

Supplementary Material

Table S1. Mixed effects model used to explore the relationship between latency and time.

Term	b	SEM	SD	t	p
Fixed					
Intercept	4.11	0.23		17.79	< 0.0001
Block	-0.16	0.46		-3.49	0.0006
Random					
ID		0.49			
Train			>10 ⁻⁴		
Residual		1.02			
Model: Latency ~ Block + (1 ID) + (1 Train)					

Table S2. Coefficients, standard errors and p-values of the mixed model on the errors decline with time compared with those resulting from a bootstrapping analysis (10.000 simulations). Our results are strong against the violation of normality in the residuals of the model.

	Model					Bootstraping (10,000 simulations)				
Term	b	SE	SD	Z	p	Mean β	SE	SD	Z	p
Fixed										
Intercept	0.30	0.24		1.25	0.211	0.29	0.25		1.16	0.245
Block	-0.30	0.14		-2.23	0.026	-0.30	0.13		-2.40	0.016
Sex	0.34	0.14		2.40	0.017	0.34	0.13		2.58	0.010
Random										
ID			$<10^{-5}$						$<10^{-5}$	
Train			$<10^{-5}$						$<10^{-5}$	
Eat			0.31						0.31	

Model: Errors ~ Block + Sex + (1|Eat) + (1|Train) + (1|ID)

Table S3. Results from GLM analyses comparing chromatic distances for each pair of morphs (i.e. Morph pair), including Sex as a second factor and the interaction, for each visual model generated by the combination of the four alternative cone proportions and the three alternative values of Weber fraction.

Weber fraction													
		0.05				0.03				0.07			
		b	SE	t	p	b	SE	t	p	b	SE	t	p
1:1:1:4	Intercept	0.96	0.03	29.30	< 0.00001	1.18	0.03	36.08	< 0.00001	0.81	0.03	24.83	< 0.00001
	Morph pair	-0.07	0.02	-4.48	< 0.00001	-0.07	0.02	-4.48	< 0.00001	-0.07	0.02	-4.48	< 0.00001
	Sex	-0.13	0.02	-5.40	< 0.00001	-0.13	0.02	-5.40	< 0.00001	-0.13	0.02	-5.40	< 0.00001
	interaction	0.04	0.01	3.76	0.0002	0.04	0.01	3.76	0.0002	0.04	0.01	3.76	0.0002
1:1:1:1	Intercept	1.15	0.04	31.90	< 0.00001	1.37	0.04	38.04	< 0.00001	1.01	0.04	27.85	< 0.00001
	Morph pair	-0.05	0.02	-2.79	0.0053	-0.05	0.02	-2.79	0.0053	-0.05	0.02	-2.79	0.0053
	Sex	-0.13	0.03	-5.05	< 0.00001	-0.13	0.03	-5.05	< 0.00001	-0.13	0.03	-5.05	< 0.00001
	interaction	0.04	0.01	3.17	0.0016	0.04	0.01	3.17	0.0016	0.04	0.01	3.17	0.0016
1:1:1:8	Intercept	0.84	0.03	26.04	< 0.00001	1.06	0.03	32.90	< 0.00001	0.70	0.03	21.52	< 0.00001
	Morph pair	-0.08	0.02	-4.92	< 0.00001	-0.08	0.02	-4.92	< 0.00001	-0.08	0.02	-4.92	< 0.00001
	Sex	-0.13	0.02	-5.38	< 0.00001	-0.13	0.02	-5.38	< 0.00001	-0.13	0.02	-5.38	< 0.00001
	interaction	0.04	0.01	3.86	0.0001	0.04	0.01	3.86	0.0001	0.04	0.01	3.86	0.0001
2:3:3:11	Intercept	0.97	0.03	29.73	< 0.00001	1.20	0.04	27.85	< 0.00001	0.82	0.03	25.25	< 0.00001
	Morph pair	-0.08	0.02	-5.15	< 0.00001	-0.08	0.02	-5.15	< 0.00001	-0.08	0.02	-5.15	< 0.00001
	Sex	-0.14	0.02	-5.98	< 0.00001	-0.14	0.02	-5.98	< 0.00001	-0.14	0.02	-5.98	< 0.00001
	interaction	0.05	0.01	4.30	0.00002	0.05	0.01	4.30	0.00002	0.05	0.01	4.30	0.00002

