University of Essex

Anglia Ruskin University
Cambridge & Chelmsford

The reliability of colorimetry is precisely as expected

Amelia Aldrich Rupal Lovell-Patel Peter Allen Arnold Wilkins

OPO OPHTHALMIC & PHYSIOLOGICAL OPTICS
THE JOURNAL OF THE COLLEGE OF OPTOMETRISTS
Ophthalmic & Physiological Optics ISSN 0275-5408

TECHNICAL NOTE

Coloured overlays and precision-tinted lenses: poor repeatability in a sample of adults diagnosed with visual stress

Catherine M. Suttle, John Barbur and Miriam L. Conway
Division of Optometry and Visual Science, School of Health Sciences, City, University of London, London, UK

1st Coloured overlays → 2nd Coloured overlays → 1st Intuitive Colorimeter → 2nd Intuitive Colorimeter

	Suttle et al	Aldrich et al
Masked examiners	No	Yes
Same colorimeter	Yes	No
Same procedure	Yes	No
Variable interval	Yes	No

Table 2. Columns labelled u'1, v'1, u'2 and v'2 each show coordinates of the preferred chromaticity settings on the first and second occasion. The chromatic displacement (CD) and the number of just noticeable differences (JNDs) are also shown

Overlay Similarity	u'1	u'2	v'1	v'2	CD	Number of JNDs
Same	0.183	0.210	0.540	0.540	0.027	5.9
	0.239	0.196	0.529	0.481	0.064	13.8
	0.209	0.200	0.530	0.519	0.015	3.1
	0.197	0.218	0.532	0.541	0.023	4.9
	0.203	0.187	0.526	0.475	0.054	11.5
	0.257	0.253	0.474	0.491	0.017	3.7
	0.209	0.190	0.530	0.472	0.061	13.0
Similar	0.194	0.192	0.477	0.518	0.041	8.8
	0.208	0.192	0.530	0.517	0.020	4.4
	0.253	0.230	0.523	0.498	0.034	7.2
Different	0.184	0.261	0.540	0.544	0.077	16.5
	0.237	0.255	0.475	0.492	0.024	5.1
	0.202	0.206	0.520	0.503	0.018	3.8
	0.236	0.299	0.474	0.518	0.077	16.5
	0.158	0.261	0.441	0.484	0.111	23.8
	0.212	0.285	0.510	0.533	0.076	16.3
	0.245	0.230	0.523	0.529	0.016	3.4
	0.213	0.282	0.528	0.520	0.069	14.7
	0.224	0.249	0.544	0.538	0.026	5.5
	0.234	0.261	0.540	0.504	0.045	9.5
	0.268	0.271	0.521	0.474	0.047	10.1

Average chromaticity difference 0.035

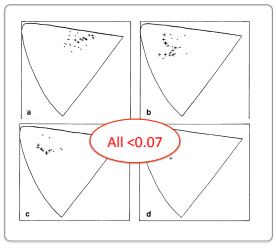
Technical Note

Colorimeter for the intuitive manipulation of hue and saturation and its role in the study of perceptual distortion

Arnold J. Wilkins, Ian Nimmo-Smith and Judy E. Jansons*
*Medical Research Council Applied Psychology Unit, 15 Chaucer Road, Cambridge CB2 2EF and *25 Keats Way, Hitchin SG4 0DP, UK.

(Received 21 January 1991, in revised form 18 November 1991)

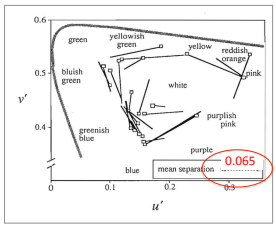
A simple optical method for mixing coloured light is described. The observer has intuitive and approximately independent control over hue and saturation at constant brightness. The method facilitates colour matching by unpractised observers. It allows children with reading difficulties to select a colour that reduces perceptual distortion of text. The chromaticity coordinates of this colour vary from one observer to another but can be very specific. Complementary colours can exacerbate the distortions and induce pain. For the majority of children reporting beneficial perceptual effects, the a' coordinate is less than 0.25.



Double-masked placebo-controlled trial of precision spectral filters in children who use coloured overlays

A. J. Wilkins[1], B. J. W. Evans[2], J. A. Brown[3], A. E. Busby[4], A. E. Wingfield[5], R. J. Jeanes[1] and J. Bald[6]
[1]MRC Applied Psychology Unit, 15 Chaucer Road, Cambridge CB2 2EF; [2]The Institute of Optometry, London; [3]Dollond and Aitchison, Leeds; [4]Upbury Manor School, Gillingham; [5]Dyslexia Institute, Leeds; and [6]11 Oxford Road, Colchester, UK

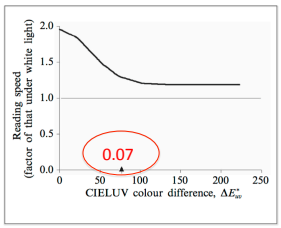
(Received 9 December 1993, in revised form 21 June 1994)

