Beauty, the feeling

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Supplementary Material

Data availability

All data, including the full descriptions of remembered beauty our participants provided, and main analyses files for this article are accessible on GitHub: https://github.com/aenneb/characterizing_beauty.

Generation of questions

All questions that were part of the studies reported here were based on discussions of all three authors, one of which is a distinguished philosophy scholar with particular expertise on Kant's and Hegel's aesthetics (Nuzzo, 2005; 2006). Accordingly, we generated questions based on the following rationale: "What would [Kant / Hegel] ask a person to find out whether she had a genuine beauty experience?". Special additional consideration was given to the positions of Aristotle (Haliwell, 1989), Plato (Denham, 2012), and Hume (Taylor, 2008).

Verbatim instructions and questions

General beliefs about beauty questions. The following questions were shown to participants in all experiments at the end of their respective different surveys.

1. How closely related are the feelings of beauty and pleasure?

   Not at all (1) to Very closely (7)

2. Which is greater, the beauty of art or nature?

   Art (1) to Nature (7)

3. The beauty of an image is…

   Entirely in the image (1) to Entirely in the story the image tells you (7)

4. Are shared experiences of beauty a form of communication?

   Not at all (1) to Very much (7)

5. How much does mood affect the feeling of beauty?

   Not at all (1) to Very much (7)

6. Can you name an object that everyone finds beautiful?

   Yes or No

7. [If yes for 6.] Please name the object(s) that everyone finds beautiful.

Experiment 1. The instructions read as follows: "Thank you for participating in our study. In the following, you will answer a series of questions about some images. We will always show you one question and one image at a time.

You will answer all questions on a scale from "not at all" to "very much". You can use either of these extremes or any point in between to indicate a less extreme opinion.

In answering the question, please refer to what you feel and think as you look at the image. We are interested in your personal opinion. There are no right or wrong answers."

Afterwards, participants answered each of the following questions for each image, in random order:

1. How much beauty do you feel from looking at this image right now?

2. How much pleasure do you feel from looking at this image right now?

3. Does this image surprise you?

4. Does this image make you want to look at it?

5. As you look at this image, do you feel content, purely contemplative, free of desire?

6. As you look at this image, how alive, excited, do you feel?

7. As you look at this image, do you want to understand it more?

8. As you look at this image, is your mind wandering freely?

9. In how many ways do you feel connected to this image?

10. Does this image tell you a story?

11. Is this image beautiful to everyone?

12. As you look at this image, do you feel longing, unfulfilled desire?

All ratings were given on a (1) Not at all to (7) Very much scale, except for the questions about the number of connections which was answered on a (1) None to (7) scale.

Experiments 2 -4. The instructions read as follows: "Please think back to an experience during which you felt intense [Experiment 2-3: beauty; Experiment 4: relief]. Picture the experience. Remember as many details as you can: what you saw, heard, smelled, and felt.

Let the memory linger for a minute.

When you are ready, continue to the next page (you will be able to do so after one minute has elapsed)."

Afterwards, participants answered each of the following questions in random order:

1. How much beauty did you feel during the experience?

2. How much pleasure did you feel during the experience?

3. Did the experience surprise you?

4. Did the experience make you want to experience it for a longer time?

5. As you had the experience, did you feel content, purely contemplative, free of desire?

6. As you had the experience, how alive, excited, did you feel?

7. As you had the experience, did you want to understand it more?

8. As you had the experience, did your mind wander freely?

9. In how many ways did you feel connected to the experience?

10. Did the experience tell you a story?

11. Is the experience [beautiful / a relief] to everyone?

12. As you had the experience, did you feel longing, unfulfilled desire?

13. Did you feel calm and peaceful during the experience?

14. How perfect was this experience?

All ratings were given on a (1) Not at all / none to (7) Very much / many scale.

Separate linear mixed-effect models for Experiment 1a

Of all linear mixed-effects models tested (see **Supplementary Tables S1-13**), one that incorporated random effects of participant and image, as well as the interaction between image category and the eleven non-beauty ratings, explained the highest proportion of rating variance, $R^2 = 0.77$. The model effects are listed in **Supplementary Table S1**. The model that performed best according to Bayes Factor was one that incorporated the interaction with gender instead of image category, $R^2 = 0.76$, relative performance 82.60% compared to 78.66% for the image category model. The gender model effects are listed in **Supplementary Table S2**. Notably, all

main effects of the other ratings were the same for both models, with the only exception of longing, reaching significance only in the stimulus category model.

Thus, in general, beauty increased with increasing ratings of pleasure, Wish to continue, feeling alive, a feeling that the image is beautiful to everyone, and feeling free of desire. This is equivalent to the findings reported across Experiments 1a and 1b in the main manuscript.

Table S1. The linear-mixed effects model for Experiment 1a, including stimulus category as an additional factor.

Random effects

	Variance	SD			
Participant	0.04	0.21			
Image	0.004	0.07			

Fixed effects

	Estimate	SE	df	t	p
Intercept	0.22	0.15	552	1.41	0.159
Beautiful stock-image (BS)	**0.76**	**0.24**	**852**	**3.17**	**0.002**
Neutral stock-image (NS)	-0.32	0.20	254	-1.64	0.101
Pleasure	**0.25**	**0.03**	**1743**	**7.28**	**<0.001**
Wish to continue	**0.19**	**0.03**	**1741**	**5.74**	**<0.001**
Feeling alive	**0.16**	**0.03**	**1596**	**4.67**	**<0.001**
Universality	**0.12**	**0.03**	**1366**	**3.63**	**<0.001**
Number of felt connections	**0.08**	**0.03**	**1703**	**2.61**	**0.009**
Longing	**0.07**	**0.03**	**1701**	**2.55**	**0.011**
Feeling free of desire	**0.06**	**0.03**	**1725**	**2.06**	**0.040**
Mind-wandering	0.05	0.03	1724	1.56	0.120
Surprise	-0.04	0.02	1442	-1.59	0.113
Wanting to understand more	0.04	0.03	1733	1.19	0.236
Telling a story	0.03	0.03	1318	1.11	0.268
BS × pleasure	-0.01	0.05	1721	-0.25	0.805
NS × pleasure	0.03	0.06	1731	0.49	0.623
BS × Wish to continue	**0.12**	**0.05**	**1743**	**2.34**	**0.019**
NS × Wish to continue	-0.08	0.06	1714	-1.46	0.144
BS × feeling alive	-0.07	0.05	1716	-1.51	0.132
NS × feeling alive	-0.01	0.06	1731	-0.18	0.860
BS × Universality	0.06	0.05	1641	1.13	0.260
NS × Universality	0.06	0.05	1628	1.15	0.249
BS × number of felt connections	-0.06	0.04	1746	-1.45	0.146
NS × number of felt connections	**0.12**	**0.05**	**1738**	**2.28**	**0.022**
BS × longing	-0.05	0.04	1737	-1.24	0.215
NS × longing	-0.06	0.05	1709	-1.40	0.163
BS × feeling free of desire	-0.05	0.04	1733	-1.32	0.186
NS × feeling free of desire	0.01	0.05	1736	0.15	0.880
BS × mind-wandering	-0.04	0.05	1720	-0.98	0.330
NS × mind-wandering	0.00	0.04	1729	-0.05	0.960
BS × surprise	-0.02	0.03	1641	-0.50	0.620
NS × surprise	0.04	0.04	1618	0.97	0.334
BS × wanting to understand more	0.01	0.04	1742	0.13	0.897
NS × wanting to understand more	-0.06	0.05	1707	-1.15	0.250
BS × telling a story	-0.02	0.04	1549	-0.56	0.576
NS × telling a story	0.00	0.04	303	0.02	0.984

Notes. The reference level for image category was the beautiful art image category. Significant fixed effects and interactions are highlighted in bold. The model explained 76.5 % of the variance.

Table S2. The linear-mixed effects model for Experiment 1a, including gender as additional factor.

Random effects

	Variance	SD			
Participant	0.04	0.19			
Image	0.02	0.13			

Fixed effects

	Estimate	SE	df	t	p
Intercept	**0.37**	**0.11**	**191**	**3.32**	**0.001**
Gender	-0.17	0.18	568	-0.94	0.347
Pleasure	**0.21**	**0.03**	**1711**	**7.80**	**<0.001**
Wish to continue	**0.21**	**0.03**	**1613**	**8.12**	**<0.001**
Feeling alive	**0.18**	**0.03**	**1716**	**6.63**	**<0.001**
Universality	**0.18**	**0.03**	**1308**	**6.93**	**<0.001**
Number of felt connections	**0.09**	**0.02**	**1444**	**4.05**	**<0.001**
Longing	0.04	0.02	1320	1.86	0.064
Feeling free of desire	**0.06**	**0.02**	**1424**	**2.48**	**0.013**
Mind-wandering	0.02	0.02	1693	0.92	0.357
Surprise	-0.02	0.02	885	-1.08	0.281
Wanting to understand more	0.00	0.02	1584	0.18	0.855
Telling a story	-0.01	0.02	1031	-0.53	0.596
Gender × pleasure	**0.11**	**0.05**	**1702**	**2.22**	**0.027**
Gender × Wish to continue	**0.09**	**0.05**	**1641**	**2.02**	**0.044**
Gender × Feeling alive	**-0.13**	**0.05**	**1695**	**-2.85**	**0.004**
Gender × Universality	0.00	0.05	1410	0.01	0.992
Gender × Number of felt connections	-0.04	0.04	1460	-1.06	0.291
Gender × Longing	-0.03	0.04	1256	-0.81	0.420
Gender × Feeling free of desire	-0.04	0.04	1374	-0.99	0.325
Gender × Mind-wandering	0.06	0.04	1451	1.37	0.173
Gender × Surprise	-0.03	0.03	1133	-0.87	0.386
Gender × Wanting to understand more	0.06	0.04	1643	1.58	0.115
Gender × Telling a story	-0.01	0.03	1602	-0.24	0.810

Notes. The reference level for gender was male. Significant fixed effects and interactions are highlighted in bold. The model explained 75.6 % of the variance.

Table S3. The linear-mixed effects model for Experiment 1a, without interactions.

Random effects					
	Variance	*SD*			
Participant	0.05	0.21			
Image	0.02	0.14			
Fixed effects					
	Estimate	*SE*	*df*	*t*	*p*
Intercept	**0.34**	**0.10**	**134.9**	**3.3**	**0.001**
Beautiful stock-image (BS)	**0.26**	**0.02**	**1757.0**	**11.3**	**<0.001**
Neutral stock-image (NS)	**-0.03**	**0.02**	**1067.0**	**-2.1**	**0.036**
Pleasure	**0.24**	**0.02**	**1633.0**	**10.9**	**<0.001**
Wish to continue	**0.13**	**0.02**	**1758.0**	**5.8**	**<0.001**
Feeling alive	**0.04**	**0.02**	**1666.0**	**1.9**	**0.063**
Universality	**0.34**	**0.10**	**134.9**	**3.3**	**0.001**
Number of felt connections	**0.18**	**0.02**	**1323.0**	**8.1**	**<0.001**
Longing	**0.26**	**0.02**	**1757.0**	**11.3**	**<0.001**
Feeling free of desire	0.02	0.02	1599.0	1.2	0.233
Mind-wandering	-0.01	0.02	861.6	-0.5	0.645
Surprise	**0.04**	**0.02**	**1496.0**	**2.4**	**0.016**
Wanting to understand more	**0.08**	**0.02**	**1526.0**	**3.9**	**<0.001**
Telling a story	0.03	0.02	1377.0	1.8	0.068

Notes. The reference level for image category was the beautiful art image category. Significant fixed effects and interactions are highlighted in bold. The model explained 74.8 % of the variance.

