Supplementary Material for the Article:

Affective communication of map symbols: A semantic differential analysis

Table S1. PCA: Total variance explained by the study's six semantic differential items.

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.516	41.931	41.931	2.516	41.931	41.931	2.363	39.391	39.391
2	1.967	32.789	74.720	1.967	32.789	74.720	2.120	35.328	74.720
3	.639	10.645	85.365						
4	.346	5.771	91.136						
5	.295	4.912	96.048						
6	.237	3.952	100.000						

Extraction Method: Principal Component Analysis.

Table S2. PCA: Rotated component matrix, suggesting two extracted components.

Rotated Component Matrix[a]

	Component	
	1	2
harmonic – disharmonic	.920	.025
appealing – unappealing	.889	.068
calm – agitated	.827	-.289
weak – strong	.115	.866
unobtrusive – dominant	-.135	.848
passive – dynamic	-.100	.750

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

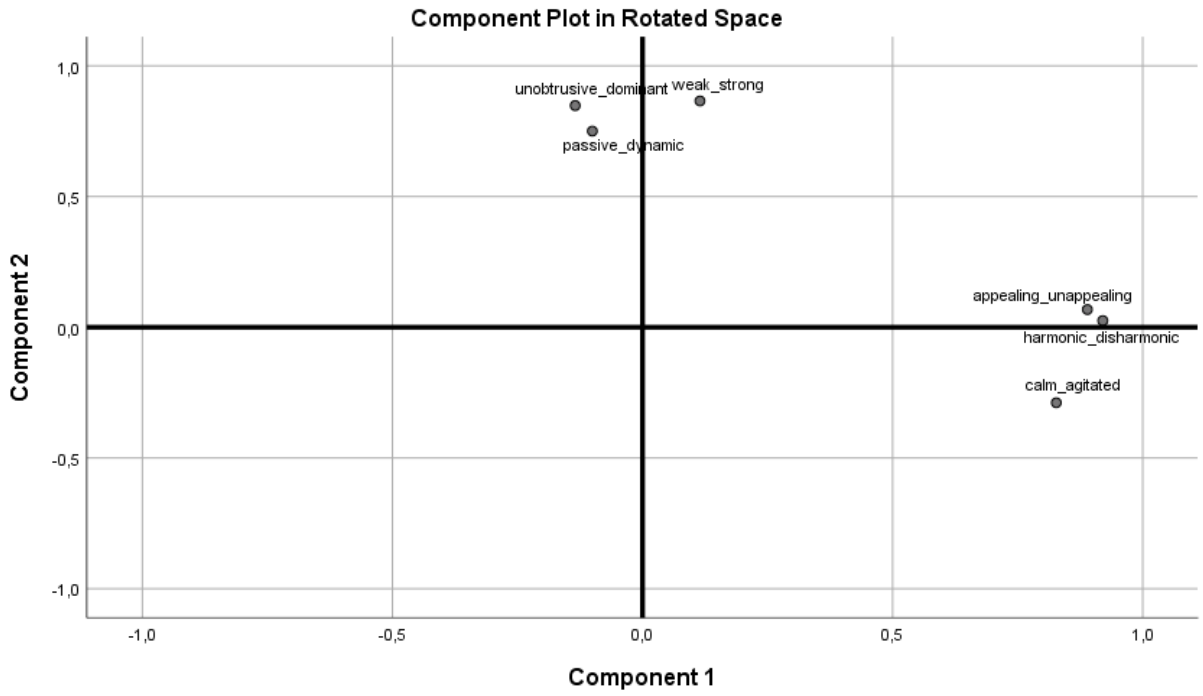

Figure S1. PCA: Component plot based on VARIMAX rotation with Kaiser normalization.

Table S3. Shape stimulus set: Descriptive statistics for the set of eight shape stimuli by the two affective dimensions valence (component 2 in the PCA, see Figure S1) and dominance (component 1 in the PCA, see Figure S1).

