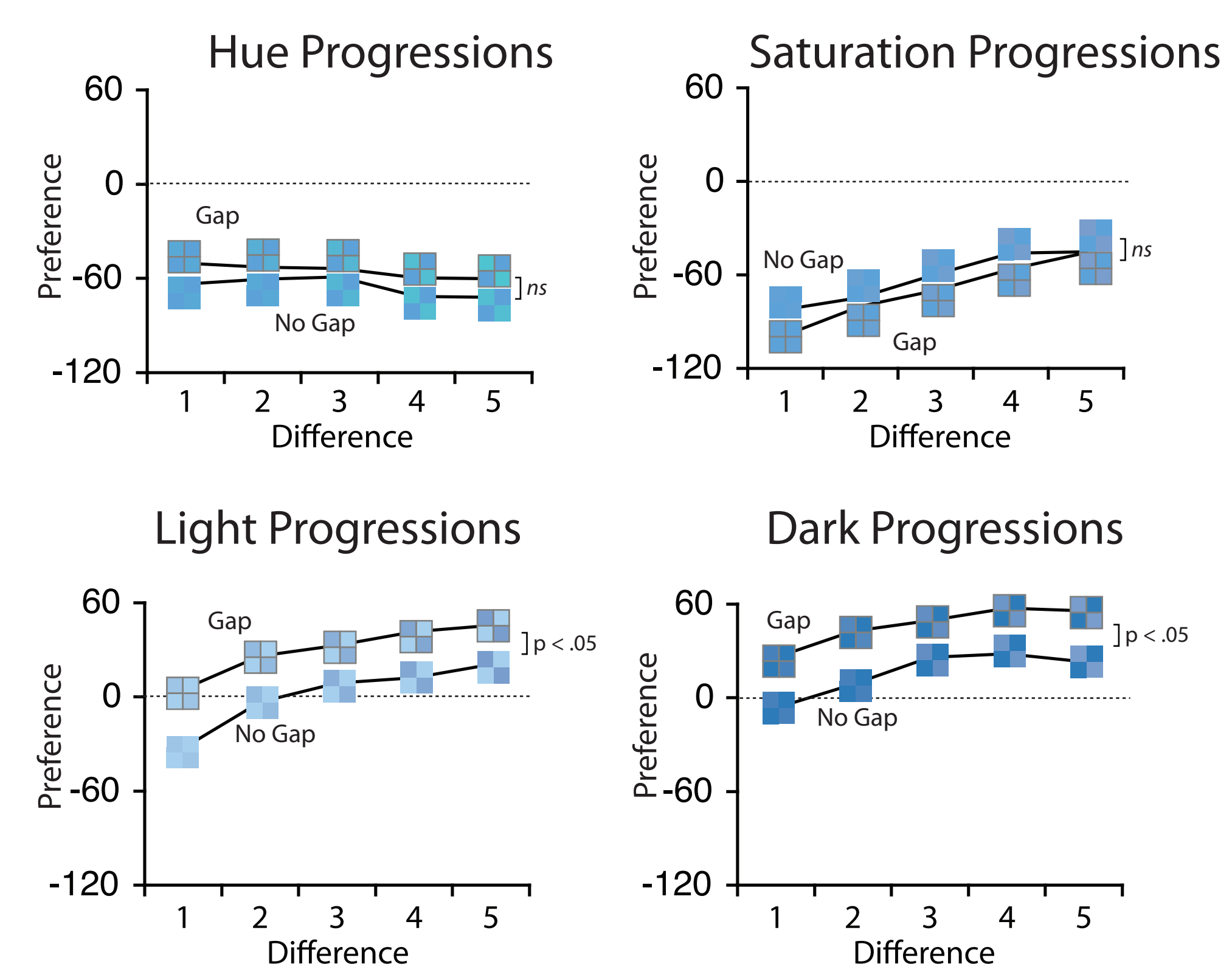


Line-Mark Rating Task:

How much do you like the display?

Not at All ————— Very Much

Preference as Color Difference Increases



Comparison with Coarse Sampling

Hue Progression: Like coarsely sampled pairs, preference *decreases* as hue difference increases ($p < .001$).

Saturation and Lightness Progression: Unlike coarsely sampled pairs, preference *increases* as color difference increases ($p < .001$).