Table S4. The linear-mixed effects model for Experiment 1a, including art education as additional factor.

Random effects					
	Variance	*SD*			
Participant	0.05	0.22			
Image	0.02	0.14			
Fixed effects					
	Estimate	*SE*	*df*	*t*	*p*
Intercept	**0.30**	**0.11**	**163**	**2.78**	**0.006**
Art education	-0.03	0.25	405	-0.13	0.901
Pleasure	**0.26**	**0.02**	**1746**	**10.61**	**<0.001**
Wish to continue	**0.23**	**0.02**	**1629**	**10.24**	**<0.001**
Feeling alive	**0.13**	**0.02**	**1742**	**5.76**	**<0.001**
Universality	**0.20**	**0.02**	**1343**	**8.27**	**<0.001**
Number of felt connections	**0.07**	**0.02**	**1496**	**3.22**	**0.001**
Longing	0.03	0.02	1354	1.54	0.124
Feeling free of desire	**0.05**	**0.02**	**1491**	**2.35**	**0.019**
Mind-wandering	0.03	0.02	1648	1.51	0.132
Surprise	-0.02	0.02	1094	-1.40	0.162
Wanting to understand more	0.02	0.02	1580	1.04	0.297
Telling a story	-0.01	0.02	912	-0.39	0.695
Art education × pleasure	-0.03	0.07	1752	-0.42	0.674
Art education × Wish to continue	0.00	0.08	1693	0.03	0.977
Art education × Feeling alive	-0.05	0.07	1741	-0.79	0.428
Art education × Universality	**-0.17**	**0.07**	**1685**	**-2.37**	**0.018**
Art education × Number of felt connections	**0.14**	**0.07**	**1746**	**2.20**	**0.028**
Art education × Longing	0.05	0.06	1636	0.90	0.368
Art education × Feeling free of desire	0.01	0.07	1687	0.11	0.915
Art education × Mind-wandering	0.05	0.06	1703	0.88	0.381
Art education × Surprise	-0.05	0.05	1286	-1.17	0.243
Art education × Wanting to understand more	0.00	0.06	1743	0.03	0.978
Art education × Telling a story	0.03	0.05	1744	0.64	0.525

Notes. The reference level for art education was no education. Significant fixed effects and interactions are highlighted in bold. The model explained 75.0 % of the variance.

Table S5. The linear-mixed effects model for Experiment 1a, including philosophy education as additional factor.

Random effects					
	Variance	*SD*			
Participant	0.05	0.21			
Image	0.02	0.13			
Fixed effects					
	Estimate	*SE*	*df*	*t*	*p*
Intercept	**0.30**	**0.11**	**157**	**2.81**	**0.006**
Philosophy education	-0.17	0.29	421	-0.60	0.547
Pleasure	**0.26**	**0.02**	**1739**	**10.84**	**<0.001**
Wish to continue	**0.23**	**0.02**	**1629**	**10.45**	**<0.001**
Feeling alive	**0.13**	**0.02**	**1742**	**5.71**	**0.000**
Universality	**0.19**	**0.02**	**1285**	**8.27**	**<0.001**
Number of felt connections	**0.07**	**0.02**	**1486**	**3.45**	**0.001**
Longing	0.03	0.02	1332	1.76	0.078
Feeling free of desire	**0.05**	**0.02**	**1468**	**2.41**	**0.016**
Mind-wandering	0.03	0.02	1651	1.53	0.125
Surprise	-0.02	0.02	1098	-1.23	0.219
Wanting to understand more	0.02	0.02	1564	1.09	0.274
Telling a story	-0.01	0.02	821	-0.62	0.538
Philosophy education × pleasure	-0.08	0.08	1708	-1.08	0.278
Philosophy education × Wish to continue	-0.08	0.09	1746	-0.98	0.329
Philosophy education × Feeling alive	0.02	0.08	1738	0.23	0.820
Philosophy education × Universality	**-0.17**	**0.08**	**1749**	**-2.06**	**0.039**
Philosophy education × Number of felt connections	**0.17**	**0.08**	**1743**	**2.20**	**0.028**
Philosophy education × Longing	0.03	0.06	1674	0.46	0.643
Philosophy education × Feeling free of desire	0.03	0.07	1749	0.38	0.707
Philosophy education × Mind-wandering	0.05	0.07	1691	0.76	0.449
Philosophy education × Surprise	-0.07	0.05	1356	-1.35	0.179
Philosophy education × Wanting to understand more	-0.01	0.07	1725	-0.11	0.915
Philosophy education × Telling a story	0.11	0.06	1729	1.82	0.069

Notes. The reference level for philosophy education was no education. Significant fixed effects and interactions are highlighted in bold. The model explained 75.1 % of the variance.

Table S6. The linear-mixed effects model for Experiment 1a, including age as additional predictor.

Random effects					
	Variance	*SD*			
Participant	0.04	0.20			
Image	0.02	0.15			

Fixed effects					
	Estimate	*SE*	*df*	*t*	*p*
Intercept	-0.33	0.33	397	-1.00	0.319
Age	**0.02**	**0.01**	**369**	**2.11**	**0.036**
Pleasure	**0.42**	**0.09**	**1744**	**4.75**	**0.000**
Wish to continue	**0.32**	**0.09**	**1745**	**3.74**	**0.000**
Feeling alive	0.06	0.08	1734	0.75	0.453
Universality	0.01	0.09	1609	0.11	0.916
Number of felt connections	-0.02	0.07	1438	-0.29	0.772
Longing	**0.16**	**0.07**	**1377**	**2.34**	**0.019**
Feeling free of desire	0.04	0.07	1385	0.65	0.516
Mind-wandering	**0.21**	**0.07**	**1685**	**2.93**	**0.003**
Surprise	**-0.12**	**0.06**	**1007**	**-2.08**	**0.038**
Wanting to understand more	**0.15**	**0.07**	**1602**	**2.23**	**0.026**
Telling a story	**-0.19**	**0.06**	**1735**	**-3.18**	**0.002**
Age × pleasure	**0.00**	**0.00**	**1747**	**-1.89**	**0.059**
Age × Wish to continue	0.00	0.00	1742	-0.98	0.330
Age × Feeling alive	0.00	0.00	1745	0.76	0.450
Age × Universality	**0.00**	**0.00**	**1654**	**1.98**	**0.048**
Age × Number of felt connections	0.00	0.00	1495	1.39	0.165
Age × Longing	0.00	0.00	1413	-1.95	0.051
Age × Feeling free of desire	0.00	0.00	1376	-0.07	0.941
Age × Mind-wandering	**0.00**	**0.00**	**1684**	**-2.48**	**0.013**
Age × Surprise	0.00	0.00	1056	1.58	0.115
Age × Wanting to understand more	0.00	0.00	1599	-1.88	0.060
Age × Telling a story	**0.01**	**0.00**	**1740**	**3.25**	**0.001**

Notes. Significant fixed effects and interactions are highlighted in bold. The model explained 75.2 % of the variance.

Table S7. The linear-mixed effects model for Experiment 1a, 1a including political orientation as additional predictor.

Random effects	Variance	SD			
Participant	0.04	0.20			
Image	0.02	0.13			
Fixed effects					
	Estimate	SE	df	t	p
Intercept	0.30	0.17	393	1.82	0.069
Conservativism	0.01	0.04	521	0.28	0.780
Pleasure	**0.20**	**0.05**	**1688**	**4.39**	**<0.001**
Wish to continue	**0.36**	**0.04**	**1620**	**8.97**	**<0.001**
Feeling alive	0.04	0.04	1738	0.99	0.322
Universality	**0.20**	**0.04**	**1443**	**4.57**	**<0.001**
Number of felt connections	**0.10**	**0.04**	**1527**	**2.56**	**0.011**
Longing	**0.08**	**0.03**	**1493**	**2.24**	**0.025**
Feeling free of desire	0.01	0.04	1463	0.16	0.873
Mind-wandering	**0.09**	**0.04**	**1666**	**2.31**	**0.021**
Surprise	**-0.09**	**0.03**	**1383**	**-2.73**	**0.006**
Wanting to understand more	0.00	0.03	1742	-0.11	0.915
Telling a story	0.00	0.03	1474	-0.08	0.940
Conservativism × pleasure	0.02	0.01	1697	1.42	0.155
Conservativism × Wish to continue	**-0.04**	**0.01**	**1634**	**-3.80**	**<0.001**
Conservativism × Feeling alive	**0.03**	**0.01**	**1748**	**2.17**	**0.030**
Conservativism × Universality	-0.01	0.01	1584	-0.52	0.605
Conservativism × Number of felt connections	0.00	0.01	1553	-0.42	0.674
Conservativism × Longing	-0.01	0.01	1537	-1.62	0.107
Conservativism × Feeling free of desire	0.01	0.01	1532	1.09	0.277
Conservativism × Mind-wandering	-0.02	0.01	1638	-1.69	0.092
Conservativism × Surprise	**0.02**	**0.01**	**1404**	**2.14**	**0.033**
Conservativism × Wanting to understand more	0.01	0.01	1749	1.20	0.232
Conservativism × Telling a story	0.00	0.01	1655	-0.31	0.759

Notes. The reference level for image category was the beautiful art image category. Political orientation was measured on a strong liberal (1) to strong conservative (7) scale. Significant fixed effects and interactions are highlighted in bold. The model explained 75.2 % of the variance.

Table S8. The linear-mixed effects model for Experiment 1a, including the general beauty attitude question "How closely related are the feelings of beauty and pleasure?" as additional predictor.