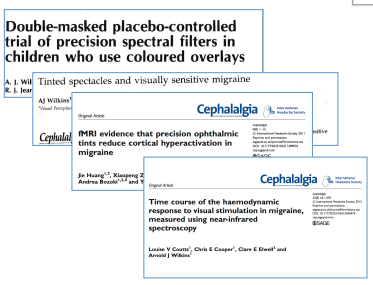


Perception, 2005, volume 34, pages 109 – 120
DOI:10.1068/p5045

Increasing reading speed by using colours: Issues concerning reliability and specificity, and their theoretical and practical implications

Arnold J Wilkins, Nirmal Sihra, Andrew Myers
Visual Perception Unit, Department of Psychology, University of Essex, Colchester CO4 3SQ, UK; e-mail: arnold@essex.ac.uk
Received 30 January 2003, in revised form 25 May 2004; published online 21 January 2005



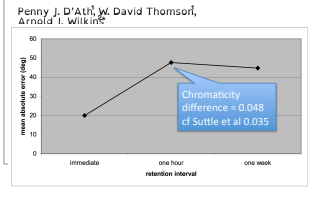


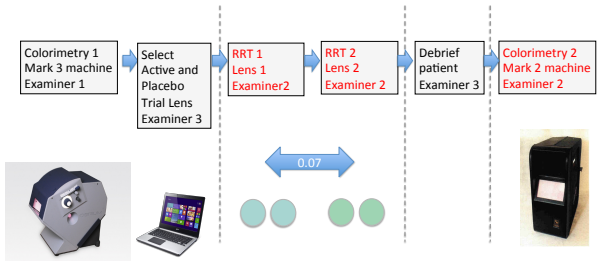
All compare an "active" tint with a "Control" tint differing by 0.07 in UCS chromaticity. All show a difference in favour of the active tint.

This is interesting, since it suggests that in the present study the optimal colour chosen on the second occasion is separated from the first optimal colour choice by more than the separation at which the colour is no longer likely to be beneficial.

Memory for the Color of Non-Monochromatic Lights

Penny J. D'Ath, W. David Thomson, Arnold I. Wilkins





Sex	Age	Reason for Referral	1st Reliability Rating	2nd Reliability Rating	1st Colorimetry hue, satn	2nd Colorimetry hue, satn	Difference in hue (degrees)	1st Colorimetry u'	1st Colorimetry v'	2nd Colorimetry u'	2nd Colorimetry v'	Difference in chromaticity
M	8	VS/Dyslexia	Good	Good	300 30	300 50	0	0.252	0.473	0.263	0.449	0.026
M	12	VS/ Concussion	Good	Good	120 30	150 50	30	0.215	0.543	0.156	0.553	0.059
M	14	VS/Dyslexia	Good	Good	180 30	260 40	80	0.179	0.528	0.179	0.452	0.076
F	17	Dyslexia	Good	Good	165 30	170 35	5	0.180	0.534	0.188	0.535	0.008
F	17	Headaches/ Dyslexia	Good	Good	80 30	80 40	0	0.253	0.541	0.240	0.554	0.018
M	18	VS	Good	Good	300 30	330 50	30	0.253	0.474	0.297	0.479	0.044
M	19	VS/Photo-sensitivity	Good	Good	150 30	180 40	30	0.182	0.537	0.169	0.531	0.015
F	23	VS	Good	Good	180 35	150 40	30	0.164	0.528	0.173	0.547	0.021
F	27	VS	Good	Good	30 30	30 40	0	0.286	0.530	0.278	0.539	0.012
M	31	VS/Dyslexia	Good	Good	270 30	270 30	0	0.270	0.463	0.207	0.485	0.067
F	38	VS/Dyslexia	Good	Good	180 30	210 50	30	0.179	0.527	0.146	0.508	0.038
F	9	VS	Good	Moderate	90 30	70 50	20	0.238	0.544	0.255	0.559	0.023
F	11	Dyslexia	Good	Moderate	30 30	30 30	0	0.287	0.530	0.252	0.535	0.036
F	13	VS	Good	Moderate	150 30	150 50	0	0.182	0.538	0.157	0.553	0.029
F	23	Dyslexia	Good	Moderate	130 30	60 30	70	0.203	0.541	0.242	0.540	0.040
M	71	VS	Moderate	Good	0 30	300 50	30	0.300	0.518	0.262	0.450	0.078
M	*9*	*VS/Dyslexia*	*Poor*	*Good*	*150 30*	*150 40*	*0*	*0.181*	*0.537*	*0.169*	*0.549*	*0.017*
F	*13*	*Headaches*	*Poor*	*Poor*	*180 25*	*10 35*	*170*	*0.191*	*0.527*	*0.283*	*0.528*	*0.092*
M	*14*	*VS/Dyslexia*	*Poor*	*Poor*	*290 30*	*260 50*	*30*	*0.238*	*0.470*	*0.165*	*0.424*	*0.086*
M	*58*	*VS*	*Poor*	*Poor*	*150 20*	*330 35*	*180*	*0.203*	*0.531*	*0.267*	*0.499*	*0.071*