

Preference for higher-order luminance regularities in natural scenes

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SUPPLEMENTARY INFORMATION

Table S1. Pixel intensity statistics of the stimuli in Experiment 1 are listed below.

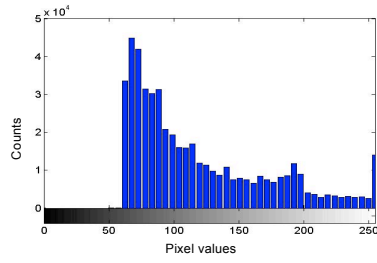
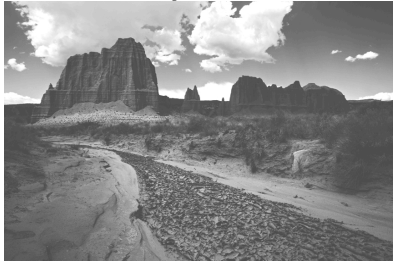
Image	Experiment 1a				Experiment 1b			
	Mean	Variance	Skewness	Kurtosis	Mean	Variance	Skewness	Kurtosis
1_1	118.8	2804.8	1.011	2.983	110.5	2170.0	1.773	5.276
1_2	119.0	2864.2	0.887	2.763	111.4	2480.0	1.327	3.842
1_3	119.1	2906.1	0.743	2.544	111.8	2600.0	0.985	3.026
1_4	119.2	2921.0	0.567	2.319	111.8	2610.0	0.616	2.380
1_5	119.2	2921.7	0.358	2.143	111.8	2610.0	0.358	2.143
1_6	119.2	2915.3	0.122	2.091	111.9	2600.0	0.111	2.092
1_7	119.5	2853.5	-0.118	2.150	112.1	2530.0	-0.139	2.157
1_8	120.0	2629.2	-0.360	2.317	112.7	2240.0	-0.413	2.379
2_1	81.9	2223.5	1.542	4.617	99.4	1810.0	2.011	6.421
2_2	81.9	2230.1	1.362	4.029	99.6	1870.0	1.449	4.298
2_3	81.7	2246.9	1.159	3.440	99.7	1880.0	0.955	2.941
2_4	81.9	2234.0	0.955	2.939	99.7	1880.0	0.643	2.367
2_5	82.0	2233.9	0.727	2.497	99.7	1880.0	0.440	2.132
2_6	81.9	2233.9	0.480	2.168	99.7	1880.0	0.232	2.012
2_7	82.1	2214.9	0.223	1.976	99.8	1860.0	-0.005	2.007
2_8	82.5	2125.3	-0.025	1.909	100.1	1740.0	-0.267	2.146
3_1	97.6	1525.3	1.922	6.850	111.3	1160.0	2.299	8.485
3_2	97.7	1563.7	1.617	5.748	111.6	1240.0	1.759	6.278
3_3	97.7	1582.2	1.250	4.588	111.6	1250.0	1.255	4.608
3_4	97.7	1582.9	0.917	3.746	111.6	1260.0	0.775	3.468
3_5	97.7	1583.0	0.611	3.210	111.6	1260.0	0.403	2.984
3_6	97.7	1582.5	0.365	2.955	111.6	1260.0	0.079	2.869
3_7	97.8	1575.6	0.068	2.848	111.6	1250.0	-0.228	3.013
3_8	97.9	1539.3	-0.204	2.876	111.9	1210.0	-0.575	3.438
4_1	127.3	3070.5	1.126	2.901	116.4	2560.0	1.690	4.546
4_2	127.7	3163.6	0.993	2.649	117.4	2830.0	1.361	3.550
4_3	127.8	3206.0	0.897	2.493	117.6	2900.0	1.178	3.095
4_4	127.9	3224.2	0.825	2.385	117.7	2920.0	0.949	2.607
4_5	127.9	3233.2	0.700	2.220	117.7	2920.0	0.710	2.233
4_6	128.0	3230.8	0.509	2.046	117.7	2920.0	0.547	2.069
4_7	128.0	3213.1	0.289	1.942	117.7	2910.0	0.363	1.960
4_8	128.1	3145.6	0.109	1.924	118.1	2740.0	-0.005	1.904