Model: chromatic distances ~ Morph pair*Sex



Figure S1. Frame of a video recording in which two trained lizards feed on *Tenebrio molitor* larvae after uncovering the trained colour-identified well.

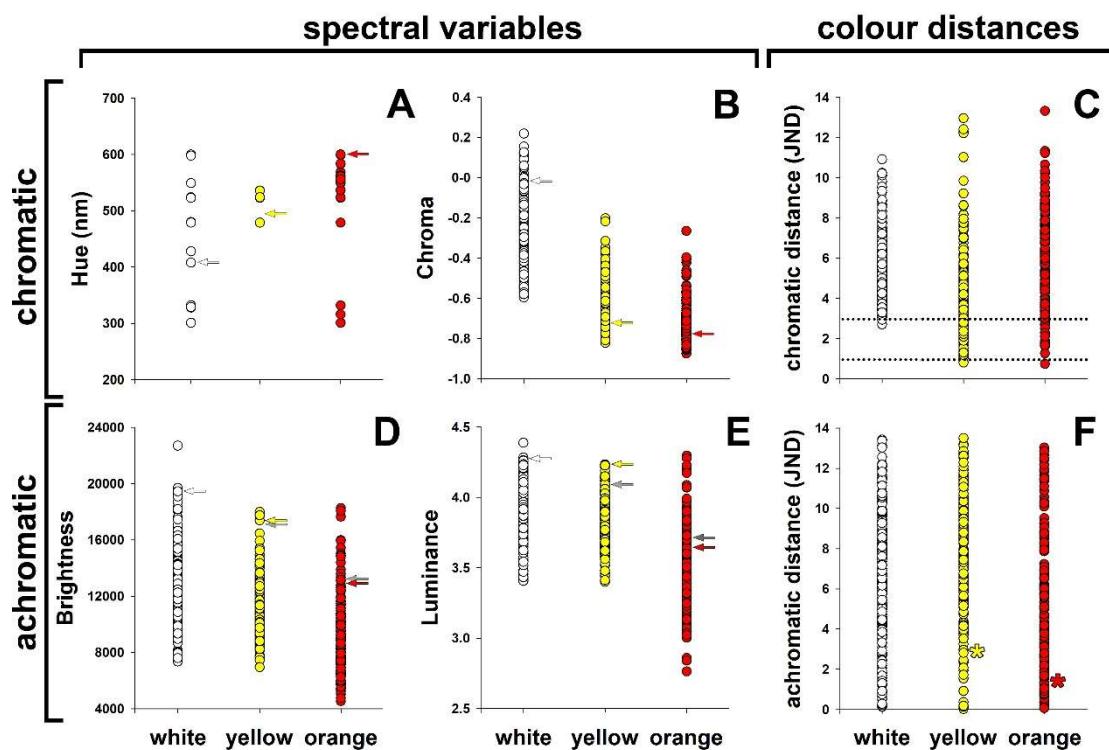


Figure S2. Spectral variables (A, B, D, E) and chromatic (C) and achromatic (F) distances calculated with visual models from male and female throats (circles). Hue was calculated as the wavelength of maximum slope of the curve. Chroma was calculated as $(R450 - R700)/R700$. Brightness was calculated as the sum of the relative reflectance over the entire spectral range. Luminance was calculated considering the response of the long-wavelength cone type for visual modelling. In A, B, D, and E panels, the arrows indicate the values of the artificial stimuli used in the experiment (in D and E, the grey arrows indicate the values of the achromatic stimuli). In C and F panels, circles indicate the chromatic and achromatic distances between each natural stimulus of each morph against the corresponding artificial chromatic stimuli used in the experiment. Horizontal dotted lines in C indicate the assumed discriminability thresholds of 1 and 3 JND (see details in the main text). The yellow and the orange stars in F indicate the achromatic distance calculated between the yellow and orange artificial stimuli against the respective achromatic stimuli.