Statistics

								
Valence:								
N	168	129	168	129	168	129	129	168
Mean	.23	.12	1.93	.11	.72	.81	-2.28	-2.21
Median	.00	.00	2.00	.00	1.00	1.00	-3.00	-3.00
Std. Deviation	1.687	1.519	1.318	1.917	1.593	1.485	.976	1.252
Variance	2.847	2.307	1.738	3.676	2.538	2.204	.953	1.567
Minimum	-3	-3	-2	-3	-3	-3	-3	-3
Maximum	3	3	3	3	3	3	1	3
Dominance:								
N	168	129	168	129	168	129	129	168
Mean	1.08	.89	.40	1.26	.66	.47	1.95	1.74
Median	1.00	1.00	.00	2.00	1.00	.00	2.00	2.00
Std. Deviation	1.504	1.522	1.724	1.476	1.993	1.526	1.014	1.461
Variance	2.263	2.316	2.973	2.180	3.974	2.329	1.029	2.135
Minimum	-3	-3	-3	-3	-3	-3	-1	-3
Maximum	3	3	3	3	3	3	3	3

Table S4. Map stimulus set 1: Descriptive statistics for set 1 of eight map stimuli each depicting one shape by the two affective dimensions valence (component 2 in the PCA, see Figure S1) and dominance (component 1 in the PCA, see Figure S1).

Statistics

								
Valence:								
N	129	168	129	168	129	168	168	129
Mean	-.13	-.35	.71	-.10	-.16	-.04	-1.92	-1.85
Median	.00	.00	1.00	.00	.00	.00	-2.00	-2.00
Std. Deviation	1.523	1.645	1.582	1.650	1.657	1.751	1.324	1.257
Variance	2.318	2.706	2.503	2.721	2.747	3.065	1.753	1.580
Minimum	-3	-3	-3	-3	-3	-3	-3	-3
Maximum	3	3	3	3	3	3	2	2
Dominance:								
N	129	168	129	168	129	168	168	129
Mean	-.40	-.15	-.40	.40	-.51	-.44	1.09	.51
Median	.00	.00	.00	1.00	-1.00	.00	2.00	1.00
Std. Deviation	1.711	1.706	1.656	1.802	1.833	1.774	1.788	1.803
Variance	2.928	2.910	2.741	3.248	3.361	3.146	3.196	3.252
Minimum	-3	-3	-3	-3	-3	-3	-3	-3
Maximum	3	3	3	3	3	3	3	3

Table S5. Map stimulus set 2: Descriptive statistics for the set of eight shape stimuli each depicting on type of shapes on various positions on the map by the two affective dimensions valence (component 2 in the PCA, see Figure S1) and dominance (component 1 in the PCA, see Figure S1).

Statistics

								
Valence:								
N	114	108	114	108	114	108	108	114
Mean	.70	.29	.28	-.12	.93	.61	-1.11	-.92
Median	1.00	.00	.00	.00	1.00	1.00	-1.00	-1.00
Std. Deviation	1.629	1.466	1.643	1.521	1.556	1.386	1.608	1.614
Variance	2.654	2.150	2.699	2.312	2.420	1.922	2.586	2.604
Minimum	-3	-3	-3	-3	-3	-3	-3	-3
Maximum	3	3	3	3	3	3	3	3
Dominance:								
N	114	108	114	108	114	108	108	114
Mean	.46	.49	-.08	.55	.10	.34	1.22	1.13
Median	1.00	1.00	.00	1.00	.00	1.00	1.00	1.00
Std. Deviation	1.446	1.242	1.506	1.328	1.551	1.320	1.270	1.379
Variance	2.092	1.542	2.268	1.764	2.407	1.741	1.614	1.903
Minimum	-3	-3	-3	-3	-3	-3	-2	-3
Maximum	3	3	3	3	3	3	3	3

Table S6. Shape stimulus set: Frequencies of affective shape ratings by the two affective components of valence and dominance (N = 99).