Stimuli

Pixel Histogram

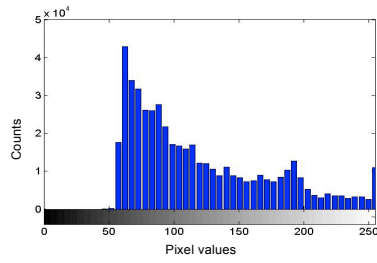
Skewness

Image 1 Version 1



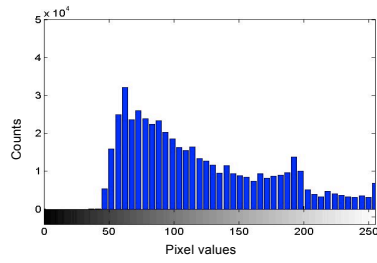
1.011

Image 1 Version 2



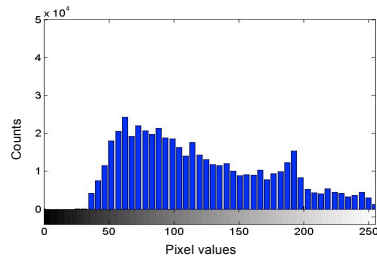
0.887

Image 1 Version 3



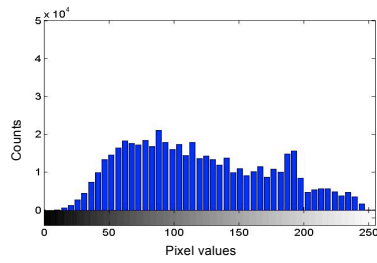
0.743

Image 1 Version 4



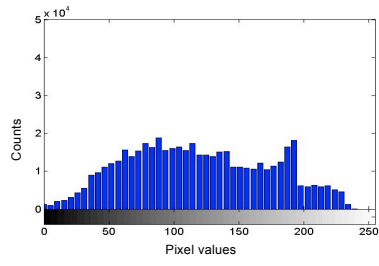
0.567

Image 1 Version 5



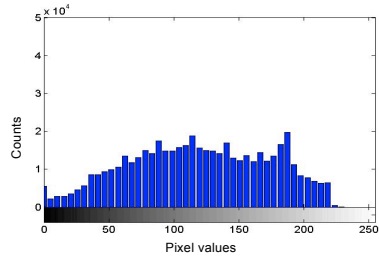
0.358

Image 1 Version 6



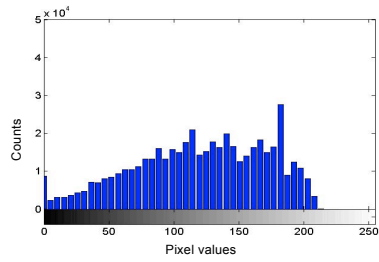
0.122

Image 1 Version 7



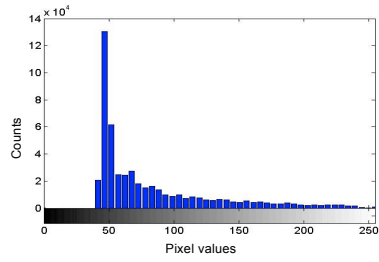
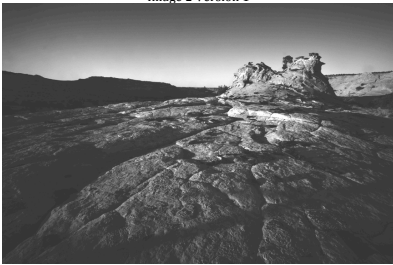
-0.118

Image 1 Version 8



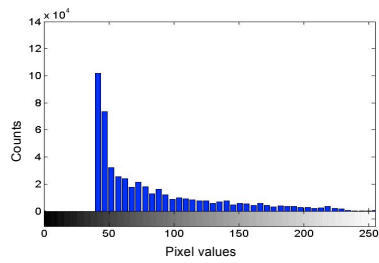
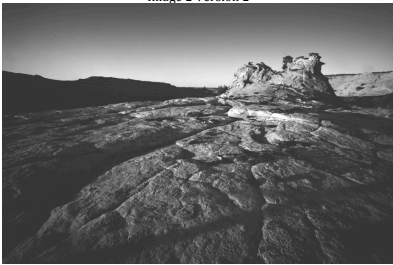
-0.360