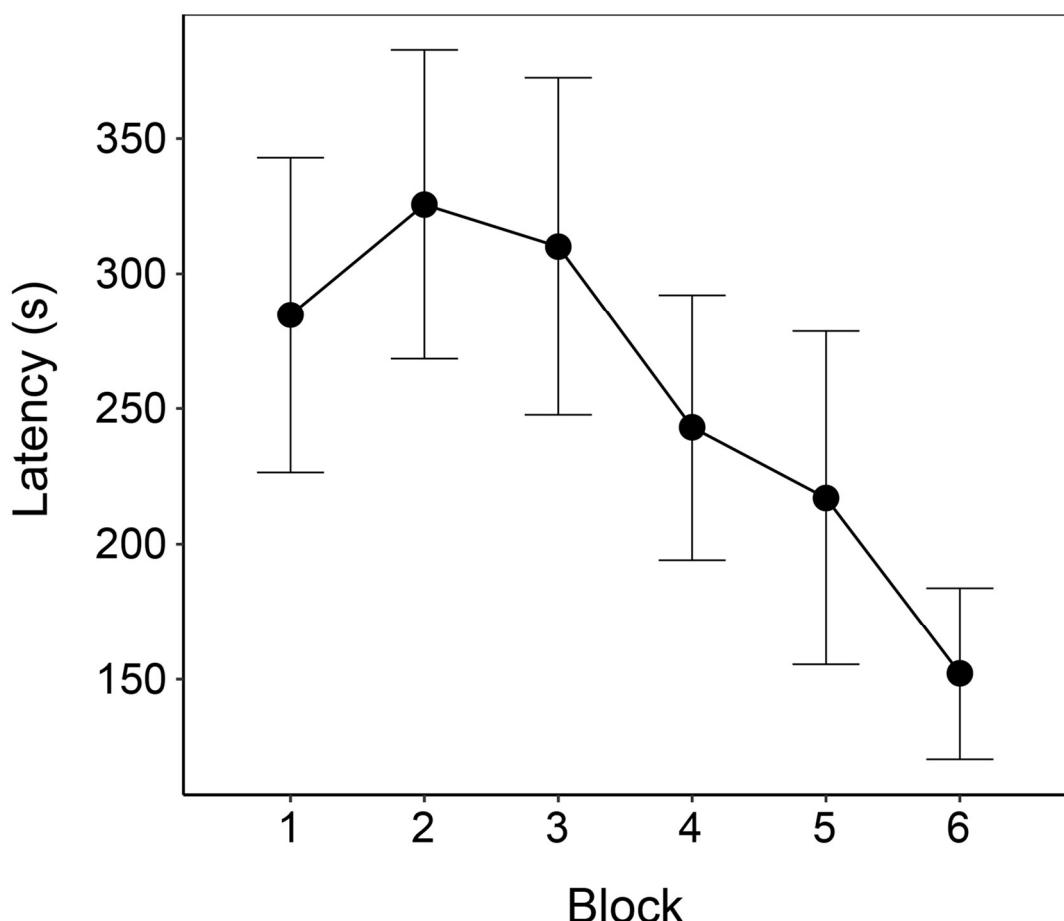


Figure S3. Mean latency per block of trials (12 lizards, three trials per block). Latency was defined as the time (s) elapsed since the lizard left the refuge until it lifted the right lid. Error bars represent the standard error of the mean.

