Supplementary 4 - Replication for Study 1

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1 Background

This study is a replication of Study 1 as elaborated in the manuscript. This replication was conducted during the early months of the 'Haravot Habarzel' war in Gaza, under the hypothesis that heightened anxiety and adversity would increase motivation for self-verification and reduce tolerance for self-violations. The sole change is the removal of the Patient Health Question (PHQ-2) and the addition of 2 questionnaires-

- General Anxiety Disorder (GAD-7) questionnaire (Spitzer et al., 2006)

- a custom-designed questionnaire assessing both objective and subjective impacts of the war on participants. The questionnaire included questions such as:

  - I was evacuated from my house (objective)

  - Someone close to me was kidnapped (objective)

  - I felt that my life was in real danger (subjective)

2 Participant Exclusion

A total of N = 141 participants began the first session of Study 4.
92 participants did not finish the study and were excluded from data analysis according to pre-registered criteria:

- Twenty-four provided in session 1 self-ratings that were unsuitable for session 2. Elaborated below.

- Thirty-nine failed comprehension checks either at the beginning of Session 1 or at the beginning of Session 2.

- Nineteen failed attention checks either on Session 1 or on Session 2.

- Five did not finish Session 1.

- Two did not return to session 2 in the appropriate time.

- Three participants completed the study on a tablet rather than a computer as instructed.

The final analysis included N = 49 participants. Note that this large dropout was expected as the study was conducted during an ongoing war on students who study in Beer-Sheva, the largest city in southern Israel, not very far from the war front.

Unsuitable self-ratings-

To be eligible for the 2nd session, participants needed to provide self-rating that allow us to create feedbacks for all 4 conditions-

- Positive Verification - a feedback similar to the self-rating (self-rating + rand(-5:5)) of a trait self-rated higher than 75.

- Positive Violation - a feedback higher than the self-rating (self-rating + 30 + rand(-5:5)).

- Non-Positive Verification - a feedback similar to the self-rating (self-rating + rand(-5:5)) of a trait self-rated between 35-65.

- Negative Violation - a feedback lower than the self-rating (self-rating - 30 + rand(-5:5)).

To do so, an eligible participant needed to have:

- at least 4 traits self-rated higher than 75 &

- at least 4 (different) traits self-rated lower than 70 &

- at least 4 (different) traits self-rated between 35 and 65 &

- at least 4 (different) traits self-rated higher than 30

3 Stimuli - Traits and Trait Questionnaires

Stimuli were exactly the same as in Study 1, see Supplementary 1 - Study 1.

4 Analyses Unreported in the Paper

4.1 Main Model Analysis

The model predicting the desire to retake questionnaire is a 2X2 design:

- Feedback: Verifying feedback vs. Violating feedback
- Valence: Positive feedback vs. Non-positive feedback

Table 1: Fixed Effects from Main Model

term	β	SE	t value	df	p.value	CI Lower	CI Upper
Intercept	-1.291	4.102	-0.315	49.315	0.754	-9.534	6.951
Feedback	19.211	2.982	6.442	47.826	0.000	13.214	25.207
Valence	5.354	1.414	3.788	51.756	0.000	2.518	8.191
Feedback × Valence	2.119	1.568	1.351	30.384	0.187	-1.082	5.320

Table 2: Estimated Marginal Means: Feedback × Valence

feedback	valence	emmean	SE	df	lower.CL	upper.CL
Violation	Non-Positive	25.393	6.313	48.685	12.705	38.080
Verification	Non-Positive	-17.267	5.587	45.436	-28.516	-6.018
Violation	Positive	10.446	4.688	42.257	0.988	19.905
Verification	Positive	-23.738	5.441	44.802	-34.698	-12.777

Table 3: Estimated Marginal Means: Feedback

feedback	emmean	SE	df	lower.CL	upper.CL
Violation	17.920	4.986	48.671	7.899	27.941
Verification	-20.502	5.203	48.107	-30.964	-10.041