Random effects

	Variance	SD
Participant	0.05	0.22
Image	0.02	0.14

Fixed effects

	Estimate	SE	df	t	p
Intercept	-0.08	0.36	388	-0.22	0.823
Closeness beauty pleasure (CBP)	0.07	0.06	399	1.14	0.256
Pleasure	**0.46**	**0.10**	**1722**	**4.38**	**<0.001**
Wish to continue	**0.38**	**0.08**	**1633**	**4.53**	**<0.001**
Feeling alive	0.08	0.10	1728	0.82	0.413
Universality	0.11	0.09	1497	1.14	0.253
Number of felt connections	-0.04	0.08	1145	-0.55	0.585
Longing	-0.02	0.08	1425	-0.21	0.836
Feeling free of desire	0.06	0.08	1673	0.66	0.508
Mind-wandering	0.01	0.09	1657	0.13	0.897
Surprise	0.08	0.08	1268	0.98	0.326
Wanting to understand more	-0.05	0.08	1737	-0.63	0.530
Telling a story	0.02	0.07	1244	0.24	0.810
CBP × pleasure	**-0.04**	**0.02**	**1730**	**-2.01**	**0.045**
CBP × Wish to continue	-0.03	0.02	1619	-1.82	0.070
CBP × Feeling alive	0.01	0.02	1729	0.48	0.628
CBP × Universality	0.01	0.02	1454	0.82	0.412
CBP × Number of felt connections	0.02	0.01	1270	1.59	0.111
CBP × Longing	0.01	0.01	1493	0.67	0.501
CBP × Feeling free of desire	0.00	0.02	1652	-0.14	0.890
CBP × Mind-wandering	0.00	0.02	1664	0.27	0.787
CBP × Surprise	-0.02	0.01	1307	-1.37	0.172
CBP × Wanting to understand more	0.01	0.01	1745	0.91	0.361
CBP × Telling a story	0.00	0.01	1349	-0.30	0.765

Notes. Significant fixed effects and interactions are highlighted in bold. The model explained 75.0 % of the variance.

Table S9. The linear-mixed effects model for Experiment 1a, including the general beauty attitude question "Which is greater, the beauty of art or nature?" as additional predictor.

Random effects					
	Variance	SD			
Participant	0.04	0.21			
Image	0.02	0.14			
Fixed effects					
	Estimate	SE	df	t	p
Intercept	0.58	0.33	424	1.73	0.084
Art or nature	-0.04	0.06	418	-0.76	0.449
Pleasure	0.09	0.09	1744	0.98	0.325
Wish to continue	**0.19**	**0.08**	**1713**	**2.31**	**0.021**
Feeling alive	0.16	0.08	1749	1.95	0.051
Universality	0.10	0.08	1704	1.21	0.228
Number of felt connections	**0.23**	**0.08**	**1489**	**2.90**	**0.004**
Longing	0.08	0.07	1426	1.21	0.226
Feeling free of desire	0.05	0.08	1541	0.69	0.493
Mind-wandering	0.09	0.08	1625	1.11	0.270
Surprise	0.00	0.06	1196	-0.08	0.940
Wanting to understand more	-0.03	0.07	1635	-0.45	0.653
Telling a story	-0.01	0.06	1538	-0.19	0.846
Art or nature × pleasure	**0.03**	**0.02**	**1742**	**2.05**	**0.041**
Art or nature × Wish to continue	0.01	0.01	1713	0.58	0.560
Art or nature × Feeling alive	-0.01	0.01	1741	-0.44	0.662
Art or nature × Universality	0.02	0.01	1707	1.00	0.317
Art or nature × Number of felt connections	**-0.03**	**0.01**	**1473**	**-1.98**	**0.048**
Art or nature × Longing	-0.01	0.01	1427	-0.79	0.429
Art or nature × Feeling free of desire	0.00	0.01	1535	-0.11	0.916
Art or nature × Mind-wandering	-0.01	0.01	1638	-0.68	0.500
Art or nature × Surprise	0.00	0.01	1247	-0.44	0.658
Art or nature × Wanting to understand more	**0.01**	**0.01**	**1671**	**0.78**	**0.438**
Art or nature × Telling a story	0.00	0.01	1562	0.08	0.934

Notes. The reference level for image category was the beautiful art image category. Significant fixed effects and interactions are highlighted in bold. The model explained 74.9 % of the variance.

Table S10. The linear-mixed effects model for Experiment 1a, including the general beauty attitude question "The beauty of an image is…" entirely in the image (1) to entirely in the story (7) as additional predictor.

Random effects

	Variance	SD			
Participant	0.05	0.21			
Image	0.02	0.14			

Fixed effects

	Estimate	SE	df	t	p
Intercept	**0.69**	**0.28**	**481**	**2.42**	**0.016**
Image vs story	-0.09	0.07	481	-1.33	0.186
Pleasure	**0.30**	**0.08**	**1748**	**3.97**	**<0.001**
Wish to continue	**0.32**	**0.07**	**1748**	**4.66**	**<0.001**
Feeling alive	0.11	0.08	1742	1.44	0.150
Universality	0.11	0.07	1619	1.56	0.119
Number of felt connections	0.04	0.07	1470	0.66	0.508
Longing	0.01	0.06	1347	0.23	0.820
Feeling free of desire	0.03	0.07	1692	0.49	0.627
Mind-wandering	0.04	0.07	1634	0.56	0.576
Surprise	-0.04	0.06	1595	-0.69	0.488
Wanting to understand more	0.09	0.07	1747	1.38	0.168
Telling a story	**-0.12**	**0.06**	**1515**	**-1.97**	**0.049**
Image vs story × pleasure	-0.01	0.02	1740	-0.65	0.518
Image vs story × Wish to continue	-0.02	0.02	1752	-1.40	0.162
Image vs story × Feeling alive	0.01	0.02	1734	0.34	0.737
Image vs story × Universality	0.02	0.02	1713	0.98	0.327
Image vs story × Number of felt connections	0.01	0.02	1553	0.58	0.562
Image vs story × Longing	0.00	0.02	1399	0.33	0.740
Image vs story × Feeling free of desire	0.00	0.02	1657	0.12	0.901
Image vs story × Mind-wandering	0.00	0.02	1665	-0.12	0.903
Image vs story × Surprise	0.00	0.01	1636	0.19	0.853
Image vs story × Telling a story	0.03	0.01	1557	1.95	0.052

Notes. Significant fixed effects and interactions are highlighted in bold. The model explained 74.9 % of the variance.

Table S11. The linear-mixed effects model for Experiment 1a, including the general beauty attitude question "Are shared experiences of beauty a form of communication?" as additional predictor.

Random effects

	Variance	SD			
Participant	0.04	0.21			
Image	0.02	0.14			

Fixed effects

	Estimate	SE	df	t	p
Intercept	0.27	0.31	347	0.90	0.371
Communication	0.02	0.05	358	0.29	0.774
Pleasure	**0.27**	**0.09**	**1745**	**2.86**	**0.004**
Wish to continue	**0.31**	**0.07**	**1588**	**4.18**	**<0.001**
Feeling alive	0.03	0.09	1735	0.32	0.749
Universality	0.09	0.09	1692	1.08	0.281
Number of felt connections	**0.16**	**0.08**	**1130**	**2.10**	**0.036**
Longing	0.13	0.07	1527	1.78	0.076
Feeling free of desire	**0.17**	**0.08**	**1700**	**2.09**	**0.036**
Mind-wandering	-0.04	0.08	1649	-0.55	0.585
Surprise	-0.02	0.07	1072	-0.26	0.798
Wanting to understand more	-0.04	0.07	1683	-0.61	0.545
Telling a story	-0.08	0.06	1369	-1.27	0.206
Communication × pleasure	0.00	0.02	1747	-0.08	0.939
Communication × Wish to continue	-0.01	0.01	1609	-1.06	0.288
Communication × Feeling alive	0.02	0.02	1737	1.15	0.249
Communication × Universality	0.02	0.02	1677	1.01	0.314
Communication × Number of felt connections	-0.02	0.01	1172	-1.13	0.258
Communication × Longing	-0.02	0.01	1473	-1.41	0.159
Communication × Feeling free of desire	-0.02	0.01	1624	-1.56	0.118
Communication × Mind-wandering	0.01	0.01	1647	0.98	0.326
Communication × Surprise	0.00	0.01	1087	-0.22	0.827
Communication × Wanting to understand more	0.01	0.01	1671	1.02	0.310
Communication × Telling a story	0.01	0.01	1333	1.14	0.257

Notes. The reference level for image category was the beautiful art image category. Significant fixed effects and interactions are highlighted in bold. The model explained 74.9 % of the variance.

Table S12. The linear-mixed effects model for Experiment 1a, including the general beauty attitude question "How much does mood affect the feeling of beauty?" as additional predictor.

Random effects					
	Variance	*SD*			
Participant	0.04	0.21			
Image	0.02	0.14			
Fixed effects					
	Estimate	*SE*	*df*	*t*	*p*
Intercept	0.02	0.40	572	0.05	0.964
Mood	0.05	0.07	555	0.82	0.415
Pleasure	0.04	0.12	1750	0.33	0.740
Wish to continue	0.13	0.11	1675	1.19	0.234
Feeling alive	**0.29**	**0.11**	**1747**	**2.69**	**0.007**
Universality	**0.23**	**0.10**	**1712**	**2.21**	**0.028**
Number of felt connections	0.12	0.09	1418	1.33	0.184
Longing	0.13	0.09	1664	1.45	0.148
Feeling free of desire	0.13	0.10	1606	1.35	0.178
Mind-wandering	-0.01	0.10	1738	-0.15	0.880
Surprise	0.04	0.08	1114	0.48	0.630
Wanting to understand more	0.02	0.09	1666	0.17	0.867
Telling a story	-0.06	0.08	1565	-0.79	0.431
Mood × pleasure	0.04	0.02	1751	1.78	0.075
Mood × Wish to continue	0.02	0.02	1676	0.93	0.353
Mood × Feeling alive	-0.03	0.02	1747	-1.55	0.122
Mood × Universality	-0.01	0.02	1661	-0.39	0.693
Mood × Number of felt connections	-0.01	0.02	1411	-0.55	0.583
Mood × Longing	-0.02	0.01	1646	-1.13	0.260
Mood × Feeling free of desire	-0.01	0.02	1584	-0.88	0.378
Mood × Mind-wandering	0.01	0.02	1737	0.51	0.611
Mood × Surprise	-0.01	0.01	1065	-0.87	0.383
Mood × Wanting to understand more	0.00	0.02	1665	0.09	0.930
Mood × Telling a story	0.01	0.01	1562	0.65	0.517

Notes. The reference level for image category was the beautiful art image category. Significant fixed effects and interactions are highlighted in bold. The model explained 74.8 % of the variance.

Table S13. The linear-mixed effects model for Experiment 1a, including the general beauty attitude question "Can you name an object that everyone finds beautiful?" as additional predictor.