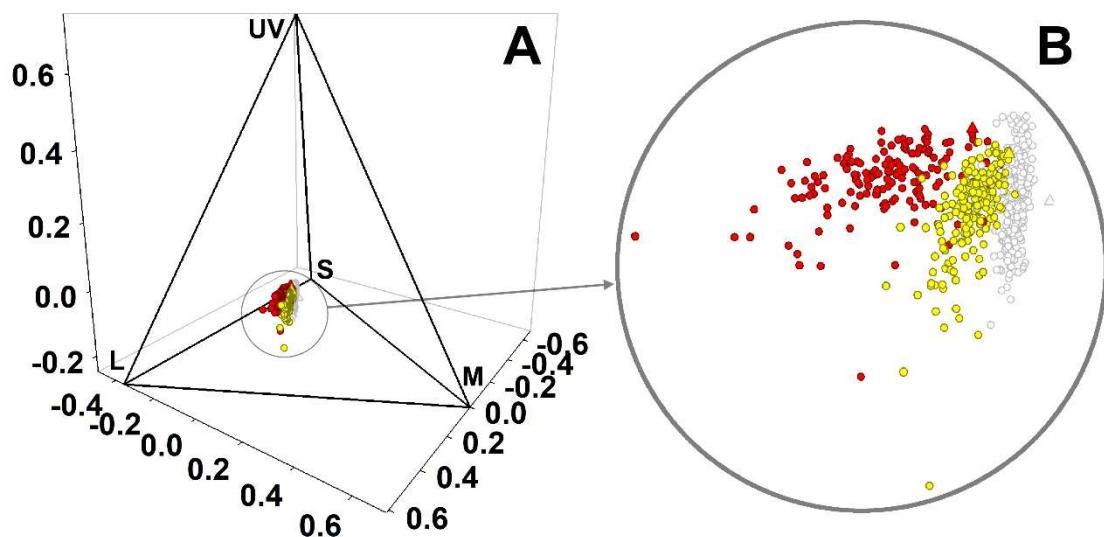


Figure S4. Colour space showing the location of chromatic points. Panel A shows the entire colour space and panel B a detail of the volume occupied by the chromatic points. Circles correspond to chromatic points from the natural ventral colours (pooling males and females). Triangles correspond to the artificial stimuli. The colours of symbols indicate the morph. See sample sizes in the main text. The overlap between the white and the yellow volumes represents the 27.8% of the white volume and the 4.9 of the yellow volume; the overlap between the white and the orange volumes represents the 5.1 % of the white volume and the 0.7 % of the orange volume; the overlap between the yellow and the orange volumes represents the 12.2% of the yellow volume and the 9.1 of the orange volume.