	Valence							Dominance						
Shape stimulus set	**-3**	**-2**	**-1**	**0**	**+1**	**+2**	**+3**	**-3**	**-2**	**-1**	**0**	**+1**	**+2**	**+3**
Triangle (up)	9	20	30	35	31	25	18	2	11	14	26	36	50	29
Triangle (down)	7	14	21	32	31	18	6	2	6	18	24	29	28	22
Circle	0	4	5	21	18	40	80	5	25	24	36	19	39	20
Star	15	19	17	15	26	23	14	1	6	15	10	27	44	26
Square	6	11	20	34	35	40	22	18	13	16	25	24	33	39
Rhombus	4	5	13	30	32	28	17	3	11	22	29	26	27	11
Asymm. star	73	29	18	8	1	0	0	0	0	2	12	21	49	45
Asymm. 8-point star	98	36	20	6	4	1	3	2	5	8	20	18	47	68

Table S7. Map stimulus set 1: Frequencies of affective map ratings (map stimulus set 1) by the two components of valence and dominance (N = 99).

	Valence							Dominance						
Map stimulus set 1	**-3**	**-2**	**-1**	**0**	**+1**	**+2**	**+3**	**-3**	**-2**	**-1**	**0**	**+1**	**+2**	**+3**
Triangle (up)	14	14	15	33	40	11	2	19	20	23	20	29	14	4
Triangle (down)	17	31	32	33	29	20	6	15	28	37	16	39	26	7
Circle	5	9	12	29	26	33	15	17	16	29	31	18	11	7
Star	19	17	31	30	41	25	5	20	5	23	31	38	30	21
Square	15	17	18	29	27	20	3	20	25	28	17	15	15	9
Rhombus	20	13	41	21	36	26	11	29	25	28	28	31	21	6
Asymm. star	78	39	27	11	9	4	0	11	13	6	16	34	50	38
Asymm. 8-point star	54	33	18	18	5	1	0	13	9	11	21	33	25	17

Table S8. Map stimulus set 2: Frequencies of affective map ratings (map stimulus set 2) by the two components of valence and dominance (N = 74).

	Valence							Dominance						
Map stimulus set 2	**-3**	**-2**	**-1**	**0**	**+1**	**+2**	**+3**	**-3**	**-2**	**-1**	**0**	**+1**	**+2**	**+3**
Triangle (up)	5	8	16	15	24	35	11	2	12	15	24	28	29	4
Triangle (down)	3	12	18	23	24	26	2	2	5	14	28	39	16	4
Circle	5	14	20	19	27	19	10	5	15	31	19	25	15	4
Star	3	21	22	25	19	13	5	1	8	16	21	33	26	3
Square	1	7	17	16	28	23	22	6	15	19	24	25	22	3
Rhombus	1	8	14	26	25	28	6	1	13	14	20	42	16	2
Asymm. star	23	24	35	9	7	5	5	0	3	10	13	32	34	16
Asymm. 8-point star	17	34	28	7	16	10	2	2	5	7	16	30	40	14

Table S9. Shape stimulus set: Conover-Iman pairwise stimulus comparisons. Cells in grey and with bold score show the test statistics at the Bonferroni-corrected significance level.

Valence

								
	0							
	-19.60	0						
	**289.81**	**309.41**	0					
	-16.70	2.91	**-306.51**	0				
	83.00	**102.60**	**-206.81**	**99.70**	0			
	**96.41**	**116.01**	**-193.41**	**113.10**	13.41	0		
	**-411.70**	**-392.09**	**-701.51**	**-395.00**	**-494.70**	**-508,10**	0	
	**-399.17**	**-379.57**	**-688.98**	**-382.47**	**-482.17**	**-495,57**	12,53	0