Random effects					
	Variance	*SD*			
Participant	0.04	0.21			
Image	0.02	0.13			
Fixed effects					
	Estimate	*SE*	*df*	*t*	*p*
Intercept	0.17	0.14	293	1.24	0.217
Universally beautiful object (UBO)	0.24	0.17	596	1.40	0.163
Pleasure	**0.23**	**0.03**	**1753**	**6.88**	**<0.001**
Wish to continue	**0.21**	**0.03**	**1710**	**6.26**	**<0.001**
Feeling alive	**0.11**	**0.03**	**1747**	**3.36**	**0.001**
Universality	**0.22**	**0.03**	**1693**	**6.50**	**<0.001**
Number of felt connections	**0.10**	**0.03**	**1566**	**3.40**	**0.001**
Longing	0.04	0.03	1322	1.52	0.130
Feeling free of desire	0.03	0.03	1371	1.25	0.213
Mind-wandering	0.03	0.03	1656	0.92	0.358
Surprise	-0.03	0.02	1094	-1.17	0.243
Wanting to understand more	0.03	0.03	1693	1.16	0.245
Telling a story	0.01	0.03	1518	0.23	0.817
UBO × pleasure	0.05	0.05	1744	1.00	0.315
UBO × Wish to continue	0.04	0.04	1660	0.92	0.358
UBO × Feeling alive	0.03	0.04	1736	0.69	0.491
UBO × Universality	-0.07	0.04	1572	-1.57	0.116
UBO × Number of felt connections	-0.04	0.04	1506	-0.97	0.334
UBO × Longing	-0.02	0.04	1318	-0.53	0.598
UBO × Feeling free of desire	0.02	0.04	1454	0.54	0.592
UBO × Mind-wandering	0.01	0.04	1652	0.17	0.864
UBO × Surprise	-0.01	0.03	1138	-0.18	0.854
UBO × Wanting to understand more	-0.02	0.04	1694	-0.55	0.586
UBO × Telling a story	-0.02	0.03	1643	-0.56	0.574

Notes. The reference level for universal beauty was "yes". Significant fixed effects and interactions are highlighted in bold. The model explained 74.8 % of the variance.

Additional analyses for Experiment 1a

Since Menninghaus and colleagues (2019a) also employed an unpleasant-pleasant scale in their study asking people about their conception of beauty with the same 1-7 range we used, and their data is openly accessible, we compared the ratings given by our and their participants to increase the generalizability of our results. From our data, we used trials of stimuli with a beauty rating of 6 or 7. Pleasure ratings for the concept beauty in Menninghaus and colleagues' study and our data for beautiful images were no different, $p = 0.325$, $MD = 0.14$, 95% CI [-0.14, 0.43]. This underlines the stable association between high pleasure and beauty.

Apart from these general patterns, we also examined whether distinct groups of participants exhibited different correlational patterns between beauty and the other ratings. To do so, we performed k-means cluster analyses on the correlation coefficients for each other rating with beauty ratings per participant. We evaluated cluster sizes ranging from one to ten based on the total sum of distances. A clear break in the reduction of the total sum of distances (from ≥ 17.7 to ≤ 6.2) happened at three clusters. Thus, there were three distinct groups of participants with different correlation patterns; their patterns are illustrated in **Figure S1**.
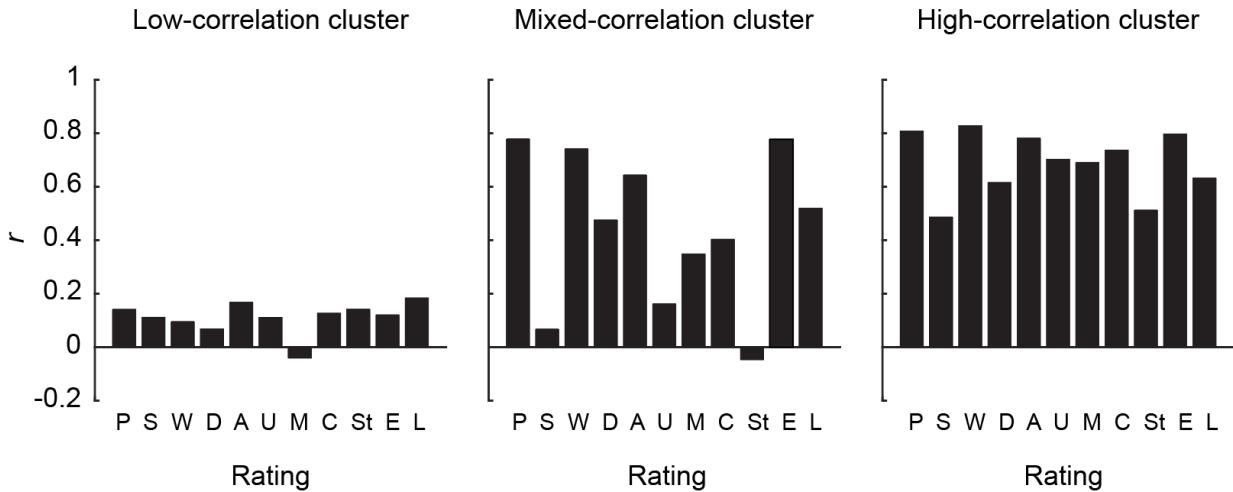
Figure S1. Pattern of correlation coefficients for each participant cluster as determined by k-means cluster analyses. P = pleasure, S = surprise, W = wanting to look longer, D = feeling free of desire, A = feeling alive, U = wanting to understand more, M = mind-wandering, C = number of felt connections, St = telling a story, E = beautiful to everyone, L = longing.

The first cluster ($N = 14$) exhibited consistently low correlations between beauty and all other ratings. The second cluster ($N = 34$) showed a mixed pattern of correlations similar to the overall observed relation between beauty and other ratings using linear mixed-effects modeling. In the third cluster ($N = 46$), all correlations were moderately or highly positive.

To gain a better understanding of these different participant clusters, we tested on which demographic and general beauty belief questions the clusters differed. Gender did not differ, all $p \geq 0.239$, nor did the proportion of Caucasian individuals, all $p \geq 0.059$, nor age, all $p \geq 0.889$, nor political orientation, all $p \geq 0.085$, nor income, all $p \geq 0.218$, nor general education, all $p \geq 0.409$, nor art education, all $p \geq 0.093$, nor philosophy education, all $p \geq 0.093$. However, the proportion of participants in the mixed-correlation cluster that stated that there was a universally beautiful object was lower (27%) than in the high-correlation cluster (56%), Chi(1) = 5.62, $p = 0.018$. The mixed-correlation cluster also stated that beauty and pleasure were less closely related, $M = 5.00$ on a 1-7 scale, than both other clusters, both $p \leq 0.026$.

Clusters did not differ in their response to whether art or nature is more beautiful, all $p \geq 0.086$, how much a story matters for beauty, all $p \geq 0.187$, whether beauty is a form of communication, all $p \geq 0.079$, and how much mood affects beauty, all $p \geq 0.551$.

Separate linear models for Experiment 1b

Of all linear mixed-effects models tested (see **Supplemental Tables S14-X**), one that incorporated random effects of participant and stimulus, as well as the interaction between stimulus category and the eleven non-beauty ratings, predicted beauty ratings best, $R^2 = 0.73$, performance 81.64%, all remaining performances $\leq 80.88\%$. The model effects for this best model are listed in **Supplemental Table S14**. Beauty ratings were, on average, 1.23 points lower for songs than for images. Beauty generally increased with increasing ratings of pleasure, Wish to continue, a feeling that the image is beautiful to everyone, feeling free of desire, and mind-wandering. The increase of beauty with increasing mind-wandering was the only effect observed in Experiment 1b but not Experiment 1a. In addition, we saw a greater increase in beauty with an increasing wish to continue the experience for images. In contrast, beauty increased more with increasing ratings of that stimulus being beautiful for everyone for songs compared to images. Ratings of longing and of the extent to which the stimulus tells a story are related positively with beauty ratings for songs only, not for images.

Table S14. The mixed-effects model that best predicts rated beauty in Experiment 1b.

Random effects

	Variance	SD
Participant	0.10	0.31
Stimulus	0.02	0.14

Fixed effects

	Estimate	SE	df	t	p
(Intercept)	**0.93**	**0.28**	**385.0**	**3.32**	**0.001**
Song	**-1.23**	**0.34**	**266.2**	**-3.63**	**<0.001**
Pleasure*	**0.21**	**0.05**	**822.1**	**4.40**	**<0.001**
Wish to continue*	**0.26**	**0.05**	**848.2**	**5.49**	**<0.001**
Feeling alive	0.07	0.05	854.6	1.55	0.121
Universality*	**0.13**	**0.05**	**799.6**	**2.78**	**0.006**
Number of felt connections	0.03	0.04	822.5	0.59	0.557
Longing	-0.03	0.04	808.8	-0.88	0.377
Feeling free of desire*	**0.14**	**0.04**	**803.5**	**3.50**	**<0.001**
Mind-wandering	**0.10**	**0.04**	**788.2**	**2.37**	**0.018**
Surprise	0.00	0.03	800.3	0.04	0.969
Wanting to understand more	0.03	0.04	821.7	0.70	0.483
Telling a story	-0.07	0.04	799.8	-1.79	0.075
Song × pleasure	-0.05	0.05	852.1	-1.00	0.320
Song × Wish to continue	**0.20**	**0.06**	**834.3**	**3.30**	**0.001**
Song × feeling alive	-0.12	0.06	845.3	-1.89	0.060
Song × Universality	**-0.19**	**0.06**	**855.6**	**-3.01**	**0.003**
Song × number of felt connections	0.05	0.06	857.6	0.98	0.329
Song × longing	-0.08	0.05	835.4	-1.40	0.163
Song × feeling free of desire	0.06	0.05	850.1	1.31	0.192
Song × mind-wandering	-0.07	0.06	790.6	-1.23	0.219
Song × surprise	0.05	0.06	848.1	0.78	0.436

Song × wanting to understand more	**0.17**	**0.05**	**838.5**	**3.28**	**0.001**
Song × telling a story	**0.15**	**0.05**	**692.6**	**2.89**	**0.004**

Notes. The reference level for stimulus category was image. Significant fixed effects and interactions are highlighted in bold. The model explained 73 % of the variance. *Main effect is present in Experiment 1a and 1b.

Table S15. The linear-mixed effects model for Experiment 1b, including gender as additional factor.

Random effects					
	Variance	*SD*			
Participant	0.1	0.32			
Image	0.2	0.47			

Fixed effects					
	Estimate	*SE*	*df*	*t*	*p*
Intercept	-0.13	0.51	402.4	-0.25	0.804
Gender	0.35	0.31	559.4	1.13	0.258
Pleasure	0.14	0.11	825.9	1.32	0.186
Wish to continue	**0.22**	**0.10**	**849.9**	**2.26**	**0.024**
Feeling alive	0.08	0.09	849.7	0.89	0.372
Universality	**0.30**	**0.09**	**790.8**	**3.35**	**0.001**
Number of felt connections	0.05	0.10	778.1	0.48	0.630
Longing	-0.13	0.09	641.0	-1.47	0.143
Feeling free of desire	0.03	0.08	843.9	0.36	0.718
Mind-wandering	**0.35**	**0.08**	**760.0**	**4.29**	**<0.001**
Surprise	-0.05	0.08	753.5	-0.69	0.491
Wanting to understand more	0.03	0.09	832.7	0.33	0.745
Telling a story	-0.01	0.08	852.1	-0.12	0.905
Gender × pleasure	0.00	0.07	803.1	-0.01	0.990
Gender × Wish to continue	-0.02	0.06	847.9	-0.38	0.701
Gender × Feeling alive	-0.04	0.06	848.5	-0.74	0.461
Gender × Universality	-0.02	0.06	780.4	-0.35	0.727
Gender × Number of felt connections	0.01	0.07	774.4	0.14	0.891
Gender × Longing	0.11	0.06	729.8	1.93	0.055
Gender × Feeling free of desire	0.05	0.05	845.2	0.88	0.382
Gender × Mind-wandering	**-0.19**	**0.05**	**768.2**	**-3.55**	**<0.001**
Gender × Surprise	0.05	0.05	737.4	1.01	0.312
Gender × Wanting to understand more	0.02	0.06	831.2	0.41	0.681
Gender × Telling a story	-0.01	0.05	848.4	-0.28	0.782

Notes. The reference level for gender was male. Significant fixed effects and interactions are highlighted in bold. The model explained 68 % of the variance.

