

SUPPLEMENTARY MATERIALS

Pilot Study

Method

Participants and design. Two hundred and thirty-two English-speaking volunteers participated online via the Prolific Academic website (<https://prolific.ac>) in exchange for a small monetary reward (€0.75). Nineteen were excluded because they failed to complete the survey. One was excluded for failing to meet the minimum age criterion (17 or older). This left a final sample of two hundred and twelve participants (110 men, 102 women) ranging from 17 to 72 years ($M = 32.2$, $SD = 11.1$).¹

Materials. The survey consisted of 68 statements that each contained three basic elements: a generic object (always referred to as ‘the object’), a relational qualifier (e.g., ‘causes’), and a generic subject (always referred to as “positive events” or “negative events”). There were thirty-four different types of relational qualifiers each of which was paired once with ‘positive events’ and ‘negative events’ (see Appendix). The list of relations that comprised the survey were generated through a brain-storming session following a literature search for relational qualifiers that have previously been shown to influence evaluation.

Procedure

Relational survey. Participants were informed that they would encounter statements about objects and valenced events. Their job was to indicate how much they liked or disliked the object in each statement. Following these instructions they then completed the survey. They rated all 68 statements one after the other and were asked to treat each statement as independent from the others. Four statements were presented onscreen at any given time – one above the other. The presentation order of statements was randomized across

¹ Note that the study designs and data-analysis plans for this pilot experiment are available on the Open Science Framework website (<https://osf.io/me9dh/>). We report all manipulations and measures used in the study. All data were collected without intermittent data analysis. The data analytic plan, experimental scripts, and data are available at the above link.

participants, with the exception that the statement ‘the object is the same as positive/negative events’ always appeared at the beginning of the survey.²

Self-reported ratings. After reading a statement, participants indicated how much they liked or disliked the object using a scale ranging from 1 (*I dislike it extremely*) to 9 (*I like it extremely*) with 5 (*I neither like nor dislike it*) as a neutral mid-point.

Results

Submitting mean scores from the 34 statements that produced positive evaluations (see Table 1) to a repeated-measures Analysis of Variance (ANOVA) (with Relation Type as a within-subjects factor) revealed a main effect for Relation Type, $F(33, 211) = 74.46, p < .001, \eta^2_p = .26$. Likewise, submitting scores from statements that produced negative evaluations (see Table 2) to the ANOVA also revealed a main effect of Relation Type, $F(32, 211) = 91.79, p < .001, \eta^2_p = .30$. Inspection of Tables 1 and 2 indicates that the vast majority of statements gave rise to an explicit evaluation that significantly differed from neutral ($p < .05$), and that the magnitude of those ratings differed as a function of type of relation involved. Descriptively, the most extreme evaluations (both positive and negative) were those in which the source *caused*, *owned*, or was *hierarchically related* to the valenced event in some way. The least extreme evaluations (both positive and negative) were those in which the source was *physically related*, *conditionally related*, or *unrelated* to the valenced event.

Discussion

The specific way in which an object and valenced events are related, influences both the direction and magnitude of object evaluations. The results are interesting as such in that they document important differences in how relational qualifiers moderate the impact of statements on changes in liking. Within the context of the present research, however, we only utilized these data to identify three relations that moderated the transfer of valence in a strong

² We adopted this strategy in the hope that equivalence relations (“*Object Same Valence Event*”) might serve as a ‘baseline’ relation against which participants might calibrate how they respond to all other relations in the survey.

(causal, 'causes'), medium (predictive, 'predicts'), or weak (unrelated, 'is unrelated to') way and used these relations in our main study.

Table 1. Means, standard deviations, *t*-test scores, and effect sizes for those CS-US relations from the relational survey that gave rise to positive evaluations. Items are rank ordered in terms of their respective effect sizes (with scores independently compared to the neutral [5] mid-point of the scale).