Table 4: Estimated Marginal Means: Valence

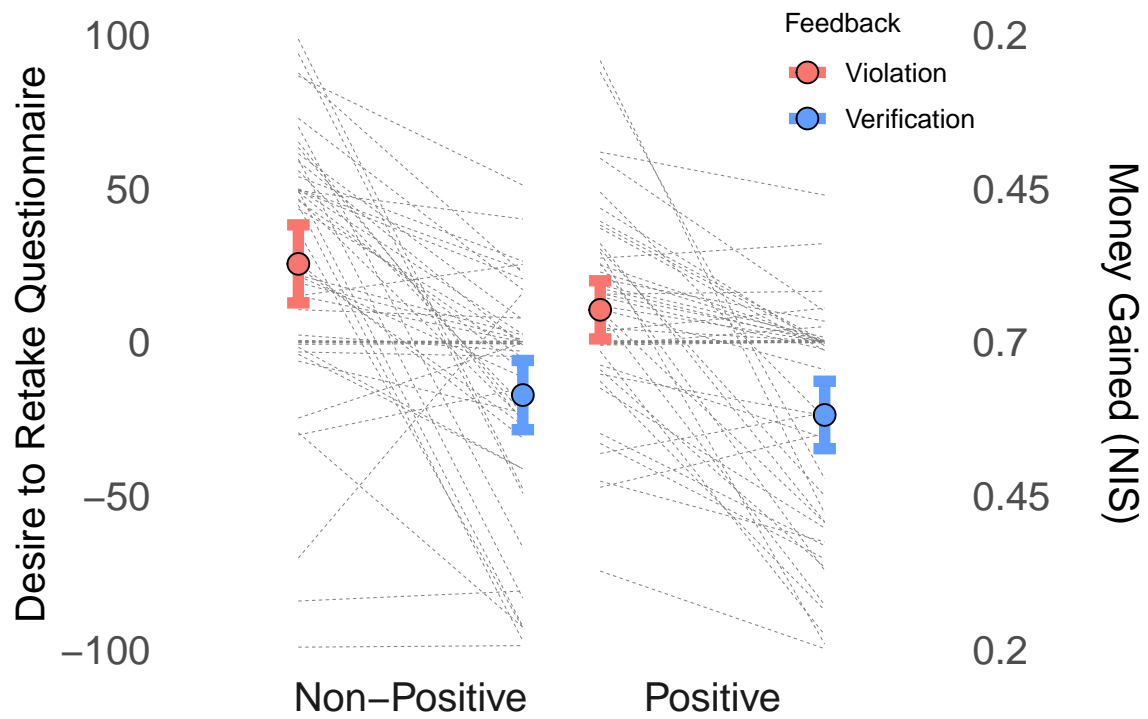| valence	emmean	SE	df	lower.CL	upper.CL
Non-Positive	4.063	4.618	47.853	-5.223	13.350
Positive	-6.646	4.101	47.196	-14.895	1.603

Figure 1: Gray lines represent the average response of each participant at each condition. Colored means and error bars generated from the Effect Coded Main Model

4.2 Comparing Replication Data to Original Data

As reported above, the main model revealed a significant main effect for feedback and for valence, similar to the results in study 1 (which is replicated here). To examine whether there is a difference between the original data and the replication we combined the data and created one major model with a study variable:

Table 5: Fixed Effects from Comparison Model

term	β	SE	t value	df	p.value	conf.low	conf.high
Intercept	0.788	3.047	0.259	105.617	0.796	-5.252	6.829
Feedback (Verification vs. Violation)	16.309	2.765	5.899	105.405	0.000	10.827	21.790
Valence (Positive vs. Non-Positive)	7.285	1.483	4.913	104.159	0.000	4.345	10.225
Study (Replication vs. Original)	-2.046	4.446	-0.460	104.982	0.646	-10.862	6.769
Feedback × Valence	1.474	1.463	1.008	97.102	0.316	-1.428	4.377
Feedback × Study	3.070	4.061	0.756	104.789	0.451	-4.982	11.122
Valence × Study	-2.053	2.189	-0.938	103.982	0.350	-6.394	2.288
Feedback × Valence × Study	0.476	2.124	0.224	104.990	0.823	-3.735	4.686

