

Supplemental Materials:

Evaluative Priming as an Implicit Measure of Evaluation:

An Examination of Outlier-Treatments for Evaluative Priming Scores

Judith Koppehele-Gossel^a, Lisa Hoffmann^a, Rainer Banse^a, & Bertram Gawronski^b

^aDepartment of Psychology, University of Bonn, Germany

^bDepartment of Psychology, University of Texas at Austin, Texas

Table S1. *Skewness of reaction times before log-transformation, Studies 1-4.*

	Study 1		Study 2		Study 3		Study 4	
<i>SE</i>	0.245		0.121		0.238		0.230	
	skew	<i>z</i>	skew	<i>z</i>	skew	<i>z</i>	skew	<i>z</i>
Errors only	-0.56	2.27	-5.48	-45.29	4.85	20.38	9.15	39.79
0 – 800 ms	0.34	1.38	-0.25	-2.07	0.19	0.81	-0.19	-0.83
0 – 1,500 ms	-0.41	-1.69	-0.20	-1.61	-1.04	-4.36	-0.57	-2.49
250 – 1,500 ms	-0.44	-1.80	-0.17	1.37	-1.21	-5.07	-0.57	-2.49
250 ms – 3 <i>SD</i>	-0.57	-2.31	-0.08	-0.63	1.84	7.74	-2.80	-12.17
300 – 1,000 ms	0.28	1.15	-0.20	-1.64	-0.27	-1.15	-0.24	-1.06
300 – 1,500 ms	-0.49	-1.98	-0.17	-1.38	-1.16	-4.88	-0.58	-2.52
300 – 3,000 ms	-0.24	-0.99	0.41	3.36	-0.13	-0.54	-0.45	-1.94
300 ms – 2 <i>SD</i>	-1.10	-4.48	-0.26	-2.17	0.05	0.19	-0.36	-1.57
-/+ 2 <i>SD</i>	-1.01	-4.12	-0.24	-1.99	0.01	0.05	-0.34	-1.50

Note. *SE* = standard error. *z* = z-transformed skewness parameter, values above |1.96| indicate significant deviations from normal distribution. Significant deviations from normality are printed in bold. Errors only = only error trials are excluded. *SD* = standard deviation.

Table S2. *Skewness of reaction times after log-transformation, Studies 1-4.*

<i>SE</i>	Study 1		Study 2		Study 3		Study 4	
	0.245		0.121		0.238		0.230	
	skew	<i>z</i>	skew	<i>z</i>	skew	<i>z</i>	skew	<i>z</i>
Errors only	-0.22	-0.90	-0.27	-2.26	0.37	1.55	-0.56	-2.43
0 – 800 ms	0.41	1.66	-0.44	-3.63	0.73	3.07	-0.16	-0.69
0 – 1,500 ms	-0.12	-0.49	-0.35	-2.85	-0.29	-1.23	-0.32	-1.40
250 – 1,500 ms	-0.21	-1.36	-0.21	-1.73	-0.79	-3.33	-0.31	-1.34
250 ms – 3 <i>SD</i>	-0.28	-1.12	-0.20	-1.64	-0.42	-1.75	-0.37	-1.59
300 – 1,000 ms	0.41	1.65	-0.10	-0.85	-0.13	-0.56	-0.03	-0.11
300 – 1,500 ms	-0.30	-1.21	-0.22	-1.85	-0.73	-3.07	-0.32	-1.41
300 – 3,000 ms	-0.28	-1.16	0.03	0.26	-0.20	-0.83	-0.26	-1.14
300 ms – 2 <i>SD</i>	-0.62	-2.54	-0.19	-1.58	-0.94	-3.95	-0.21	-0.91
-/+ 2 <i>SD</i>	-0.44	-1.78	-0.36	-2.96	-0.88	-3.70	-0.18	-0.77

Note. *SE* = standard error. *z* = *z*-transformed skewness parameter, values above |1.96| indicate significant deviations from normal distribution. Significant deviations from normality are printed in bold. Errors only = only error trials are excluded. *SD* = standard deviation.