Table S16. The linear-mixed effects model for Experiment 1b, including age as additional predictor.

Random effects

	Variance	SD
Participant	0.1	0.31
Image	0.2	0.44

Fixed effects

	Estimate	SE	df	t	p
Intercept	0.06	0.57	413.9	0.10	0.921
Age	0.01	0.01	408.6	0.52	0.606
Pleasure	0.15	0.12	837.5	1.25	0.213
Wish to continue	**0.34**	**0.10**	**853.0**	**3.20**	**0.001**
Feeling alive	0.06	0.10	848.5	0.57	0.569
Universality	**0.62**	**0.11**	**765.0**	**5.87**	**<0.001**
Number of felt connections	-0.19	0.11	734.0	-1.76	0.079
Longing	0.06	0.10	789.4	0.61	0.541
Feeling free of desire	0.01	0.10	849.6	0.09	0.925
Mind-wandering	-0.07	0.10	822.1	-0.71	0.481
Surprise	0.02	0.09	772.1	0.19	0.848
Wanting to understand more	-0.09	0.10	843.0	-0.88	0.380
Telling a story	0.04	0.09	848.5	0.47	0.636
Age × pleasure	0.00	0.00	838.9	-0.19	0.848
Age × Wish to continue	0.00	0.00	849.8	-1.55	0.122
Age × Feeling alive	0.00	0.00	848.2	-0.46	0.644
Age × Universality	**-0.01**	**0.00**	**682.2**	**-3.33**	**0.001**
Age × Number of felt connections	**0.01**	**0.00**	**755.8**	**2.39**	**0.017**
Age × Longing	0.00	0.00	770.6	-0.27	0.787
Age × Feeling free of desire	0.00	0.00	849.6	0.88	0.381
Age × Mind-wandering	0.00	0.00	840.4	1.56	0.118
Age × Surprise	0.00	0.00	769.8	0.13	0.895
Age × Wanting to understand more	0.00	0.00	849.9	1.65	0.100
Age × Telling a story	0.00	0.00	850.7	-0.83	0.406

Notes. Significant fixed effects and interactions are highlighted in bold. The model explained 69 % of the variance.

Table S17. The linear-mixed effects model for Experiment 1b, including the general beauty attitude question "How closely related are the feelings of beauty and pleasure?" as additional predictor.

Random effects					
	Variance	*SD*			
Participant	0.11	0.33			
Image	0.21	0.46			
Fixed effects					
	Estimate	*SE*	*df*	*t*	*p*
Intercept	0.36	0.73	506	0.50	0.621
Closeness beauty pleasure (CBP)	0.00	0.12	506	-0.03	0.978
Pleasure	**0.45**	**0.15**	**718**	**2.92**	**0.004**
Wish to continue	**0.34**	**0.12**	**844**	**2.73**	**0.007**
Feeling alive	0.10	0.14	840	0.72	0.473
Universality	0.21	0.12	460	1.76	0.079
Number of felt connections	-0.27	0.15	800	-1.76	0.078
Longing	0.12	0.13	772	0.96	0.339
Feeling free of desire	0.10	0.12	849	0.84	0.401
Mind-wandering	-0.13	0.12	792	-1.09	0.277
Surprise	-0.08	0.13	791	-0.57	0.568
Wanting to understand more	0.14	0.13	837	1.06	0.289
Telling a story	-0.03	0.11	852	-0.26	0.798
CBP × pleasure	**-0.06**	**0.03**	**730**	**-2.14**	**0.032**
CBP × Wish to continue	-0.03	0.02	845	-1.33	0.182
CBP × Feeling alive	-0.01	0.02	839	-0.59	0.557
CBP × Universality	0.01	0.02	494	0.58	0.561
CBP × Number of felt connections	**0.06**	**0.03**	**802**	**2.22**	**0.027**
CBP × Longing	-0.02	0.02	777	-0.69	0.492
CBP × Feeling free of desire	0.00	0.02	848	0.00	0.999
CBP × Mind-wandering	0.04	0.02	800	1.86	0.063
CBP × Surprise	0.02	0.02	790	0.76	0.450
CBP × Wanting to understand more	-0.01	0.02	846	-0.56	0.575
CBP × Telling a story	0.00	0.02	849	0.00	0.998

Notes. Significant fixed effects and interactions are highlighted in bold. The model explained 69 % of the variance.

Table S18. The linear-mixed effects model for Experiment 1b, including the general beauty attitude question "Which is greater, the beauty of art or nature?" as additional predictor.

Random effects					
	Variance	SD			
Participant	0.10	0.32			
Image	0.23	0.48			
Fixed effects					
	Estimate	SE	df	t	p
Intercept	0.66	0.75	473.7	0.88	0.382
Art or nature	-0.04	0.13	479.1	-0.30	0.768
Pleasure	0.23	0.15	772.4	1.51	0.132
Wish to continue	**0.34**	**0.14**	**845.1**	**2.52**	**0.012**
Feeling alive	0.18	0.14	848.7	1.28	0.200
Universality	**0.32**	**0.12**	**828.3**	**2.58**	**0.010**
Number of felt connections	**-0.45**	**0.15**	**774.1**	**-2.90**	**0.004**
Longing	-0.03	0.13	817.5	-0.21	0.836
Feeling free of desire	0.11	0.12	832.1	0.94	0.347
Mind-wandering	-0.13	0.12	545.3	-1.07	0.285
Surprise	-0.12	0.12	612.0	-1.05	0.292
Wanting to understand more	0.20	0.13	848.3	1.47	0.142
Telling a story	0.05	0.11	788.3	0.49	0.623
Art or nature × pleasure	-0.02	0.03	800.6	-0.59	0.555
Art or nature × Wish to continue	-0.03	0.02	846.0	-1.18	0.240
Art or nature × Feeling alive	-0.03	0.02	847.3	-1.25	0.210
Art or nature × Universality	-0.01	0.02	826.4	-0.46	0.648
Art or nature × Number of felt connections	**0.09**	**0.03**	**760.3**	**3.38**	**0.001**
Art or nature × Longing	0.01	0.02	809.6	0.48	0.633
Art or nature × Feeling free of desire	0.00	0.02	835.9	-0.14	0.886
Art or nature × Mind-wandering	0.04	0.02	585.8	1.78	0.075
Art or nature × Surprise	0.02	0.02	635.4	1.17	0.245
Art or nature × Wanting to understand more	-0.02	0.02	847.7	-0.97	0.332
Art or nature × Telling a story	-0.01	0.02	813.5	-0.68	0.494

Notes. The reference level for image category was the beautiful art image category. Significant fixed effects and interactions are highlighted in bold. The model explained 69 % of the variance.

Table S19. The linear-mixed effects model for Experiment 1b, including the general beauty attitude question "The beauty of an image is…" entirely in the image (1) to entirely in the story (7) as additional predictor.

Random effects	Variance	SD			
Participant	0.10	0.31			
Image	0.23	0.48			

Fixed effects	Estimate	SE	df	t	p
Intercept	0.19	0.59	521.1	0.33	0.742
Image vs story	0.05	0.13	691.6	0.35	0.728
Pleasure	**0.49**	**0.12**	**818.8**	**4.19**	**<0.001**
Wish to continue	**0.29**	**0.10**	**845.4**	**2.76**	**0.006**
Feeling alive	0.15	0.10	852.4	1.56	0.118
Universality	0.08	0.11	753.3	0.80	0.424
Number of felt connections	-0.15	0.11	770.6	-1.33	0.182
Longing	0.02	0.10	633.1	0.18	0.857
Feeling free of desire	0.06	0.09	850.3	0.68	0.494
Mind-wandering	0.13	0.09	790.0	1.35	0.178
Surprise	-0.14	0.09	783.4	-1.64	0.101
Wanting to understand more	-0.02	0.09	835.1	-0.23	0.817
Telling a story	0.05	0.08	852.7	0.57	0.569
Image vs story × pleasure	**-0.09**	**0.03**	**839.8**	**-3.23**	**0.001**
Image vs story × Wish to continue	-0.03	0.02	842.4	-1.11	0.269
Image vs story × Feeling alive	-0.04	0.02	848.2	-1.54	0.123
Image vs story × Universality	0.05	0.02	794.6	1.85	0.065
Image vs story × Number of felt connections	**0.05**	**0.03**	**771.7**	**2.03**	**0.043**
Image vs story × Longing	0.01	0.02	704.0	0.35	0.727
Image vs story × Feeling free of desire	0.01	0.02	849.1	0.31	0.760
Image vs story × Mind-wandering	-0.01	0.02	819.6	-0.46	0.644
Image vs story × Surprise	0.04	0.02	777.9	1.92	0.056
Image vs story × Wanting to understand more	0.02	0.02	840.0	0.97	0.334
Image vs story × Telling a story	-0.02	0.02	845.0	-0.83	0.409

Notes. Significant fixed effects and interactions are highlighted in bold. The model explained 69 % of the variance.

Table S20. The linear-mixed effects model for Experiment 1b, including the general beauty attitude question "Are shared experiences of beauty a form of communication?" as additional predictor.

Random effects					
	Variance	SD			
Participant	0.11	0.33			
Image	0.22	0.47			
Fixed effects					
	Estimate	SE	df	t	p
Intercept	-0.54	0.75	559.5	-0.72	0.474
Communication	0.15	0.12	577.1	1.25	0.213
Pleasure	0.28	0.18	831.7	1.51	0.131
Wish to continue	0.16	0.15	848.4	1.10	0.271
Feeling alive	**0.31**	**0.15**	**848.6**	**2.08**	**0.038**
Universality	**0.61**	**0.14**	**759.8**	**4.32**	**<0.001**
Number of felt connections	-0.01	0.17	800.8	-0.04	0.971
Longing	-0.03	0.14	712.2	-0.24	0.814
Feeling free of desire	0.00	0.15	786.4	0.01	0.995
Mind-wandering	-0.07	0.14	804.2	-0.54	0.591
Surprise	0.01	0.13	757.4	0.07	0.944
Wanting to understand more	-0.18	0.15	811.6	-1.18	0.239
Telling a story	0.03	0.12	845.9	0.24	0.810
Communication × pleasure	-0.03	0.03	823.7	-0.81	0.416
Communication × Wish to continue	0.00	0.03	847.3	0.11	0.911
Communication × Feeling alive	**-0.05**	**0.03**	**848.1**	**-2.04**	**0.041**
Communication × Universality	**-0.06**	**0.02**	**742.2**	**-2.42**	**0.016**
Communication × Number of felt connections	0.01	0.03	807.6	0.47	0.642
Communication × Longing	0.01	0.02	723.0	0.53	0.599
Communication × Feeling free of desire	0.02	0.03	798.6	0.68	0.496
Communication × Mind-wandering	0.03	0.02	811.9	1.11	0.269
Communication × Surprise	0.00	0.02	747.6	0.11	0.911
Communication × Wanting to understand more	0.04	0.03	824.8	1.68	0.093
Communication × Telling a story	-0.01	0.02	846.4	-0.47	0.639

Notes. The reference level for image category was the beautiful art image category. Significant fixed effects and interactions are highlighted in bold. The model explained 69 % of the variance.