Image 2 Version 1



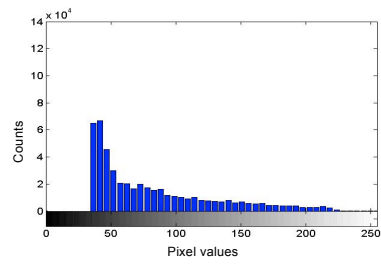
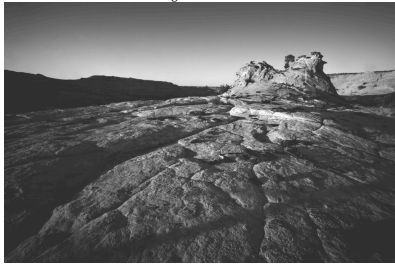
1.542

Image 2 Version 2



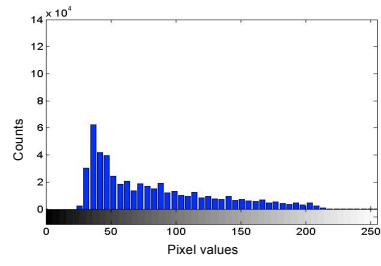
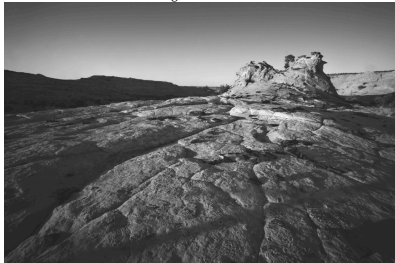
1.362

Image 2 Version 3



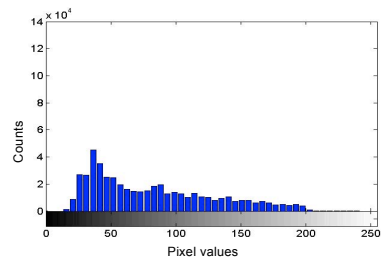
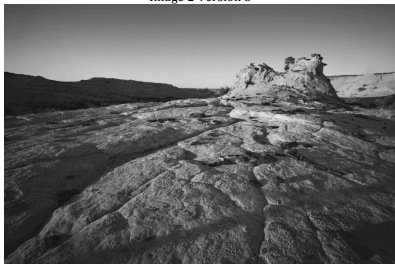
1.159

Image 2 Version 4



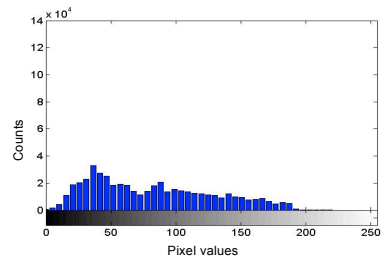
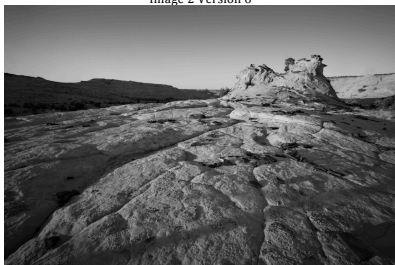
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Image 2 Version 5



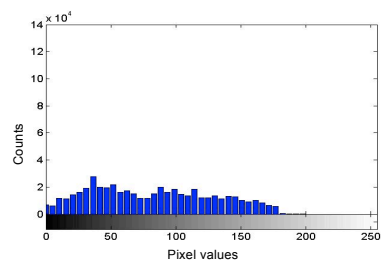
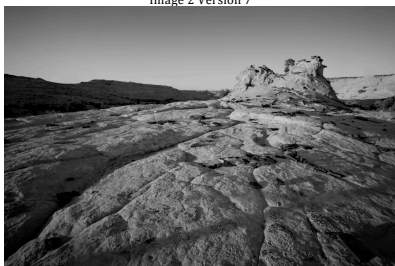
0.727