Table S3. *Evaluative priming effects in log-transformed reaction time data as a function of outlier-treatment, Studies 1-4.*

	Study 1		Study 2		Study 3		Study 4	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Errors only	0.01	0.03	0.02	0.05	0.01	0.04	0.01	0.03
0 – 800 ms	0.01	0.02	0.02	0.04	0.01	0.02	0.01	0.02
0 – 1,500 ms	0.01	0.03	0.02	0.04	<0.01	0.03	0.01	0.03
250 – 1,500 ms	0.01	0.03	0.02	0.04	<0.01	0.03	0.01	0.03
250 ms – 3 <i>SD</i>	0.01	0.03	0.02	0.04	0.01	0.03	<0.01	0.03
300 – 1,000 ms	0.01	0.02	0.02	0.03	0.01	0.03	0.01	0.02
300 – 1,500 ms	0.01	0.03	0.02	0.04	<0.01	0.03	0.01	0.03
300 – 3,000 ms	0.01	0.03	0.02	0.04	<0.01	0.03	0.01	0.03
300 ms – 2 <i>SD</i>	<0.01	0.03	0.02	0.04	<0.01	0.03	<0.01	0.02
-/+ 2 <i>SD</i>	<0.01	0.03	0.02	0.04	<0.01	0.03	<0.01	0.02

Note. *M* = mean. *SD* = standard deviation. Errors only = only error trials are excluded.

Table S4. Results of one-sample *t*-tests comparing evaluative priming effects in log-transformed reaction time data against zero as a function of outlier-treatment, Studies 1-4.

	Study 1			Study 2			Study 3			Study 4		
	<i>t</i> (96)	<i>p</i>	<i>d</i>	<i>t</i> (405)	<i>p</i>	<i>d</i>	<i>t</i> (102)	<i>p</i>	<i>d</i>	<i>t</i> (109)	<i>p</i>	<i>d</i>
Errors only	2.40	.018	.24	9.62	<.001	.48	1.43	.157	.14	1.99	.049	.19
0 – 800 ms	2.45	.016	.25	9.44	<.001	.47	3.31	.001	.33	4.95	<.001	.47
0 – 1,500 ms	1.76	.082	.18	10.34	<.001	.51	1.41	.163	.14	2.53	.013	.24
250 – 1,500 ms	1.77	.079	.18	10.82	<.001	.54	1.41	.163	.14	2.46	.015	.23
250 ms – 3 <i>SD</i>	1.67	.099	.17	10.57	<.001	.52	1.68	.095	.17	1.65	.101	.16
300 – 1,000 ms	2.71	.008	.28	10.18	<.001	.51	2.59	.011	.26	4.53	<.001	.43
300 – 1,500 ms	1.88	.063	.19	10.75	<.001	.53	1.28	.203	.13	2.47	.015	.24
300 – 3,000 ms	2.52	.014	.26	10.01	<.001	.50	0.77	.441	.08	2.47	.015	.24
300 ms – 2 <i>SD</i>	1.42	.160	.14	10.37	<.001	.51	1.56	.122	.15	1.63	.106	.16
-/+ 2 <i>SD</i>	1.21	.228	.12	9.81	<.001	.49	1.52	.132	.15	1.66	.099	.16

Note. *d* = Cohen's *d*, derived from the division of *t*-statistic by the root of *N*. Errors only = only error trials are excluded. *SD* = standard deviation.

Table S5. Cronbach's alpha values as a function of outlier-treatment and parceling procedure on log-transformed reaction time data, Studies 1-4.