Table 6: Estimated Marginal Means: Feedback × Valence × Study

feedback	valence	study	emmean	SE	df	lower.CL	upper.CL
Violation	Non-Positive Trait	Original Study	25.856	4.945	102.255	16.048	35.665
Verification	Non-Positive Trait	Original Study	-9.710	4.574	96.520	-18.788	-0.631
Violation	Positive Trait	Original Study	8.337	4.081	90.853	0.231	16.444
Verification	Positive Trait	Original Study	-21.331	4.911	96.909	-31.077	-11.585
Violation	Non-Positive Trait	Replication	25.302	5.362	104.152	14.670	35.935
Verification	Non-Positive Trait	Replication	-17.356	4.972	98.807	-27.221	-7.491
Violation	Positive Trait	Replication	10.939	4.423	95.837	2.159	19.718
Verification	Positive Trait	Replication	-23.918	5.316	100.767	-34.465	-13.372

Table 7: Estimated Marginal Means: Feedback × Study

feedback	study	emmean	SE	df	lower.CL	upper.CL
Violation	Original Study	17.097	3.911	105.158	9.343	24.851
Verification	Original Study	-15.520	4.340	102.717	-24.129	-6.912
Violation	Replication	18.121	4.240	106.160	9.715	26.526
Verification	Replication	-20.637	4.714	103.526	-29.985	-11.289

Table 8: Estimated Marginal Means: Valence × Study

valence	study	emmean	SE	df	lower.CL	upper.CL
Non-Positive Trait	Original Study	8.073	3.537	100.986	1.056	15.090
Positive Trait	Original Study	-6.497	3.275	98.527	-12.995	0.002
Non-Positive Trait	Replication	3.973	3.841	102.521	-3.645	11.591
Positive Trait	Replication	-6.490	3.546	101.039	-13.524	0.544

Table 9: Estimated Marginal Means: Valence × Study

study	emmean	SE	df	lower.CL	upper.CL
Original Study	0.788	3.058	105.615	-5.275	6.851
Replication	-1.258	3.318	106.143	-7.836	5.319

Table 10: Pairwise Comparison Between Studies

contrast	estimate	SE	df	t.ratio	p.value
Study Comparison (Replication - Original)	2.046	4.452	105.014	0.46	0.647

As evident by these results, the different circumstances in which the replication study was conducted in (i.e., war) did not affect the participants' behavior. Our original results were replicated, as participants forwent money to retake violating and especially negatively violating questionnaires, and to avoid verifying and especially positively verifying questionnaires. Important to note, as will be demonstrated next by the GAD scores, our sample included students who came back to the university and were probably less affected by the war than students who did not return yet to the university.

4.3 Anxiety Mediation

General Anxiety was measured by the General Anxiety Disorder-7 (GAD-7) questionnaire (Spitzer et al., 2006). General Anxiety was coded into 2 groups as recommended in the literature (Blake et al., 2011; Clark et al., 2009; Spitzer et al., 2006)

Adding general anxiety to the main model did not impact the significance of the effect of Feedback or Valence, on the desire to retake questionnaires. We did not manage to collect a sample with a large variance of anxiety levels, and general anxiety levels did not impact the desire to retake questionnaires.