Image 2 Version 6



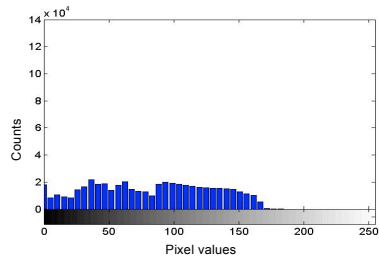
0.480

Image 2 Version 7



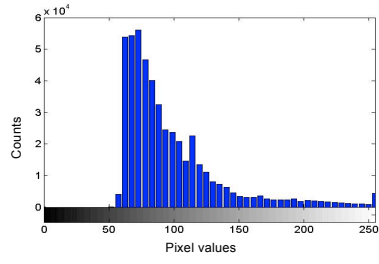
0.223

Image 2 Version 8



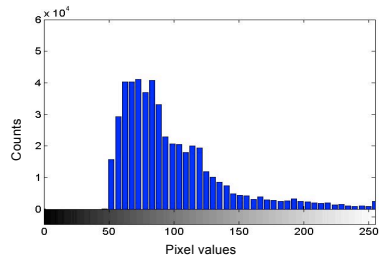
-0.025

Image 3 Version 1



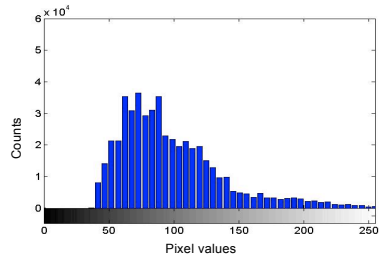
1.922

Image 3 Version 2



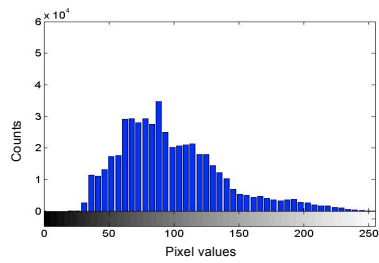
1.617

Image 3 Version 3



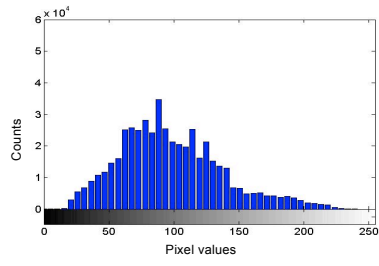
1.250

Image 3 Version 4



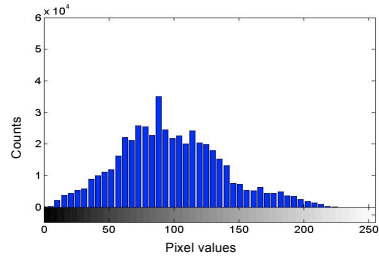
0.917

Image 3 Version 5



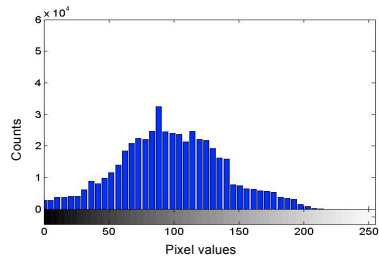
0.611

Image 3 Version 6



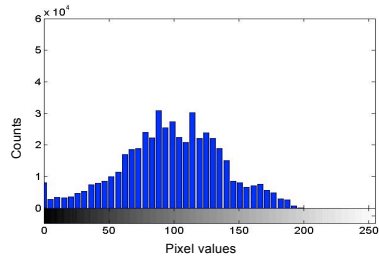
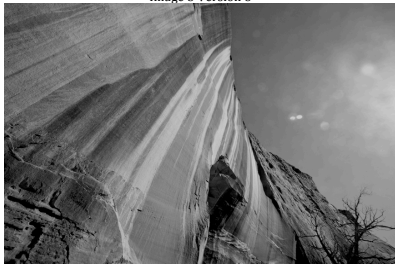
0.365

