The Role of Spatial Factors in Preference for Color Pairs
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Background
Itten (1973): Colors should be combined such that the ratio of their areas is inversely proportional to the ratio of their “intensities” (Goethe, 1810):

<table>
<thead>
<tr>
<th>Color</th>
<th>Intensity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yellow</td>
<td>9</td>
</tr>
<tr>
<td>Orange</td>
<td>8</td>
</tr>
<tr>
<td>Green</td>
<td>6</td>
</tr>
<tr>
<td>Blue</td>
<td>4</td>
</tr>
<tr>
<td>Violet</td>
<td>3</td>
</tr>
</tbody>
</table>

Goethe’s color intensities correspond best with Warmness/Coolness (r = .61) and Lightness/Darkness (r = .52) ratings (Schloss & Palmer, VSS 2007):

We correlated these intensities with colorimetric Itten (1973): Colors should be combined such that the ratio of their areas

E.g., relative area, surroundedness, shared contour length (perimeter)

Are ratios of areas of equal size surroundered equally? (Experiments 2 & 3)

What are the most important spatial factors that influence preference asymmetries? (Experiments 2 & 3)

E.g., relative area, surroundedness, shared contour length (perimeter)

Which do you prefer? Which do you prefer?

Research Questions

If two color displays have identical colors in opposite spatial arrangements, will there be a preference asymmetry (one pair preferred over the other)?

If so, Which color-related factors are important? (Experiment 1)

E.g., should yellower regions be smaller than bluer regions, as implied by Itten’s intensity ratio?

What are the most important spatial factors that influence preference asymmetries? (Experiments 2 & 3)

E.g., relative area, surroundedness, shared contour length (perimeter)

Choose which color combination is preferred, where the colors were in opposite spatial arrangements

Choose which color is preferred for single color squares

General Methods

Rate each color along five colorimetric dimensions by making a line-mark along a scale from...

Light to Dark

Warm to Cool

Yellow to Blue

Red to Green

Unsaturated to Saturated

Conclusions

Reliable preference asymmetries show that spatial factors influence preferences for color combinations.

Relative area between the two regions is the most important spatial factor. People prefer combinations in which:

- yellower, warmer regions are smaller than bluer, cooler regions

- more-preferred colors are larger than less-preferred colors

- lighter regions are smaller in center-surround displays but larger in bipartite displays

* This effect supports Itten’s conjecture that people prefer yellower regions to be smaller and bluer regions to be larger.

References and Acknowledgements


References


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