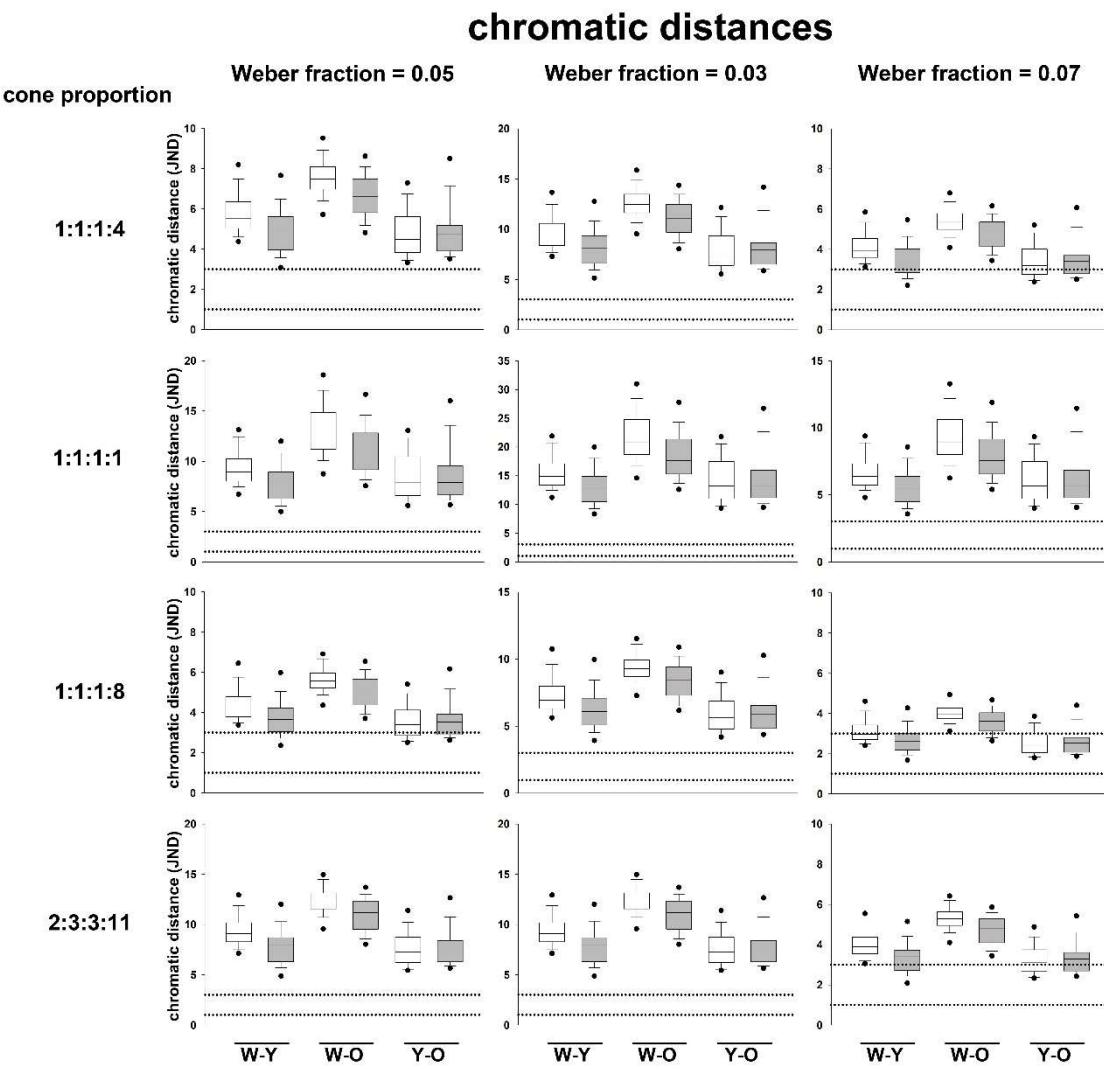


Figure S5. Box-plots showing chromatic distances generated by pairs of colour morphs (W = white, Y = yellow, O = orange) generated by the alternative visual models used in the analyses considering four different cone proportions and three values of Weber fraction. White box-plots correspond to males and grey box-plots correspond to females. In each case, horizontal lines, boxes, error bars and points indicate, respectively, the median, the 25–75% range, the 10th and 90th percentiles, and the 5th and 95th percentiles. Horizontal dotted lines indicate the discriminability thresholds of 1 JND (values above 1 JND indicate pairs of colours that are discriminable under good illumination conditions) and 3 JND (values above 3 JND indicate easily discriminable pairs of colours). Results from the corresponding analyses in Table S3. Note that the scale of the Y axis varies depending on the panel.