Image 3 Version 7



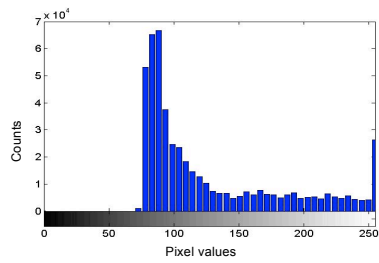
0.068

Image 3 Version 8



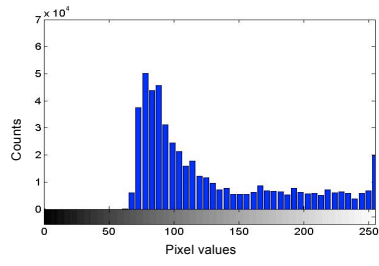
-0.204

Image 4 Version 1



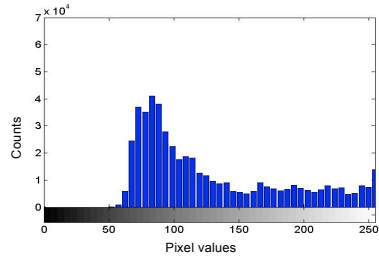
1.126

Image 4 Version 2



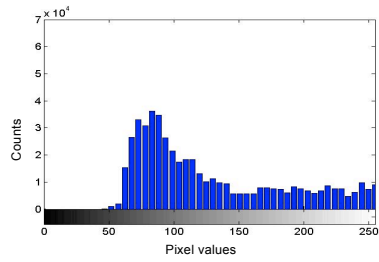
0.993

Image 4 Version 3



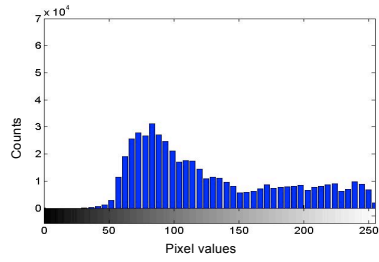
0.897

Image 4 Version 4



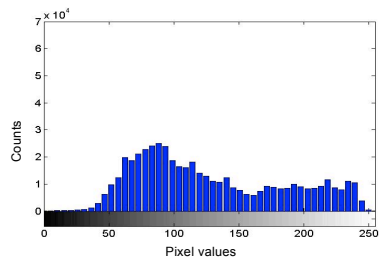
0.825

Image 4 Version 5



0.700

Image 4 Version 6



0.509

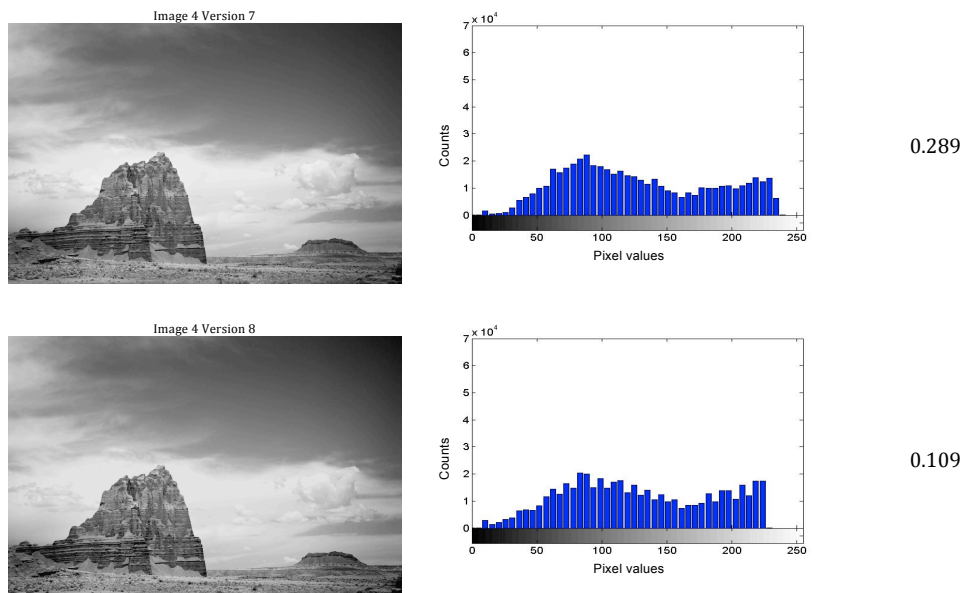


Figure S1. All 32 images used in Experiment 1a with corresponding pixel histograms and skewness.

Supplemental Study 1

We designed this study to investigate the effect of background tone on preference.