Table 11: GAD Group Counts

Group	Count
Low GAD (<8)	40
High GAD (>=8)	9

Table 12: Descriptive Statistics

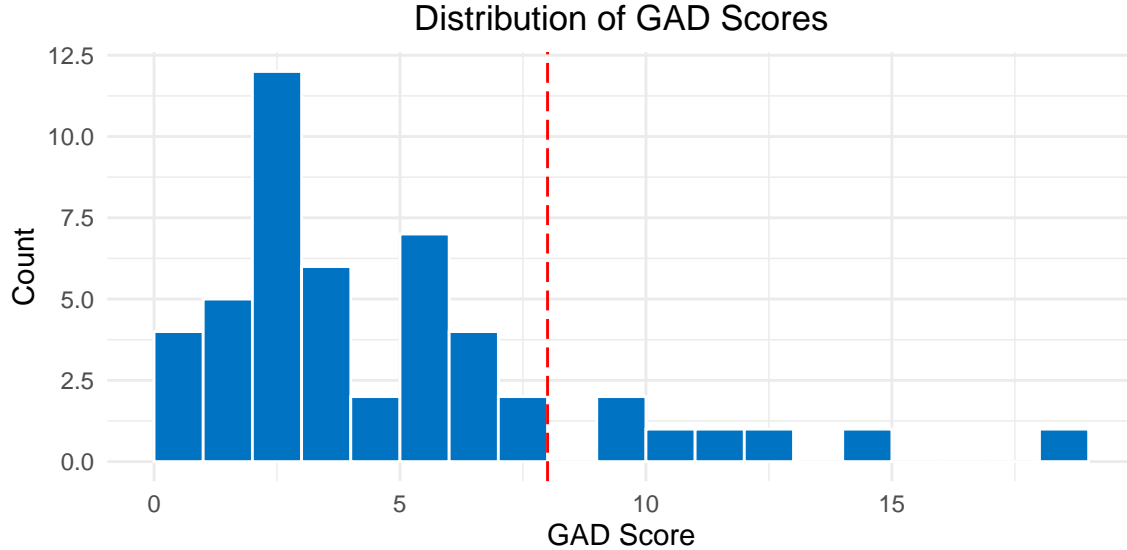| variable	n	min	max	median	q1	q3	iqr	mad	mean	sd	se	ci
gad.score	49	0	19	4	3	7	4	2.965	5.286	3.83	0.547	1.1

Figure 2: Dashed red line represents clinical cut-off

Table 13: Fixed Effects from GAD Model

term	β	SE	t value	df	p.value	conf.low	conf.high
Intercept	-3.138	5.856	-0.536	47.825	0.595	-14.913	8.638
Feedback	22.749	4.227	5.382	46.992	0.000	14.245	31.253
Valence	7.562	2.009	3.764	63.818	0.000	3.548	11.575
GAD1	2.572	5.816	0.442	46.904	0.660	-9.129	14.272
Feedback × Valence	-0.257	2.178	-0.118	49.394	0.907	-4.633	4.119
feedback1:GAD1	-4.942	4.219	-1.171	46.766	0.247	-13.431	3.548
valence1:GAD1	-3.078	1.989	-1.548	67.237	0.126	-7.048	0.891
feedback1:valence1:GAD1	3.290	2.092	1.572	59.041	0.121	-0.897	7.477

Table 14: Estimated Marginal Means: Feedback × Valence × GAD

feedback	valence	GAD	emmean	SE	df	lower.CL	upper.CL
Violation	Non-Positive Trait	Low Anxiety	24.758	6.860	48.259	10.967	38.548
Verification	Non-Positive Trait	Low Anxiety	-16.922	6.088	45.279	-29.182	-4.662
Violation	Positive Trait	Low Anxiety	9.725	5.080	43.402	-0.517	19.966
Verification	Positive Trait	Low Anxiety	-19.823	5.745	44.686	-31.396	-8.251
Violation	Non-Positive Trait	High Anxiety	29.075	16.506	47.613	-4.120	62.270
Verification	Non-Positive Trait	High Anxiety	-19.214	14.855	47.083	-49.096	10.668
Violation	Positive Trait	High Anxiety	14.888	12.094	47.191	-9.440	39.215
Verification	Positive Trait	High Anxiety	-47.587	13.986	47.036	-75.723	-19.451

