

A performance measure that tracks the yellow-blue line

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In our phenomenological experience of colours, a special status attaches to a line that runs across colour space from ~576 nm to ~476 nm. It is the line that runs from unique yellow to unique blue: colours to one side of the line are predominantly reddish and colours to the other side are greenish. The exact position of this line depends on the observer's adaptive state, and under some experimental conditions, the line may be curved. Few performance measures are known that correlate with this yellow-blue line. In the MacLeod-Boynton (1979) chromaticity diagram, the line is oblique, and does not correspond to either of the two 'cardinal axes'.

Measuring colour discrimination by two-alternative spatial forced-choice in the parafovea, we have found that there is deep furrow of reduced thresholds that runs across colour space close to the yellow-blue line. The experimental conditions were similar to those we have used to study discrimination in the parafovea as a function of spatial separation (Danilova and Mollon, 2006, *Vision Research*, 46, 823-836). The adapting field had a chromaticity metameric to equal-energy white. The discriminanda were two patches falling on an imaginary circle of diameter 5 deg, centred on the fixation point. They were separated by a gap of 3.7 deg, and their centre point could occur at random at any point on the imaginary circle. The discriminanda were independently jittered in luminance. We worked in an analogue of MacLeod-Boynton space scaled so that the yellow-blue (576–476-nm) line was at -45 deg. In each experimental session, measurements were made for several referent stimuli located along a line that was orthogonal to the yellow-blue line. This was repeated at different points along the yellow-blue line. Each set of measurements showed a minimum, and the minima plotted out a locus close to, and parallel to, the yellow-blue line.

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