63% of the variance is explained by:

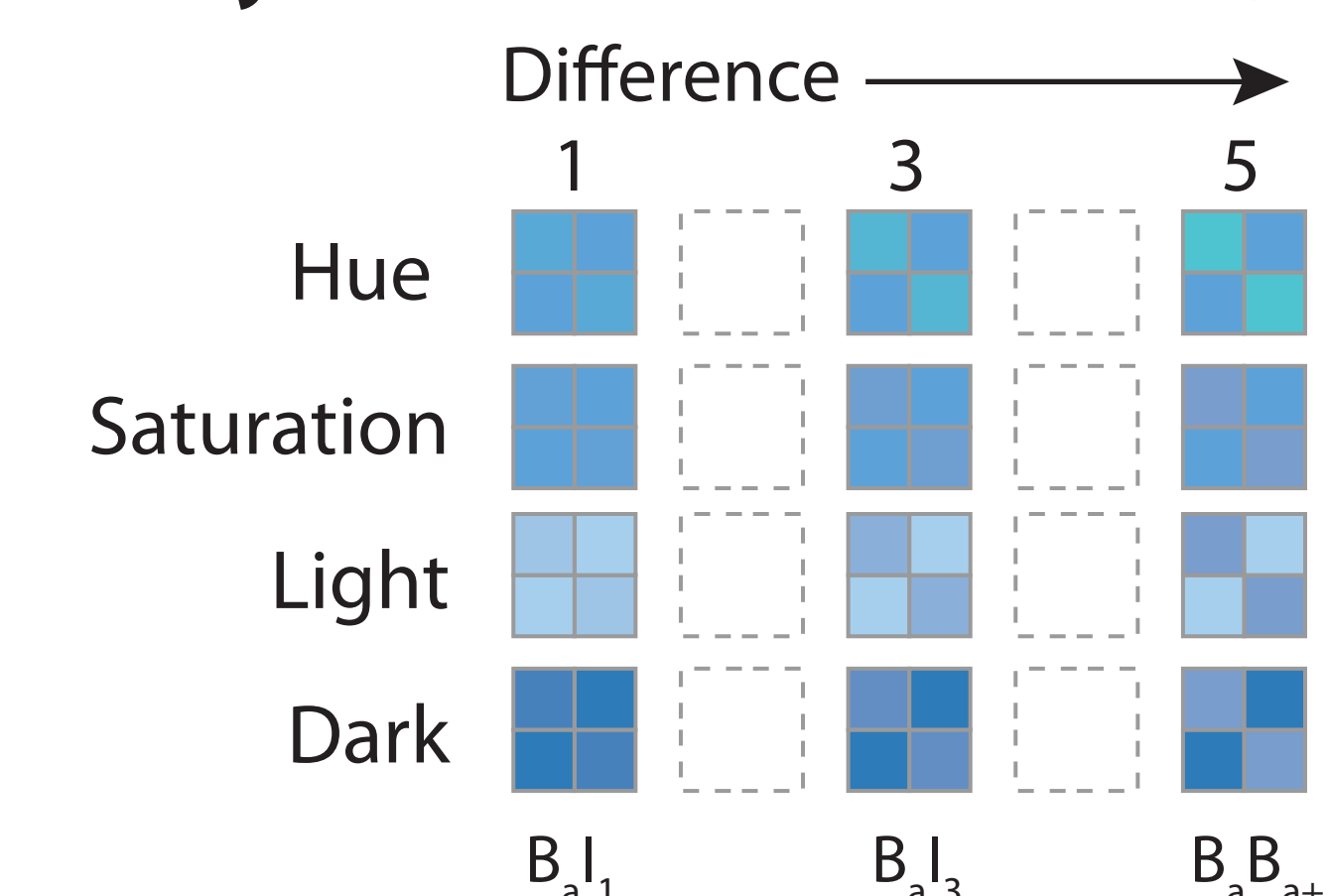
Progression Type (59%): Lightness progressions more preferred