Methods

Participants

Five students (4 female, mean age: 22.4, SD: 1.34) of the University of Vienna took part in the experiment in exchange for course credit.

Stimuli

Stimuli were the same as the ones used in Study 1.

Apparatus and procedure

Images were displayed the same way as in the previous study, only the background tone was changed from black to mid-grey.

Results

When presenting the stimuli against a grey background tone, the preference judgments were well negatively correlated with skewness ($r_{xy} = -0.80$, $p < 0.01$, 2-tailed). Moreover, each individual images' result fitted a quadratic fit ($R^2 > 0.57$, see Fig. S1). Data of all images put together fitted a linear regression curve ($R^2 = 0.64$) as well as a quadratic curve ($R^2 = 0.64$).

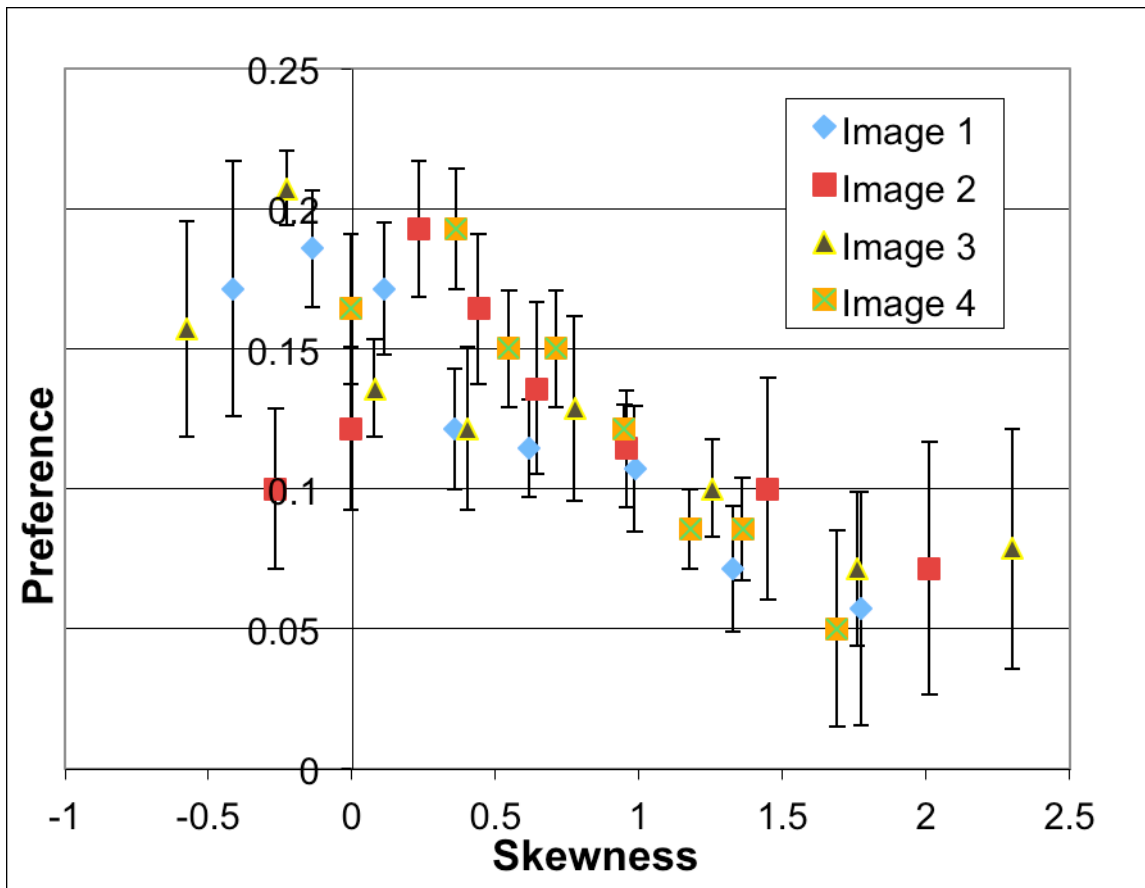


Figure S1. Preference judgements for each individual image plotted against skewness. Black lines are quadratic regression fits for each image.

The results suggest that the background tone, against which the stimuli are presented, has little or no influence on the relationship between preference and skewness.