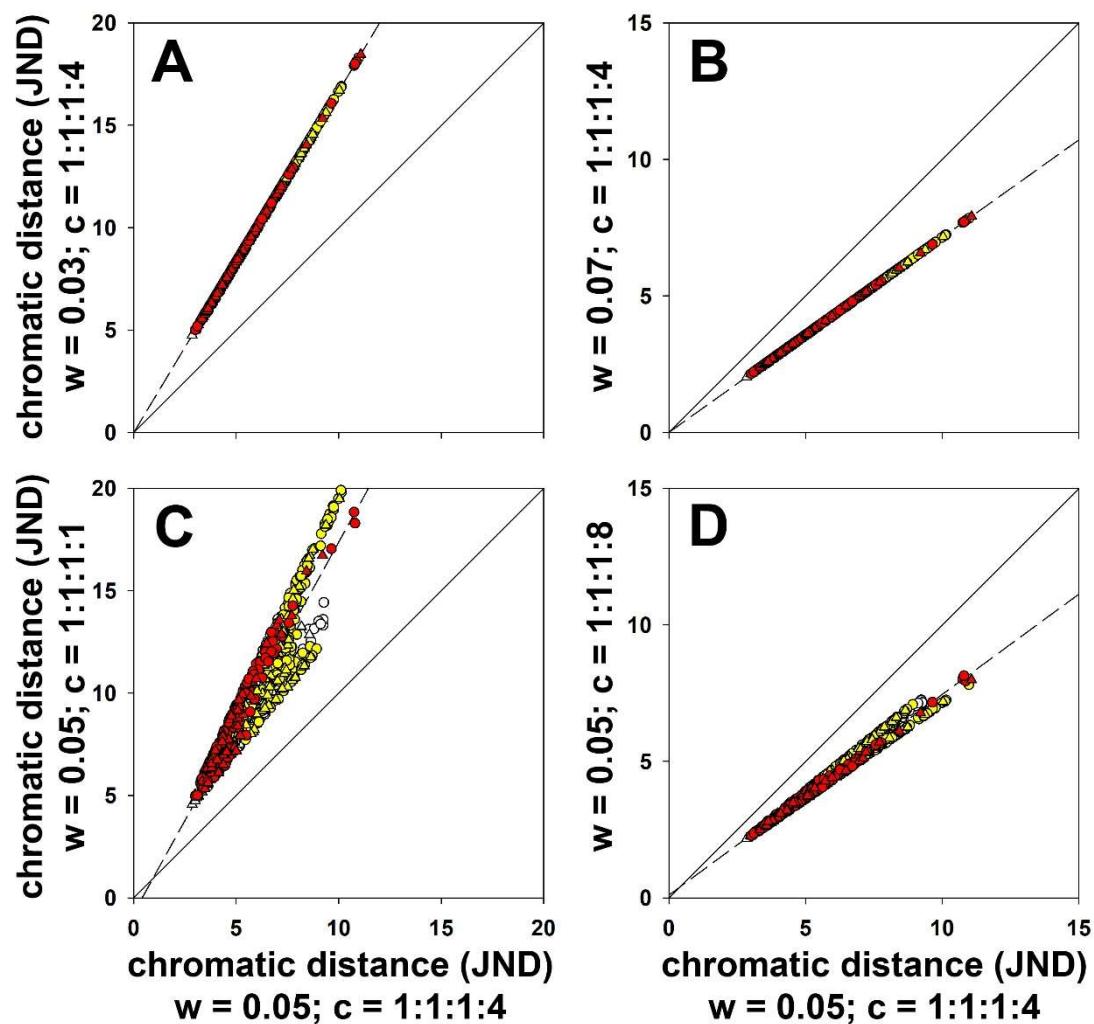


Figure S6. Effect of the Weber fraction (w) and cone proportion (c) in chromatic distances (measured in JND). Comparison of our main model assuming a cone proportion of 1:1:1:4 (ultraviolet-:short-:medium-:long-wavelength sensitive cones) and a Weber fraction of 0.05 with models setting the Weber fraction to 0.03 (A) and 0.07 (B), and models setting cone proportion to 1:1:1:1 (C) and 1:1:1:8 (D). Colours indicate morphs. Circles indicate males and triangles indicate females. The dashed lines indicate the regression. The continuous lines represent the 1:1 reference line.