Gap presence ($\Delta 4\%$): gaps preferred

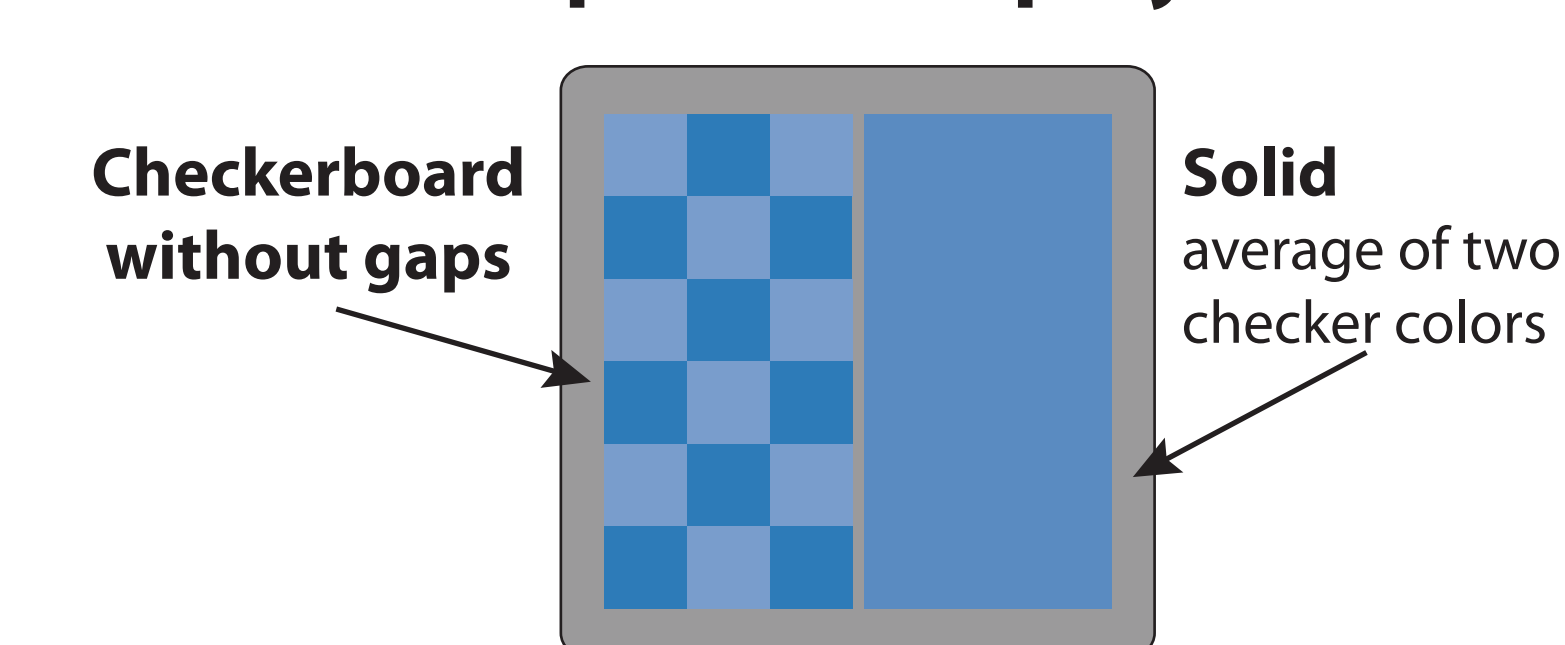
Experiment 2: Discriminating Color Combinations

Does discriminability govern finely sampled preference?