Study (N)	reliability estimate	Outlier procedure									
		Errors only	0 - 800 ms	0 - 1,500 ms	250 - 1,500 ms	250 ms - 3 SD	300 - 1,000 ms	300 - 1,500 ms	300 - 3,000 ms	300 ms - 2 SD	- /+ 2 SD
1 (97)	two-block	.04 [-.35, .42]	-.11 [-.54, .32]	.05 [-.33, .43]	.05 [-.32, .43]	.01 [-.38, .40]	-.21 [-.68, .27]	.07 [-.30, .44]	-.06 [-.49, .36]	.05 [-.32, .42]	.05 [-.33, .43]
	odd-even	-1.04 [-1.82, -.26]	-2.46 [-3.78, -1.15]	-1.15 [-2.01, -.30]	.02 [-.37, .40]	-.14 [-.58, .29]	-.06 [-.47, .36]	-.001 [-.39, .39]	-.30 [-.79, .18]	-.03 [-.42, .36]	-1.10 [-1.93, -.27]
2 (406)	two-block	.46 [.36, .56]	.48 [.39, .57]	.48 [.39, .58]	.40 [.28, .51]	.40 [.28, .51]	.43 [.32, .54]	.39 [.28, .51]	.42 [.31, .53]	.43 [.32, .54]	.47 [.37, .57]
	odd-even	.48 [.38, .58]	.50 [.40, .60]	.53 [.44, .62]	.50 [.40, .59]	.44 [.33, .55]	.48 [.38, .58]	.47 [.37, .58]	.43 [.32, .54]	.47 [.36, .57]	.53 [.43, .62]
3 (103)	two-block	.20 [-.11, .50]	-.12 [-.56, .31]	.01 [-.35, .38]	.14 [-.18, .46]	.18 [-.13, .49]	.14 [-.19, .47]	.19 [-.12, .49]	.22 [-.07, .51]	.32 [.06, .58]	.08 [-.26, .43]
	odd-even	.27 [-.02, .54]	.10 [-.24, .45]	.36 [.11, .61]	.40 [.17, .63]	.53 [.35, .71]	.38 [.14, .62]	.45 [.24, .66]	.42 [.19, .64]	.62 [.47, .76]	.52 [.34, .71]
4 (110)	two-block (all trials)	.28 [.01, .55]	<.01 [-.36, .37]	.41 [.19, .63]	.39 [.16, .62]	.42 [.20, .63]	.27 [.00, .54]	.40 [.17, .62]	.42 [.20, .63]	.40 [.18, .63]	.38 [.14, .61]
	odd-even (all trials)	.18 [-.13, .48]	-.27 [-.74, .20]	.10 [-.24, .43]	.16 [-.16, .47]	.40 [.18, .62]	-.08 [-.49, .32]	.16 [-.15, .47]	.21 [-.09, .50]	.29 [.03, .55]	.24 [-.04, .52]
	two-block (1-200)	.13 [-.19, .46]	-.27 [-.74, .20]	.19 [-.11, .49]	.19 [-.11, .49]	.12 [-.21, .45]	-.01 [-.39, .37]	.19 [-.11, .49]	-.12 [-.54, .30]	<.01 [-.36, .37]	-.003 [-.37, .36]
	odd-even (1-200)	.11 [-.22, .44]	-.67 [-1.30, -.05]	.19 [-.11, .49]	.19 [-.11, .49]	.31 [.06, .56]	-.36 [-.86, .15]	.19 [-.12, .49]	.02 [-.34, .38]	-.04 [-.41, .33]	-.05 [-.43, .33]

Notes. For the negative values the determinant of the covariance matrix was described as zero or close to zero. For those values statistics based on the inverted matrix cannot be calculated and their values are displayed as system-defined missing values. The values in squared brackets represent the bootstrapped ($n = 1,000$) upper and lower 95%-confidence boundaries of the respective reliability estimate

Table S6. *Correlations between evaluative priming scores in log-transformed reaction time data and explicit measures as a function of outlier-treatments, Studies 1-4*