Dominance

								
	0							
	-40.57	0						
	**-123.38**	-82.81	0					
	40.95	81.53	**164.33**	0				
	-48.85	-8.28	74.53	-89.81	0			
	**-128.08**	-87.51	-4.70	**-169.03**	-79.23	0		
	**187.27**	**227.84**	**310.65**	**146.31**	**236.12**	**315.35**	0	
	**157.08**	**197.66**	**280.46**	116.13	**205.93**	**285.16**	-30.19	0

Bonferroni-corrected significance level: 0.0018

Table S10. Map stimulus set 1: Conover-Iman pairwise stimulus comparisons. Cells in grey and with bold score show the test statistics at the Bonferroni-corrected significance level.

Valence

	▲	▼	●	✸	■	◆	✹	✷
▲	0							
▼	-45.61	0						
●	**150.92**	**196.53**	0					
✸	4.06	49.67	**-146.86**	0				
■	-8.48	37.13	**-159.40**	-12.54	0			
◆	10.95	56.57	**-139.96**	6.90	19.43	0		
✹	**-346.99**	**-301.38**	**-497.91**	**-351.05**	**-338.51**	**-357.94**	0	
✷	**-334.60**	**-288.99**	**-485.52**	**-338.66**	**-326.12**	**-345.56**	12.39	0

Dominance

	▲	▼	●	✸	■	◆	✹	✷
▲	0							
▼	43.83	0						
●	-4.49	-48.32	0					
✸	**148.44**	104.61	**152.93**	0				
■	-21.37	-65.20	-16.88	**-169.81**	0			
◆	-6.82	-50.65	-2.33	**-155.26**	14.55	0		
✹	**280.02**	**236.19**	**284.51**	**131.58**	**301.39**	**286.84**	0	
✷	**169.47**	**125.63**	**173.95**	21.03	**190.83**	**176.28**	-110.56	0

Bonferroni-corrected significance level: 0.0018

Table S11. Map stimulus set 2: Conover-Iman pairwise stimulus comparisons. Cells in grey and with bold score show the test statistics at the Bonferroni-corrected significance level.

Valence

								
	0							
	-63.07	0						
	-65.98	-2.91	0					
	**-127.82**	-64.75	-61.84	0				
	28.58	91.65	94.56	**156.40**	0			
	-15.42	47.65	50.56	**112.40**	-44.00	0		
	**-269.33**	**-206.26**	**-203.35**	**-141.51**	**-297.91**	**-253.91**	0	
	**-242.37**	**-179.30**	**-176.39**	**-114.55**	**-270.95**	**-226.95**	26.96	0

Dominance

								
	0							
	-6.45	0						
	-93.64	-87.19	0					
	10.24	16.69	**103.88**	0				
	-59.07	-52.62	34.57	-69.31	0			
	-26.53	-20.08	67.11	-36.76	32.54	0		
	**130.12**	**136.57**	**223.76**	**119.88**	**189.19**	**156.65**	0	
	**120.12**	**126.57**	**213.76**	**109.88**	**179.19**	**146.65**	-10.00	0

Bonferroni-corrected significance level: 0.0018

Table S12. MDS-based coordinates by shape and stimulus set.

	Shape stimulus set		Map stimulus set 1		Map stimulus set 2	
	Dimension		Dimension		Dimension	
Stimulus	**1**	**2**	**1**	**2**	**1**	**2**
Triangle (up)	-.184	.131	-.349	-.022	-.339	-.128
Triangle (down)	-.196	.210	-.216	.017	-.245	.140
Circle	-.775	-.233	-.537	-.239	-.401	.117
Star	-.070	-.058	-.245	.234	-.169	-.033
Square	-.362	-.119	-.365	-.015	-.609	-.067
Rhombus	-.511	.148	-.500	.056	-.456	-.024
Asymm. star	1.033	.143	1.207	-.105	1.157	-.129
Asymm. 8-point star	1.066	-.221	1.004	.073	1.061	.123