Only Tested Differences of 1, 3, and 5

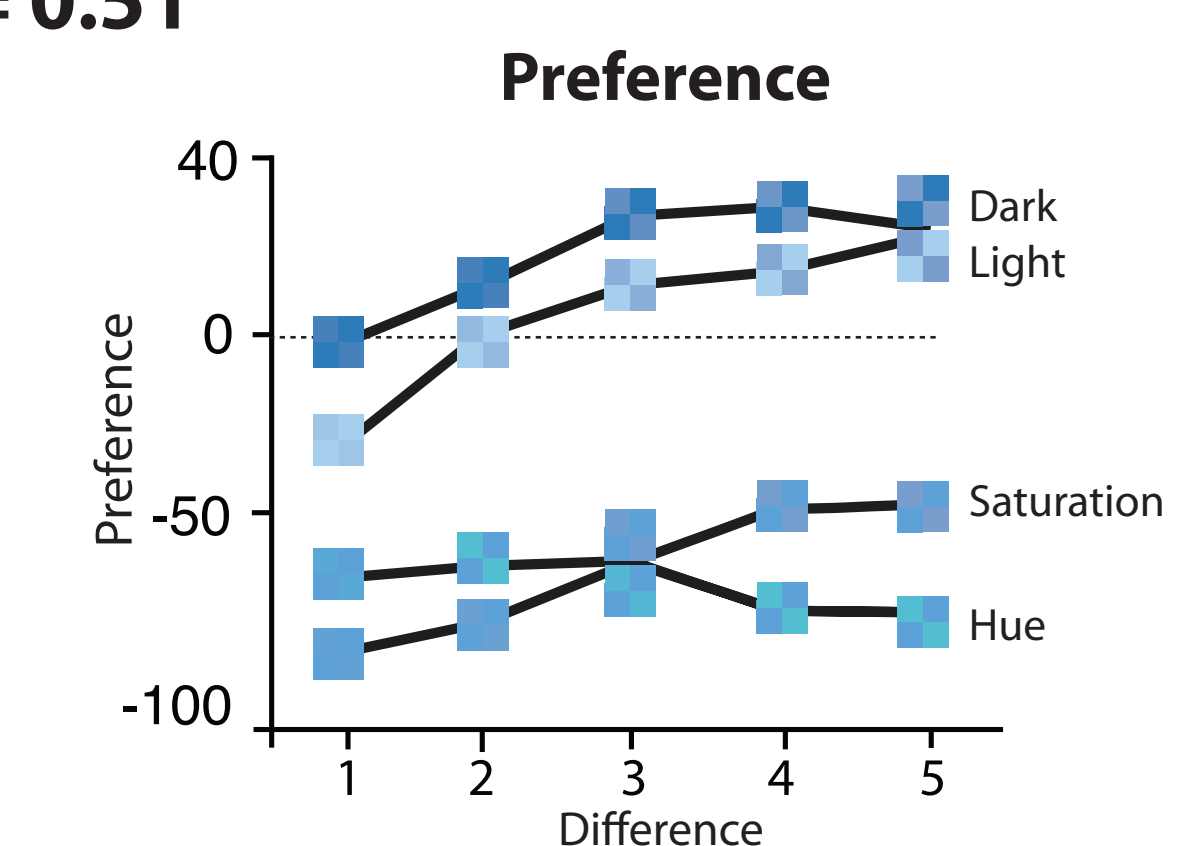