Table S21. The linear-mixed effects model for Experiment 1b, including the general beauty attitude question "How much does mood affect the feeling of beauty?" as additional predictor.

Random effects					
	Variance	*SD*			
Participant	0.08	0.28			
Image	0.23	0.48			
Fixed effects					
	Estimate	*SE*	*df*	*t*	*p*
Intercept	1.03	0.99	581.6	1.04	0.299
Mood	-0.10	0.16	586.8	-0.66	0.513
Pleasure	0.13	0.19	815.4	0.69	0.492
Wish to continue	-0.01	0.17	843.2	-0.05	0.958
Feeling alive	0.23	0.16	846.6	1.46	0.145
Universality	**0.79**	**0.14**	**765.4**	**5.55**	**<0.001**
Number of felt connections	-0.13	0.19	729.2	-0.66	0.513
Longing	-0.14	0.15	539.7	-0.96	0.335
Feeling free of desire	-0.02	0.15	841.6	-0.12	0.907
Mind-wandering	-0.09	0.15	627.6	-0.63	0.526
Surprise	-0.08	0.16	691.4	-0.50	0.616
Wanting to understand more	0.16	0.15	846.4	1.04	0.298
Telling a story	-0.12	0.13	851.7	-0.95	0.342
Mood × pleasure	0.00	0.03	810.0	0.08	0.940
Mood × Wish to continue	0.03	0.03	841.2	1.18	0.238
Mood × Feeling alive	-0.04	0.03	846.9	-1.38	0.167
Mood × Universality	**-0.09**	**0.02**	**754.3**	**-3.76**	**<0.001**
Mood × Number of felt connections	0.03	0.03	738.2	0.99	0.324
Mood × Longing	0.03	0.02	533.9	1.31	0.192
Mood × Feeling free of desire	0.02	0.02	840.2	0.77	0.439
Mood × Mind-wandering	0.03	0.02	646.2	1.18	0.238
Mood × Surprise	0.02	0.03	681.5	0.67	0.503
Mood × Wanting to understand more	-0.02	0.02	848.1	-0.65	0.515
Mood × Telling a story	0.02	0.02	849.6	0.78	0.438

Notes. The reference level for image category was the beautiful art image category. Significant fixed effects and interactions are highlighted in bold. The model explained 68 % of the variance.

Table S22. The linear-mixed effects model for Experiment 1b, including the general beauty attitude question "Can you name an object that everyone finds beautiful?" as additional predictor.

Random effects		
	Variance	SD
Participant	0.10	0.31
Image	0.20	0.45

Fixed effects					
	Estimate	SE	df	t	p
Intercept	0.48	0.28	102.6	1.68	0.096
Universally beautiful object (UBO)	-0.23	0.31	598.1	-0.74	0.458
Pleasure	**0.11**	**0.05**	**770.0**	**2.30**	**0.022**
Wish to continue	0.06	0.05	841.5	1.30	0.193
Feeling alive	0.02	0.04	856.9	0.48	0.629
Universality	**0.40**	**0.05**	**811.7**	**8.62**	**<0.001**
Number of felt connections	0.08	0.05	757.4	1.63	0.104
Longing	0.01	0.04	697.6	0.24	0.808
Feeling free of desire	**0.14**	**0.04**	**843.4**	**3.22**	**0.001**
Mind-wandering	0.01	0.04	726.9	0.17	0.866
Surprise	0.06	0.04	696.9	1.64	0.103
Wanting to understand more	0.09	0.04	828.7	2.15	0.032
Telling a story	-0.07	0.04	857.9	-1.79	0.074
UBO × pleasure	0.07	0.07	786.0	1.05	0.293
UBO × Wish to continue	**0.19**	**0.06**	**844.7**	**3.05**	**0.002**
UBO × Feeling alive	0.01	0.06	847.8	0.10	0.918
UBO × Universality	**-0.21**	**0.06**	**761.6**	**-3.69**	**<0.001**
UBO × Number of felt connections	-0.07	0.07	764.4	-1.02	0.309
UBO × Longing	0.04	0.06	703.7	0.70	0.487
UBO × Feeling free of desire	-0.08	0.05	843.3	-1.52	0.130
UBO × Mind-wandering	**0.13**	**0.05**	**751.2**	**2.47**	**0.014**
UBO × Surprise	-0.09	0.05	713.2	-1.82	0.069
UBO × Wanting to understand more	-0.04	0.06	826.5	-0.70	0.484
UBO × Telling a story	**0.09**	**0.05**	**847.4**	**1.98**	**0.048**

Notes. The reference level for universal beauty was "yes". Significant fixed effects and interactions are highlighted in bold. The model explained 69% of the variance.

Additional models tested with combined data from Experiment 1a and 1b

The model explaining the highest proportion of variance, 75%, is described in the main

article. **Tables S23-S25** list the results of all remaining tested models.

Table S23. The linear-mixed effects model for Experiment 1 (combined data) without interactions.

Random effects					
	Variance	*SD*			
Participant	0.07	0.26			
Image	0.13	0.36			
Fixed effects					
	Estimate	*SE*	*df*	*t*	*p*
Intercept	**0.34**	**0.12**	**65.1**	**2.93**	**0.005**
Pleasure	**0.21**	**0.02**	**2583.9**	**11.04**	**<0.001**
Wish to continue	**0.20**	**0.02**	**2621.6**	**11.27**	**<0.001**
Feeling alive	**0.08**	**0.02**	**2644.8**	**4.30**	**<0.001**
Universality	**0.23**	**0.02**	**2212.1**	**12.23**	**<0.001**
Number of felt connections	**0.06**	**0.02**	**2393.3**	**3.81**	**<0.001**
Longing	**0.04**	**0.02**	**2133.5**	**2.38**	**0.017**
Feeling free of desire	**0.07**	**0.02**	**2443.7**	**4.25**	**<0.001**
Mind-wandering	**0.05**	**0.02**	**2439.5**	**3.42**	**0.001**
Surprise	-0.02	0.01	1882.0	-1.13	0.260
Wanting to understand more	**0.04**	**0.02**	**2566.6**	**2.76**	**0.006**
Telling a story	-0.01	0.01	2392.7	-0.73	0.466

Notes. Significant fixed effects and interactions are highlighted in bold. The model explained 72 % of the variance.

Table S24. The linear-mixed effects model for Experiment 1 (combined data) including gender as additional factor.

Random effects					
	Variance	*SD*			
Participant	0.07	0.26			
Image	0.12	0.35			
Fixed effects					
	Estimate	*SE*	*df*	*t*	*p*
Intercept	0.32	0.13	104.0	2.50	0.014
Gender	0.01	0.16	1068.0	0.08	0.935
Pleasure	**0.18**	**0.02**	**2572.0**	**7.64**	**<0.001**
Wish to continue	**0.19**	**0.02**	**2575.0**	**8.15**	**<0.001**
Feeling alive	**0.12**	**0.02**	**2603.0**	**5.40**	**<0.001**
Universality	**0.22**	**0.02**	**2247.0**	**9.66**	**<0.001**
Number of felt connections	**0.08**	**0.02**	**2354.0**	**3.91**	**<0.001**
Longing	0.03	0.02	1929.0	1.40	0.163
Feeling free of desire	**0.06**	**0.02**	**2375.0**	**3.16**	**0.002**
Mind-wandering	**0.07**	**0.02**	**2490.0**	**3.52**	**<0.001**
Surprise	-0.02	0.02	1749.0	-1.28	0.202
Wanting to understand more	0.02	0.02	2493.0	1.23	0.219
Telling a story	-0.01	0.02	2491.0	-0.34	0.737
Gender × pleasure	0.06	0.04	2487.0	1.52	0.128
Gender × Wish to continue	0.05	0.04	2545.0	1.36	0.173
Gender × Feeling alive	**-0.11**	**0.04**	**2582.0**	**-3.04**	**0.002**
Gender × Universality	0.02	0.03	2280.0	0.51	0.609
Gender × Number of felt connections	-0.05	0.03	2295.0	-1.60	0.111
Gender × Longing	0.02	0.03	2137.0	0.58	0.561
Gender × Feeling free of desire	0.01	0.03	2381.0	0.30	0.762
Gender × Mind-wandering	-0.03	0.03	2321.0	-1.01	0.315
Gender × Surprise	0.02	0.03	1844.0	0.83	0.410
Gender × Wanting to understand more	0.04	0.03	2504.0	1.45	0.147
Gender × Telling a story	-0.01	0.03	2523.0	-0.51	0.611

Notes. The reference level for gender was male. Significant fixed effects and interactions are highlighted in bold. The model explained 72% of the variance.

Table S25. The linear-mixed effects model for Experiment 1 (combined data) including age as additional predictor.

Random effects

	Variance	SD			
Participant	0.06	0.25			
Image	0.12	0.35			

Fixed effects

	Estimate	SE	df	t	p
Intercept	-0.15	0.29	670.1	-0.53	0.600
Age	0.01	0.01	709.8	1.80	0.072
Pleasure	**0.31**	**0.07**	**2602.0**	**4.59**	**<0.001**
Wish to continue	**0.31**	**0.06**	**2626.0**	**4.83**	**<0.001**
Feeling alive	0.05	0.06	2601.0	0.83	0.408
Universality	**0.26**	**0.06**	**2283.0**	**4.09**	**<0.001**
Number of felt connections	-0.08	0.06	2235.0	-1.42	0.156
Longing	**0.12**	**0.06**	**2147.0**	**2.08**	**0.038**
Feeling free of desire	0.01	0.06	2344.0	0.16	0.875
Mind-wandering	0.10	0.06	2543.0	1.81	0.071
Surprise	-0.08	0.05	1541.0	-1.62	0.105
Wanting to understand more	0.08	0.05	2513.0	1.50	0.134
Telling a story	-0.09	0.05	2610.0	-1.85	0.065
Age × pleasure	0.00	0.00	2602.0	-1.64	0.101
Age × Wish to continue	0.00	0.00	2625.0	-1.66	0.096
Age × Feeling alive	0.00	0.00	2608.0	0.35	0.726
Age × Universality	0.00	0.00	2210.0	-0.62	0.534
Age × Number of felt connections	**0.00**	**0.00**	**2302.0**	**2.62**	**0.009**
Age × Longing	0.00	0.00	2136.0	-1.46	0.143
Age × Feeling free of desire	0.00	0.00	2346.0	1.01	0.314
Age × Mind-wandering	0.00	0.00	2571.0	-0.89	0.372
Age × Surprise	0.00	0.00	1485.0	1.47	0.143
Age × Wanting to understand more	0.00	0.00	2551.0	-0.65	0.517
Age × Telling a story	0.00	0.00	2622.0	1.75	0.080

Notes. Significant fixed effects and interactions are highlighted in bold. The model explained 72 % of the variance.

