

# Predicting categorical colour perception in successive colour constancy

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Colour constancy is a perceptual mechanism that seeks to keep the colour of objects relatively stable under an illumination shift. Experiments have shown that its effects depend on the number of colours present in the scene. We studied categorical colour changes under different adaptation states, in particular, whether the colour categories seen under a chromatically neutral illuminant are the same after a shift in the chromaticity of the illumination. To do this, we developed the chromatic setting paradigm (2011 *Journal of Vision* 11 349), which is as an extension of achromatic setting to colour categories. The paradigm exploits the ability of subjects to reliably reproduce the most representative examples of each category, adjusting multiple test patches embedded in a coloured Mondrian. Our experiments were run on a CRT monitor (inside a dark room) under various simulated illuminants and restricting the number of colours of the Mondrian background to three, thus weakening the adaptation effect. Our results show a change in the colour categories present before (under neutral illumination) and after adaptation (under coloured illuminants) with a tendency for adapted colours to be less saturated than before adaptation. This behaviour was predicted by a simple affine matrix model, adjusted to the chromatic setting results.