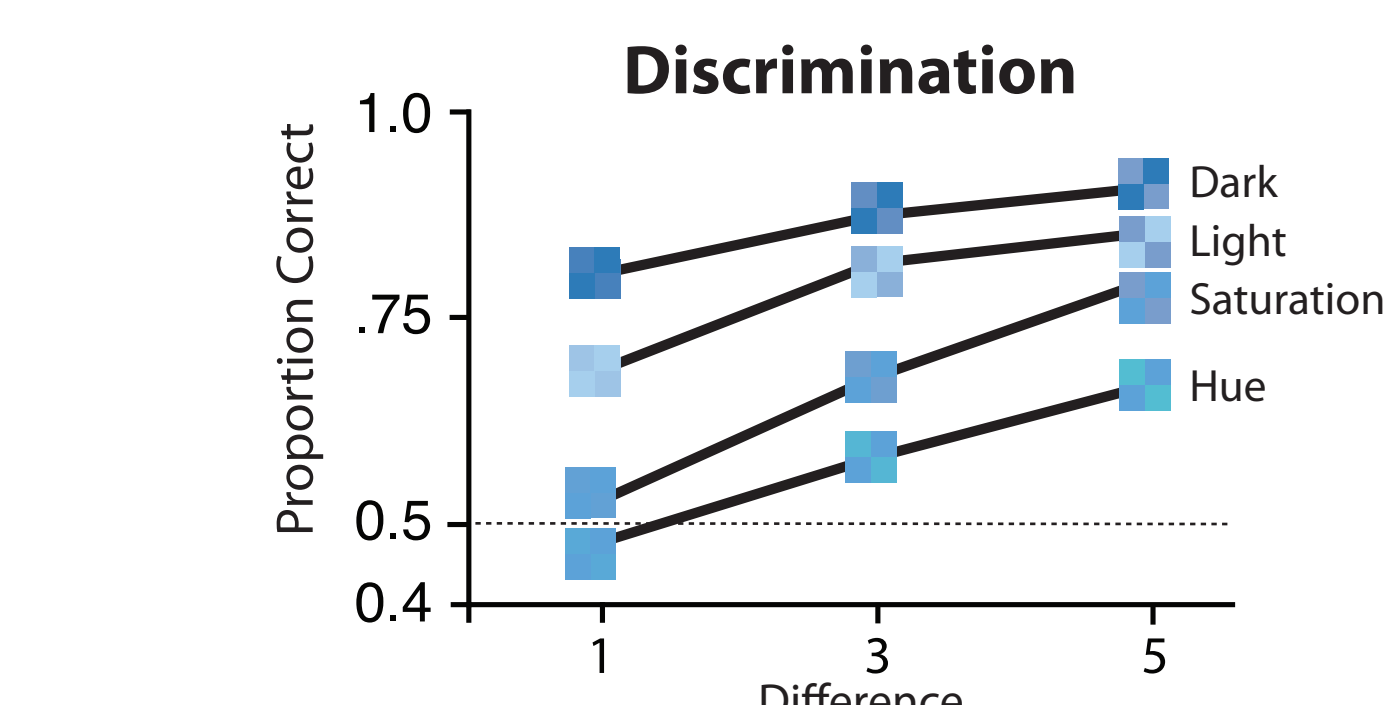
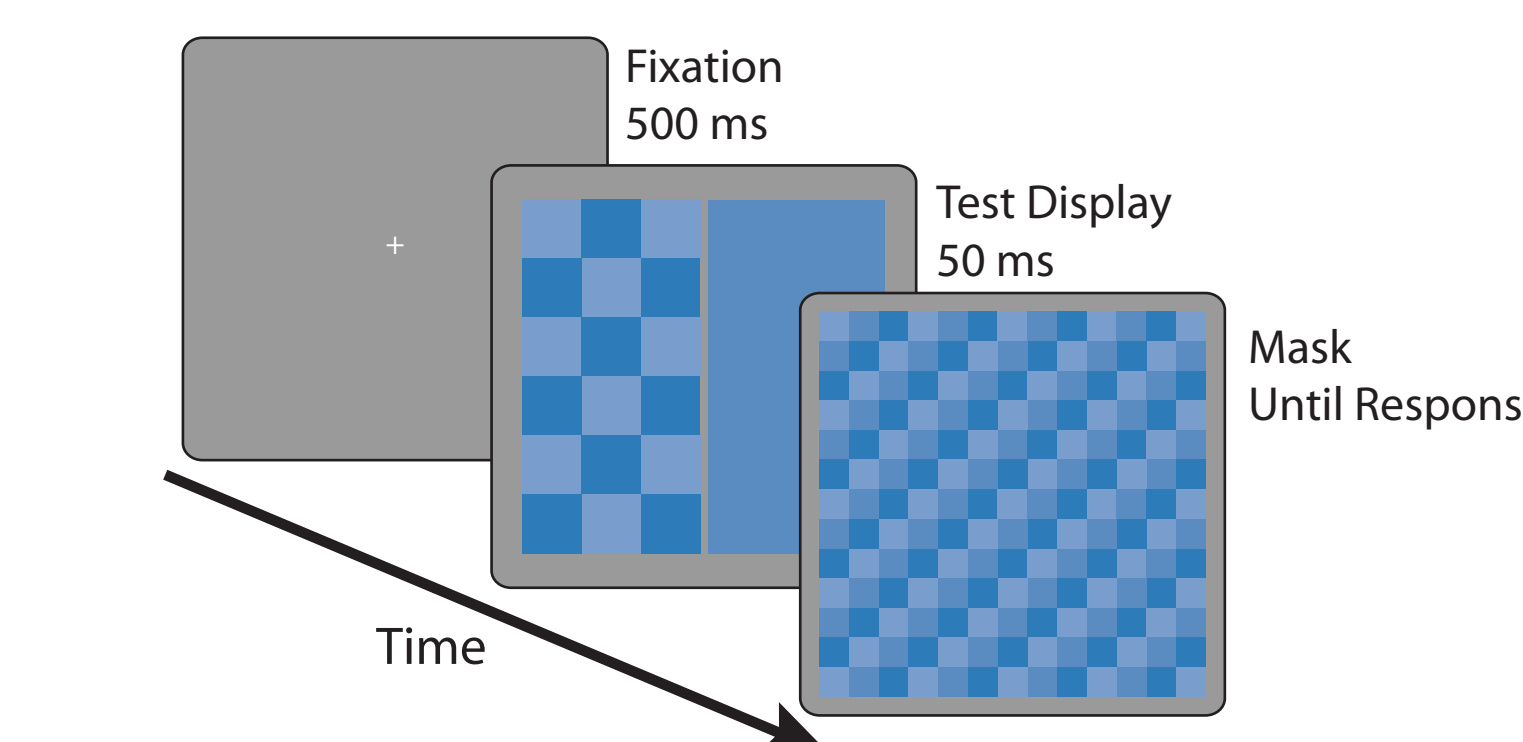