Experiment 2a &2b: Beauty memories (USA)

Experiment 2a: text analysis. For our text analysis, we first looked at the most frequently occurring words, excluding stop words and punctuation. Unsurprisingly, the most commonly used word was "beautiful" ($n = 69$), followed by "experience" ($n = 35$), and "could"

($n = 28$). Then came "like" which was just as frequently mentioned as "beauty" ($n = 27$).

Predominantly, people were describing what they visually experienced, with both "see" ($n = 26$)

and "saw" ($n = 20$) being among the 12 most frequent words. The remaining top-12 mentioned

words were related to memory recall ("one", "time", "went", "remember").

In addition to the most frequent individual words we also looked at the most frequent

word combinations, i.e., bigrams. Again, the most frequent reflected the task ("beauty

experience" $n = 9$). The next most common "could see" ($n = 8$) confirms the dominance of visual

experiences. Third, participants seemed to frequently recall special "first time" events ($n = 7$).

Going beyond the count of word frequencies, we used the *empath client* to analyze which

lexical categories are overrepresented in our beauty descriptions compared to a standard text

corpus. We find that the top ten lexical categories in the beauty memory descriptions were, in

order: beauty, attractive, feminine, weather, beach, vacation, children, family, love, and water.

Experiment 2b: text analysis. The text analysis of the second US-American sample's

memory descriptions revealed a highly similar pattern to the one obtained for the first sample.

The most commonly used word was, again, "beautiful" ($n = 65$), followed by "beauty" ($n = 28$),

and "felt" ($n = 27$). Then came "time" which was just as frequently mentioned as "day" ($n = 27$).

"Like" was frequently used, too ($n = 25$). People used words related to visual nature experiences

"see" ($n = 19$), "nature" ($n = 20$), and "sun" ($n = 18$), being among the most frequently used

words. This underlines the results obtained so far and is in line with people's general beliefs

about beauty (see below *People's explicit beliefs about beauty* in the main article). the most

frequently occurring bigrams further confirm the predominance of beauty, experiential, and

nature themes: "first time" ($n =11$), "years ago" ($n =8$), "beautiful experience" ($n = 5$), "ever

seen" ($n = 5$), "looked like", and "sun shining" ($n = 4$). Of note, as in the first US sample and the

UK, US-Americans frequently mentioned "first time" experiences, a pattern that we did not find in India.

The *empath* analyses on the second US-American sample's memory descriptions brought up similar if not identical themes compared to our first sample. The top 10 were beauty, attractive, feminine, weather, beach, vacation, love, plant, positive emotion, and traveling.

Experiment 2b: Perceptual task. The circle size ratings were mostly unrelated to aesthetic judgments. Out of 16 ratings, one correlated slightly positive, longing, $r = 0.21$, 95% CI [0.00, 0.40], and one slightly negative, beauty, $r = -0.25$, [-0.43, -0.04], with the circle size difference rating. Therefore, general biases can again not explain the overall rating pattern.

Comparison between Experiment 2a & 2b
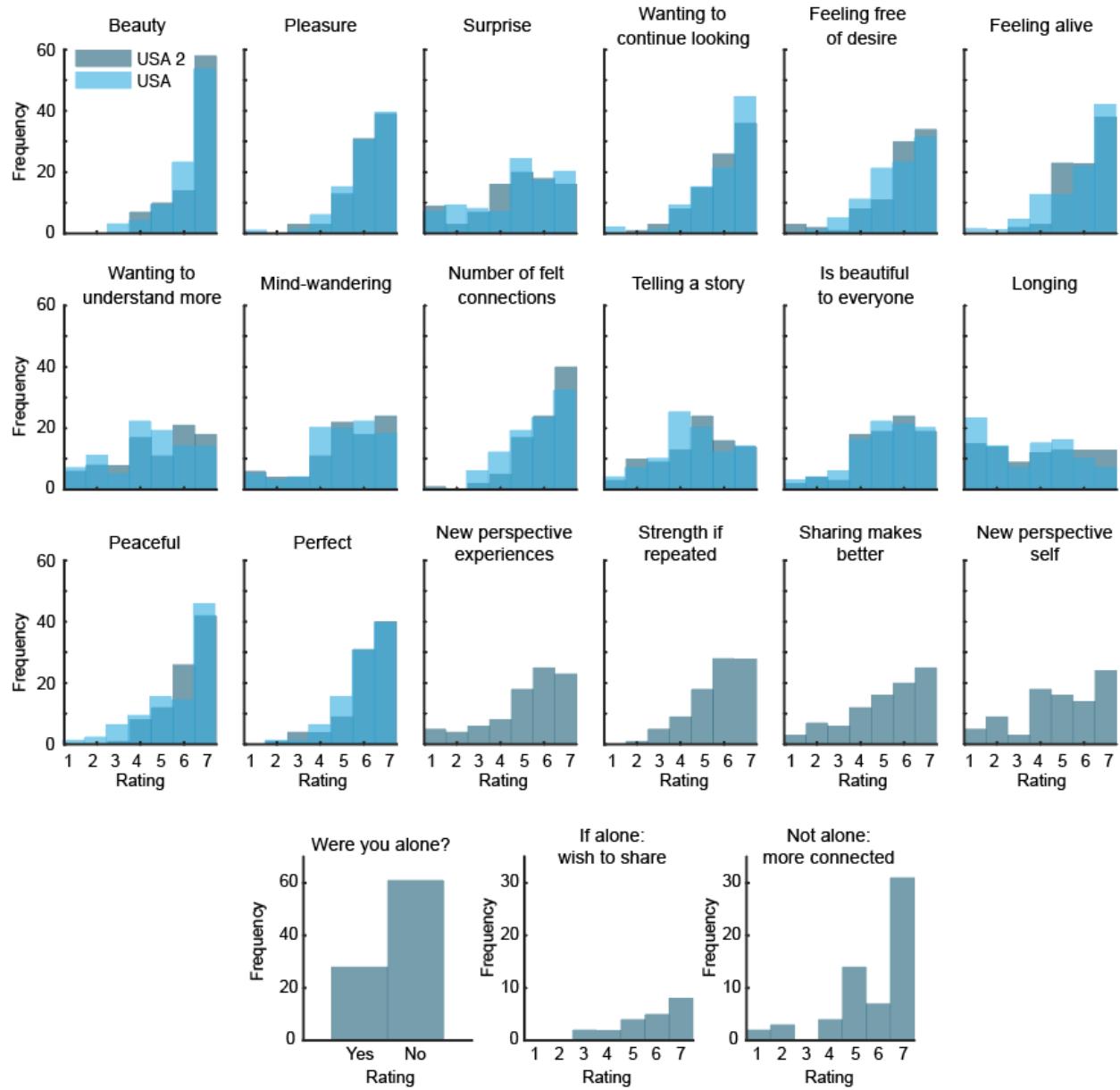
Figure S2. Histograms of ratings for beauty memories from the first US-American sample (light blue; Experiment 2a) and the second US-American sample (dark blue; Experiment 2b). Note that data for the last seven displayed ratings was collected from the second sample only. None of the average ratings differed between samples, all $p \geq 0.063$.

Additional comparisons between Experiment 1 and 2

We report comparisons between ratings correlated with beauty in the main manuscript. Here, we report differences along the remaining six dimensions. Ratings of feeling alive were higher for remembered beauty, $M = 6.33$, compared to immediate beauty, $M = 5.72$, $t(198) = 4.94$, $p < 0.001$. Reported longing was greater for immediate beauty, $M = 5.01$, compared to remembered beauty, $M = 3.67$, $t(145.16) = 5.83$, $p < 0.001$. Ratings of surprise were higher for remembered beauty, $M = 5.01$, compared to immediate beauty, $M = 3.84$, $t(188.19) = 5.65$, $p < 0.001$. Ratings of wanting to understand the experience more were higher for immediate beauty, $M = 5.37$, compared to remembered beauty, $M = 4.76$, $t(154.98) = 2.96$, $p = 0.004$. Ratings of mind wandering and of how much the experience tells a story did not differ between remembered and immediate beauty, both $p \leq 0.101$.

Experiment 3a: Beauty memories in the UK

Participants from the US and the UK did not differ in their average ratings of beauty, Wish to continue the experience, feeling alive, and longing. The overall distribution of their responses was also similar, as illustrated in **Figure S3**. However, participants from the UK did give higher ratings on 10 out of 14 rating scales (see **Figure S3**).
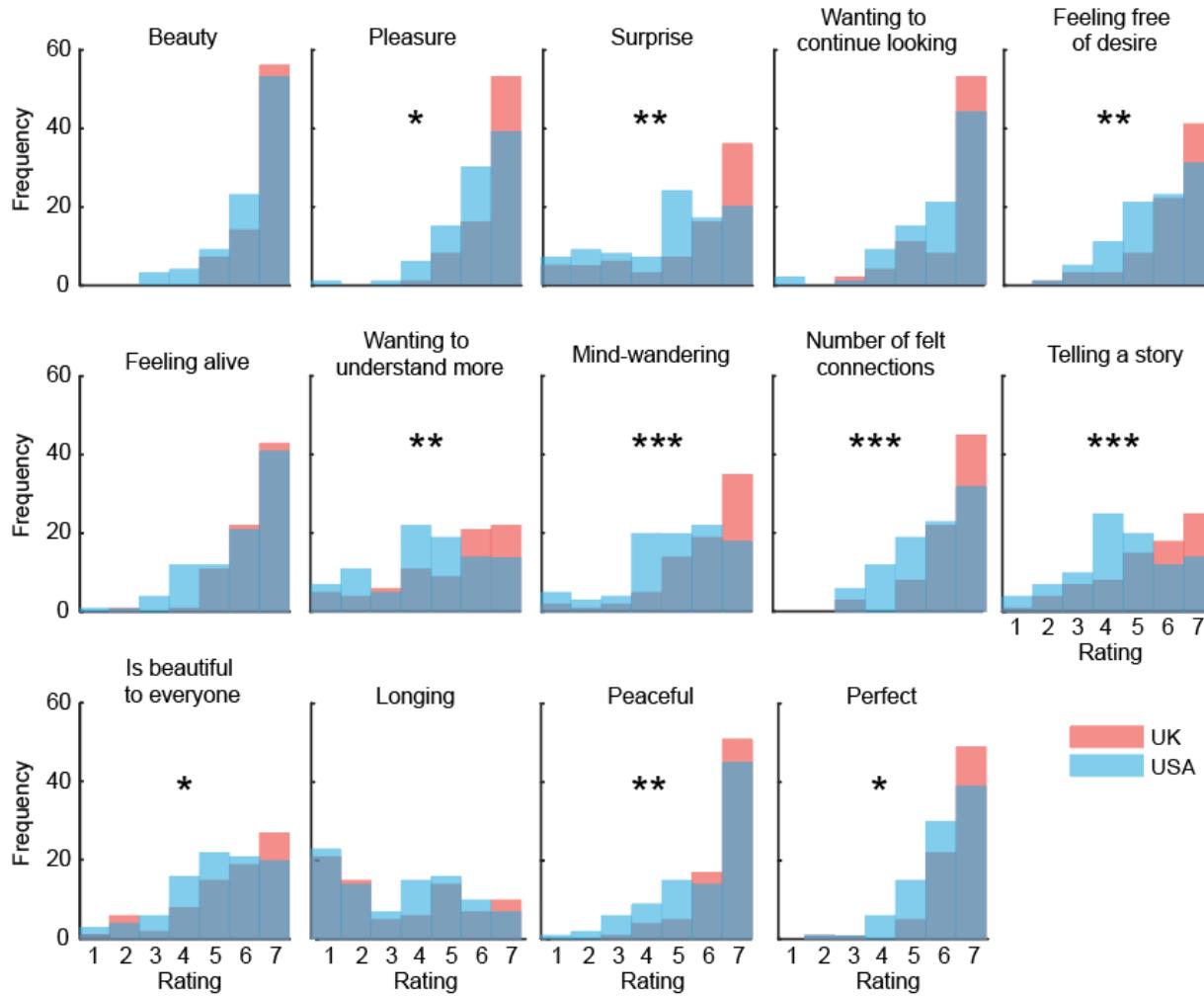
Figure S3. Histograms of ratings for beauty memories receiving maximum beauty ratings by US American (blue; Experiment 2a) and British participants (red; Experiment 3a). *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$, according to two-sided t-tests.