Explicit measure	Study 1:		Study 2:		Study 3:		Study 4:			
	Evaluative Conditioning Effects on Explicit Evaluations		Explicit Preference for Clinton over Trump		Explicit Preference for Whites over Blacks		Motivation To Act Without Prejudice		Subtle and Blatant Prejudice against Turks	
	<i>r</i> (95)	<i>p</i>	<i>r</i> (404)	<i>p</i>	<i>r</i> (101)	<i>p</i>	<i>r</i> (108)	<i>p</i>	<i>r</i> (108)	<i>p</i>
Errors only	.24	.020	.42	<.001	.05	.636	-.03	.782	.17	.077
0 – 800 ms	.10	.330	.48	<.001	.07	.474	-.02	.824	.06	.538
0 – 1,500 ms	.11	.299	.46	<.001	.05	.654	-.02	.866	.10	.305
250 – 1,500 ms	.08	.415	.45	<.001	.06	.532	-.02	.855	.09	.330
250 ms – 3 <i>SD</i>	.20	.047	.43	<.001	.10	.309	-.09	.346	.17	.081
300 – 1,000 ms	.06	.531	.46	<.001	.15	.133	-.08	.393	.12	.199
300 – 1,500 ms	.07	.478	.44	<.001	.06	.527	-.02	.800	.10	.309
300 – 3,000 ms	.20	.055	.41	<.001	.01	.904	-.03	.741	.15	.108
300 ms – 2 <i>SD</i>	.10	.312	.44	<.001	.14	.168	-.03	.737	.11	.247
-/+ 2 <i>SD</i>	.14	.166	.45	<.001	.15	.135	-.02	.820	.11	.247

Note. Errors only = only error trials are excluded. *SD* = standard deviation.

Table S7. Performance summary of outlier-treatments in terms of three evaluation criteria (overall priming effect, internal consistency, relation to explicit measures) in the log-transformed data sets, Studies 1-4.

	Errors only	0 - 800 ms	0 - 1,500 ms	250 -1,500 ms	250 ms - 3 SD	300 - 1,000 ms	300 - 1,500 ms	300 - 3,000 ms	300 ms - 2 SD	-/+ 2 SD
Overall Priming Effect										
Study 1: Conditioned Attitudes	$p < .05$	$p < .05$				$p < .01$		$p < .05$		
Study 2: Political Attitudes	$(p < .001)$	$(p < .001)$	$(p < .001)$	$(p < .001)$	$(p < .001)$	$(p < .001)$	$(p < .001)$	$(p < .001)$	$(p < .001)$	$(p < .001)$
Study 3: Racial Attitudes		$p = .001$				$p < .05$				
Study 4: Ethnic Attitudes	$p < .05$	$p < .001$	$p < .05$	$p < .05$		$p < .001$	$p < .05$	$p < .05$		
Internal Consistency										
Study 1: Conditioned Attitudes										
Study 2: Political Attitudes	moderate ^a	moderate ^a	moderate ^a	moderate ^a	moderate ^a	moderate ^a	moderate ^a	moderate ^a	moderate ^a	moderate ^a
Study 3: Racial Attitudes									moderate ^a	
Study 4: Ethnic Attitudes					moderate ^a					
Correlation to Explicit Measures										
Study 1: Conditioned Attitudes	$(p < .05)$				$(p < .05)$					
Study 2: Political Attitudes	$p < .001$	$p < .001$	$p < .001$	$p < .001$	$p < .001$	$p < .001$	$p < .001$	$p < .001$	$p < .001$	$p < .001$
Study 3: Racial Attitudes						highest ^b				
Study 4: Ethnic Attitudes	highest ^b				highest ^b					

Note. Statistically significant priming effects and statistically significant correlations are indicated by p -values. Significant results in parentheses indicate outcomes in domains without a priori reasons for a significant effect. ^a Estimates of internal consistency were marked as *moderate* whenever the averaged estimate (two-block, odd-even) was above .40. ^b Correlations with corresponding explicit measures marked as *highest* were the highest correlations in a given study, although they did not reach statistical significance.