Bipartite Displays



Discrimination Task

Following masked presentation (50ms), which side had the checkerboard?



Both discriminability ($p < .01$) and preference ($p < .001$) increased as color difference increased. Lightness progressions were easier to discriminate and more preferred ($p < .001$).

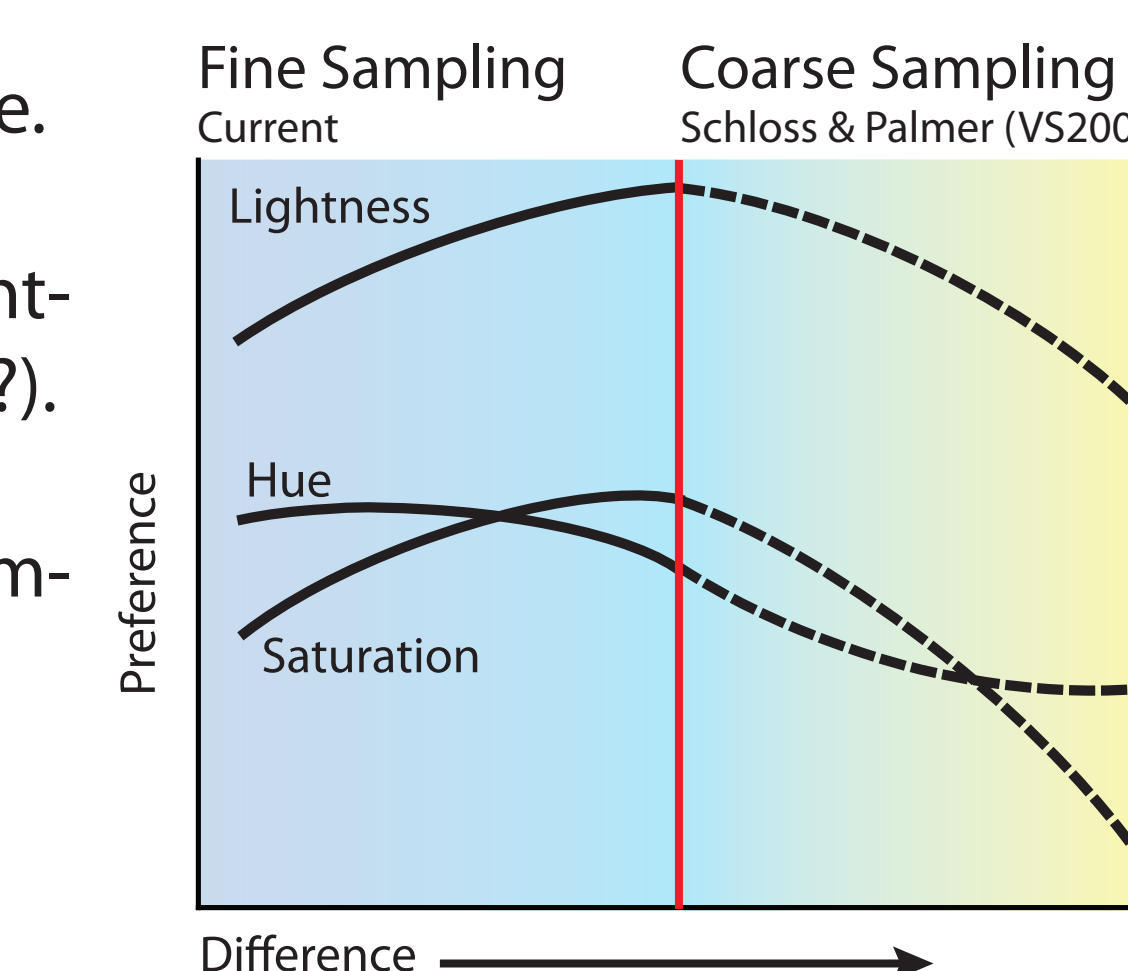
Conclusions

Pair preference decreases monotonically with hue difference.

Pair preference first increases and then decreases with lightness and saturation differences (highly similar colors “clash”).

The positive relationship between preference and discriminability could be due to “perceptual fluency”:

People aesthetically prefer displays that are easier to perceive (Reber et al., 2004).



References and Acknowledgements

Reber, R., Schwarz, N., Winkielman, P. (2004). Processing Fluency and Aesthetic Pleasure: Is Beauty in the Perceiver's Processing Experience? *Personality and Social Psychology Review*, 8(4), 364-382.

Schloss, K. B., & Palmer, S. E. "Color preferences across contexts as predicted by colorimetric variables." Presented at 7th Annual Meeting of the Vision Science Society, Sarasota, FL, May 2007.

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