Table 15: Estimated Marginal Means: GAD Main Effect

GAD	emmean	SE	df	lower.CL	upper.CL
Low Anxiety	-0.566	4.464	48.323	-9.539	8.407
High Anxiety	-5.710	10.817	47.329	-27.466	16.047

Table 16: Pairwise Comparison Between High and Low anxiety

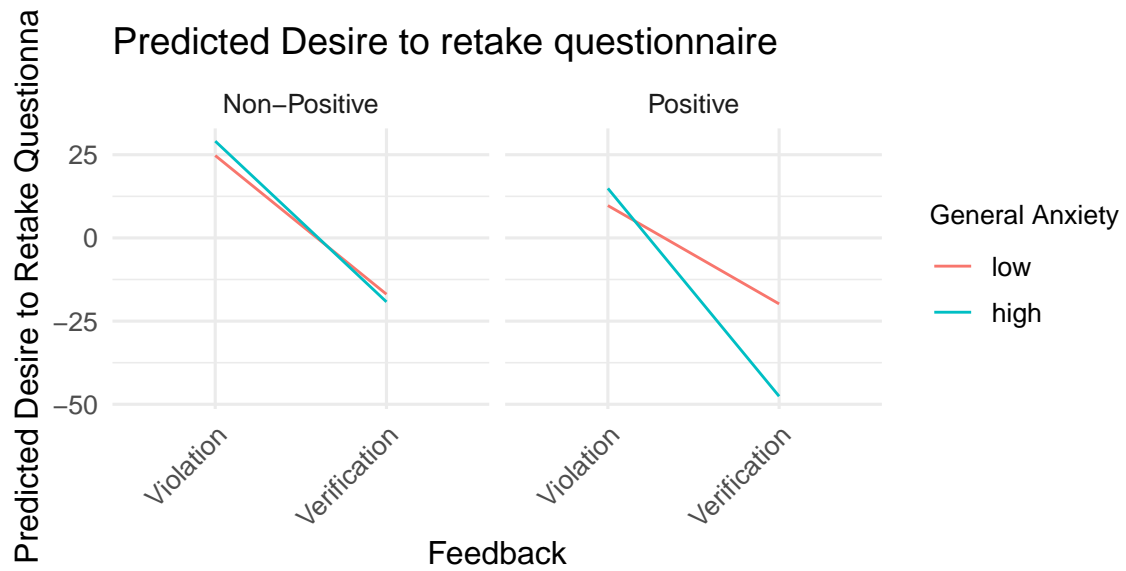| contrast	estimate	SE	df	t.ratio	p.value
Anxiety Levels Comparison (High vs. Low)	5.144	11.655	46.972	0.441	0.661

Figure 3: Interaction between Feedback, Valence, and GAD on desire to retake questionnaire. The plot displays predicted data according to modelbased::estimate_relation, and not original data.

4.4 Self-Esteem Mediation

Self-esteem was coded into 3 groups as recommended in the literature (Echeburua, 1995; García et al., 2019; Rosenberg, 1965)

Adding self-esteem to the main model did not impact the significance of the effect of the Quadratic Feedback term or of the interaction of Valence with the Linear Feedback term, on the desire to retake questionnaires. Yet neither the self-esteem nor any of its interactions yielded a consistent significant effect on the desire to retake questionnaires.