Statement	Positive Evaluation			
	<i>M</i>	<i>SD</i>	<i>T</i>	<i>d</i>
1. The object causes positive events.	7.83	1.22	$t(211) = 33.77$	2.32
2. I own the object and it is related to positive events.	7.67	1.23	$t(211) = 31.72$	2.18
3. The object is related to positive events.	7.01	0.93	$t(211) = 31.67$	2.16
4. The object is a part of positive events.	7.73	1.31	$t(211) = 30.77$	2.11
5. The object starts positive events.	7.57	1.23	$t(211) = 30.43$	2.09
6. The object stops negative events.	7.73	1.31	$t(211) = 30.37$	2.09
7. The object is more positive than other positive events.	7.76	1.39	$t(211) = 28.73$	1.97
8. The object is a member of positive events.	7.13	1.12	$t(211) = 27.74$	1.91
9. The object is a type of positive events.	7.30	1.25	$t(211) = 26.77$	1.84
10. The object, and only this object, predicts positive events.	7.33	1.30	$t(211) = 26.09$	1.79
11. The object prevents negative events from happening.	7.61	1.53	$t(211) = 24.81$	1.70
12. The object loves positive events.	7.29	1.38	$t(211) = 24.15$	1.66
13. The object is an effect of positive events.	6.98	1.27	$t(211) = 22.66$	1.56
14. The object is similar to positive events.	6.71	1.10	$t(211) = 22.58$	1.55
15. The object predicts positive events.	6.93	1.28	$t(211) = 22.00$	1.51
16. The object is the opposite of negative events.	7.16	1.48	$t(211) = 21.25$	1.46
17. The object refers to positive events.	6.68	1.16	$t(211) = 21.14$	1.45
18. The object is the same as positive events.	7.14	1.48	$t(211) = 21.00$	1.44
19. The object occurs before positive events.	6.55	1.18	$t(211) = 19.13$	1.31
20. The object (physically) approaches positive events.	6.60	1.23	$t(211) = 18.94$	1.30
21. The object was previously not related to positive events but now is.	6.54	1.19	$t(211) = 18.75$	1.29
22. The object is just one of many objects that predict positive events.	6.56	1.22	$t(211) = 18.57$	1.28
23. Others own the object and it is related to positive events.	6.64	1.31	$t(211) = 18.22$	1.25
24. The object is physically close to positive events.	6.57	1.30	$t(211) = 17.56$	1.21
25. The object (physically) avoids negative events.	6.61	1.39	$t(211) = 16.93$	1.16
26. The object occurs after positive events.	6.49	1.29	$t(211) = 16.68$	1.15
27. The object occurs at the same time as positive events.	6.48	1.38	$t(211) = 15.68$	1.08
28. The object is related to positive events only under some, but not under other, conditions.	5.88	1.00	$t(211) = 12.78$	0.88
29. The object is physically far away from negative events.	6.22	1.53	$t(211) = 11.56$	0.79
30. The object loathes negative events.	6.30	1.72	$t(211) = 10.96$	0.75
31. The object is not related to negative events.	5.93	1.29	$t(211) = 10.48$	0.72
32. The object is different from negative events.	5.69	1.17	$t(211) = 8.67$	0.59
33. The object is less positive than other positive events.	5.67	1.21	$t(211) = 8.09$	0.56
34. The object was previously related to negative events but now is not.	5.41	1.19	$t(211) = 4.96$	0.34

Table 2. Means, standard deviations, *t*-test scores, and effect sizes for those CS-US relations from the relational survey that gave rise to negative evaluations. Items are rank ordered in terms of their respective effect sizes (with scores independently compared to the neutral [5] mid-point of the scale).

Statement	Negative Evaluation			
	<i>M</i>	<i>SD</i>	<i>t</i>	<i>d</i>
1. The object causes negative events.	2.15	1.46	$t(211) = 28.38$	1.95
2. The object is more negative than other negative events.	2.13	1.58	$t(211) = 26.44$	1.82
3. The object is a type of negative events.	2.68	1.33	$t(211) = 25.40$	1.75
4. The object stops positive events.	2.26	1.58	$t(211) = 25.30$	1.74
5. The object is a member of negative events.	2.76	1.29	$t(211) = 25.13$	1.73
6. The object starts negative events.	2.32	1.57	$t(211) = 24.85$	1.71
7. The object prevents positive events from happening.	2.36	1.65	$t(211) = 23.22$	1.59
8. The object is the same as negative events.	2.81	1.49	$t(211) = 21.39$	1.47
9. The object is the opposite of positive events.	2.75	1.61	$t(211) = 20.37$	1.39
10. The object is similar to negative events.	3.29	1.22	$t(211) = 20.32$	1.39
11. The object loves negative events.	2.54	1.79	$t(211) = 20.01$	1.37
12. The object is a part of negative events.	3.01	1.46	$t(211) = 19.85$	1.36
13. The object is related to negative events.	3.17	1.43	$t(211) = 18.69$	1.28
14. The object loathes positive events.	2.75	1.77	$t(211) = 18.44$	1.27
15. Others own the object and it is related to negative events.	3.09	1.59	$t(211) = 18.29$	1.26
16. The object is an effect of negative events.	3.31	1.36	$t(211) = 18.11$	1.24
17. I own the object and it is related to negative events.	3.09	1.59	$t(211) = 17.46$	1.19
18. The object was previously not related to negative events but now is.	3.37	1.42	$t(211) = 16.65$	1.14
19. The object is physically close to negative events.	3.42	1.42	$t(211) = 16.15$	1.11
20. The object refers to negative events.	3.63	1.42	$t(211) = 14.07$	0.97
21. The object occurs after negative events.	3.73	1.45	$t(211) = 12.71$	0.87
22. The object (physically) approaches negative events.	3.74	1.51	$t(211) = 12.16$	0.84
23. The object occurs before negative events.	3.69	1.57	$t(211) = 12.15$	0.84
24. The object occurs at the same time as negative events.	3.70	1.61	$t(211) = 11.72$	0.81
25. The object (physically) avoids positive events.	3.60	1.75	$t(211) = 11.61$	0.79
26. The object is related to negative events only under some, but not other, conditions.	4.24	1.10	$t(211) = 10.02$	0.69
27. The object is physically far away from positive events.	4.04	1.55	$t(211) = 9.07$	0.62
28. The object is less negative than other negative events.	4.29	1.16	$t(211) = 8.98$	0.62
29. The object is not related to positive events.	4.42	1.37	$t(211) = 6.24$	0.43
30. The object was previously related to positive events but now is not.	4.46	1.46	$t(211) = 5.36$	0.37
31. The object is different from positive events.	4.65	1.34	$t(211) = 3.86$	0.27
32. The object is just one of many objects that predict negative events.	4.90	1.73	$t(211) = 0.84$	0.06
33. The object, and only this object, predicts negative events.	4.94	2.23	$t(211) = 0.37$	0.03