Text analysis. The most frequently occurring words in the descriptions of beauty experiences of UK participants were: "day" ($n = 42$), "beautiful" ($n = 38$), "time" ($n = 31$), "could" ($n = 30$), "like" ($n = 28$), "see" ($n = 26$), "felt" ($n = 23$), and "smell" ($n = 21$).

The most frequent bigrams for UK beauty memories were: "first time" ($n = 11$), "could see" ($n = 11$), "felt like" ($n = 4$), "could feel" ($n = 4$), "summers day" ($n = 3$), and "could hear", ($n = 3$). Thus, as opposed to US participants, people in the UK were less likely to tag the

memory as beauty or beautiful experience but they exhibited the same proclivity to describe how they felt and what they saw.

The lexical analyses with *empath* revealed a large overlap in the top ten sentiments between US and UK, namely: beauty, attractive, weather, beach, feminine, children, water, and vacation. The theme party (ranking 18 out of 195 total sentiments in the US) and friends (ranking 20 in the US) were in the top ten in the UK but not the US, whereas the themes family (ranking 15 in the UK) and love (ranking 16 in the UK) appeared there in the US but not the UK.

Experiment 3b: Beauty memories in India

Participants from the US and the India did not differ in their average ratings of beauty, pleasure, feeling free of desire, and peacefulness. The overall distribution of their responses was also similar, as illustrated in **Figure S4**. However, participants from India did give higher ratings on 9 out of 14 rating scales (see **Figure S4**).
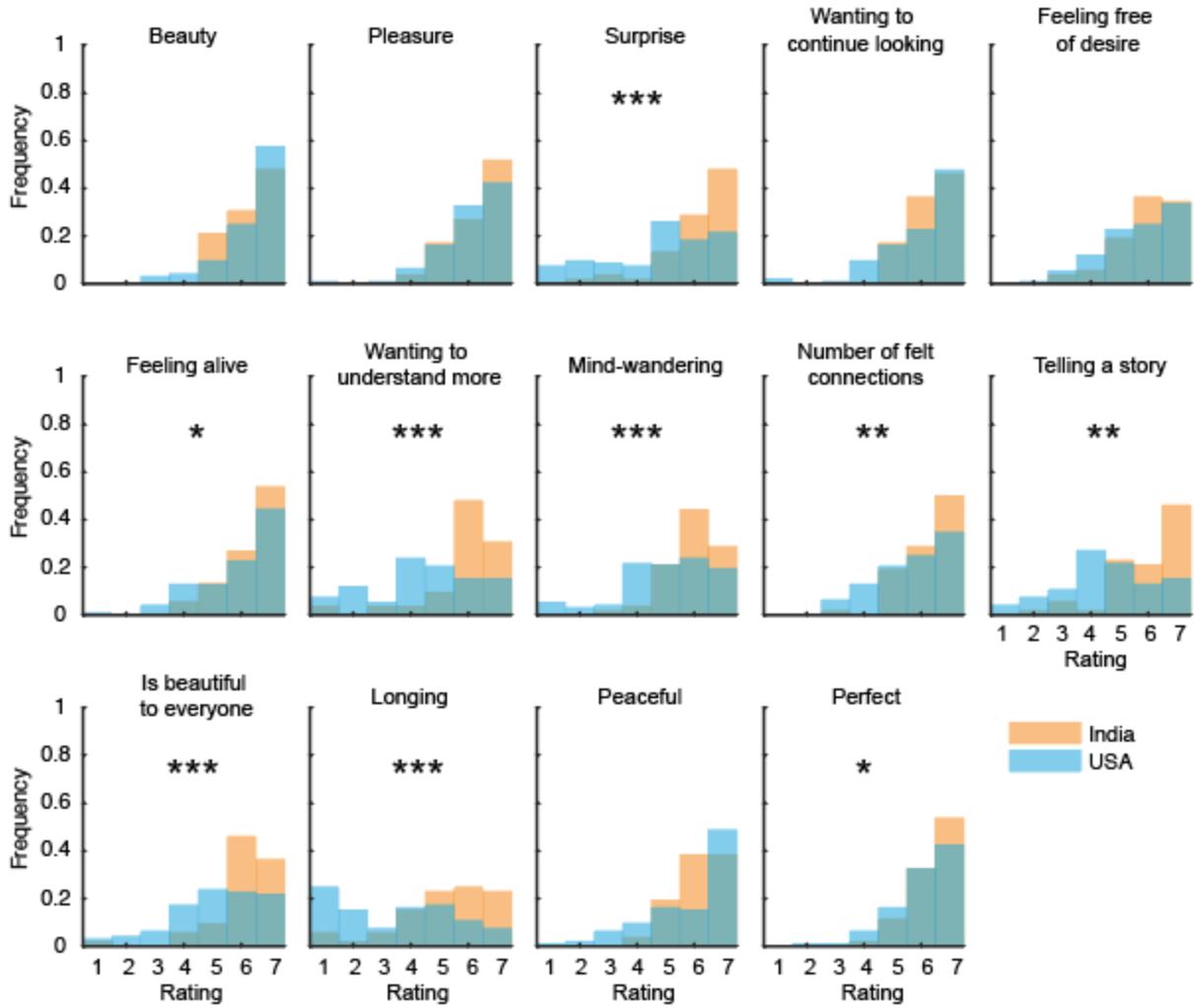
Figure S4. Histograms of ratings for beauty memories receiving maximum beauty ratings by US American (blue; Experiment 2a) and Indian participants (orange; Experiment 3b). *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$ according to two-sided t-tests.

Perceptual task. The additional perception task of rating the magnitude of size difference between two circles served as an independent assessment of biases in the rating scale use. Participants had no difficulty judging which circle was bigger (50 out of 52 participants answered correct). Only one out of 14 aesthetic ratings correlated with the circle size rating, i.e., surprise, $r = 0.50$, 95% CI [0.26, 0.68]). Thus, participants' ratings cannot be attributed to a generally biased use of the rating scales.

Text analysis. The most frequently occurring words in the descriptions of beauty experiences of participants in India were: "beautiful" ($n =33$), "felt" ($n =23$), "feel" ($n =21$), "day" ($n =21$), "beauty" ($n =21$), "time" ($n =21$), "like" ($n = 20$), and "experience" ($n = 20$).

The most frequent bigrams for UK beauty memories were: "beauty experience" ($n =7$), "years back" ($n =6$), "felt like" ($n = 5$), "beautiful experience" ($n = 5$), "back went" ($n = 3$), "beauty life" ($n = 3$), "years old" ($n = 3$), "like heaven" ($n = 3$), and "one day", ($n = 3$).

The lexical analyses with *empath* revealed a considerable overlap in the top ten sentiments between US and India, namely: beauty, attractive, feminine, and love. The theme positive emotion (ranking 24 out of 195 total sentiments in the US), optimism (ranking 32 in the US), celebration (ranking 28 in the US), and contentment (ranking 48 in the US) were in the top ten in India but not the US. In contrast, the themes weather (ranking 18 in India), beach (ranking 36 in India), vacation (ranking 13 in India), children (ranking 19 in India), family (ranking 20 in India), and water (ranking 68 in India) appeared there in the US but not India.

Additional experiment: comparing beauty and joy memories

Methods

Participants. Of the 100 recruited participants, 99 completed the survey. Based on the written memory descriptions provided, we excluded nine participants (7 men, 2 women) due to apparent non-compliance. Of the remaining 90 participants, 58 were male, 31 female, and one preferred not to disclose their gender. Their age ranged from 20 to 71 with a mean of 36.6 years ($SD = 11.5$).

Procedures. The procedures were identical to Experiment 3 except for replacing the word "beauty" with "joy". However, participants still rated how much beauty they felt during the experience.

Analyses. We used the same analyses as for Experiment 3.

Results

Average ratings for beauty versus joy memories differed in two aspects: Joy memories were accompanied by a greater feeling of being alive, $M = 6.20$, than beauty memories, $M = 5.17$, $p = 0.001$. Plus, people felt more strongly that their joy experience is joyful to everyone, $M = 4.04$, than they felt that their beauty experience is beautiful to everyone, $M = 3.57$, $p = 0.013$. Ratings of beauty and joy memories did not differ along any other tested dimension, all $p \geq 0.122$.

The most frequently occurring words in the descriptions of joy experiences were related to task and recall: "time" ($n = 58$), "first" ($n = 47$), "day" ($n = 38$), "went" ($n = 34$), "felt"

(n = 34), and "joy" (n = 34). Next came "happy" (n = 29), and "see" (n = 27), again showing that people mostly described a visual experience, just like they did for beauty. Notably, people also frequently mentioned "beautiful" (n = 22) when describing their experiences of joy.

The most frequent bigrams for joy memories were: "first time" (n = 23), "intense joy" (n = 9), "felt intense" (n = 7), followed by "best friend" (n = 6) and "daughter born" (n = 5). Thus, it seems, when people are asked about intense joy experiences, they recall special first-time events more so than when they think about a beauty experience. A more frequent connection with being with other people also seems apparent and was confirmed by the lexical analyses with *empath*. The top ten *empath client* categories for joy were: positive emotion, family, optimism, children, love, friends, party, celebration, childish, wedding.

Overall, beauty and joy experiences seem to share a large portion of their characteristics. This should not come as a surprise given that many joy experiences were also rated to be beautiful. Text analyses, however, revealed that different themes dominate people's memories when asking for joy vs. pleasure. While beauty memories often occur in the context of nature, joy memories seem to be more social in nature and frequently involve family and friends.

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