Table 17: RSE Group Counts

Group	Count
Low RSE (<26)	7
Medium RSE (26–29)	11
High RSE (>29)	31

Table 18: Descriptive Statistics

variable	n	min	max	median	q1	q3	iqr	mad	mean	sd	se	ci
rse.score	49	19	40	31	29	35	6	5.93	31.388	5.053	0.722	1.451

Distribution of RSE Scores
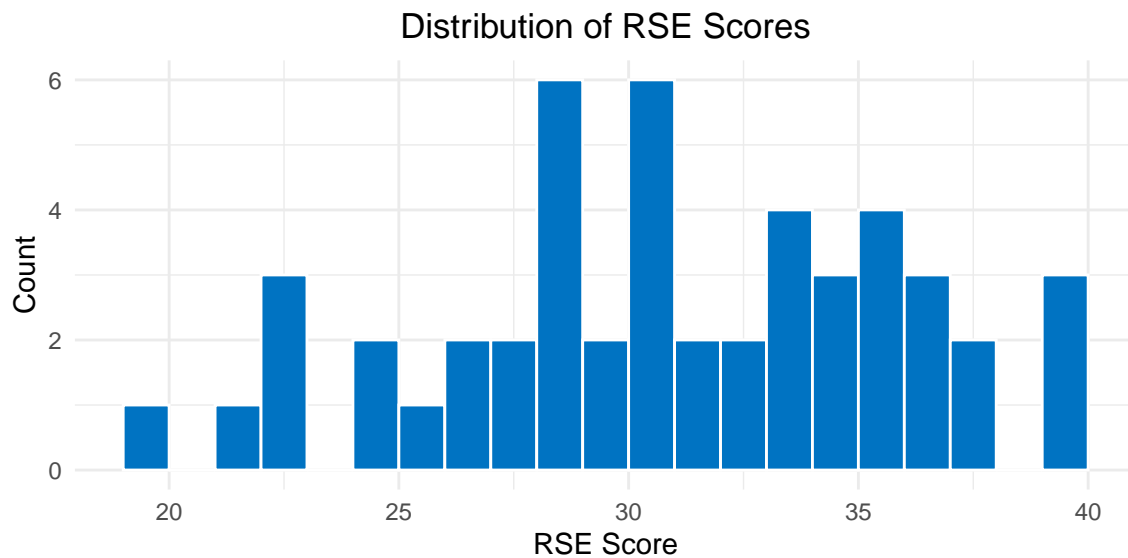
Table 19: Fixed Effects from RSE Model

term	β	SE	t value	df	p.value	conf.low	conf.high
Intercept	-2.301	4.995	-0.461	47.248	0.647	-12.349	7.747
Feedback	18.052	3.649	4.947	46.026	0.000	10.707	25.398
Valence	4.184	1.684	2.485	59.055	0.016	0.814	7.553
RSE (Medium vs. Low)	-5.379	7.981	-0.674	45.918	0.504	-21.445	10.686
RSE (High vs. Medium)	4.021	7.029	0.572	45.921	0.570	-10.127	18.170
Feedback × Valence	1.957	1.866	1.049	39.943	0.301	-1.815	5.729
Feedback × RSE (Med vs. Low)	-2.383	5.879	-0.405	45.830	0.687	-14.219	9.453
Feedback × RSE (High vs. Med)	0.060	5.179	0.012	45.873	0.991	-10.366	10.486
Valence × RSE (Med vs. Low)	-4.048	2.670	-1.516	67.225	0.134	-9.377	1.281
Valence × RSE (High vs. Med)	1.980	2.354	0.841	67.184	0.403	-2.717	6.678
Feedback × Valence × RSE (Med vs. Low)	-2.231	2.859	-0.781	52.836	0.439	-7.965	3.503
Feedback × Valence × RSE (High vs. Med)	2.286	2.517	0.908	52.698	0.368	-2.763	7.336

Table 20: Estimated Marginal Means from Self-Esteem Model

feedback	valence	RSE	emmean	SE	df	lower.CL	upper.CL
Violation	Non-Positive Trait	Low	7.851	16.473	46.624	-25.296	40.999
Verification	Non-Positive Trait	Low	-22.939	14.907	46.191	-52.942	7.063
Violation	Positive Trait	Low	8.128	12.300	46.307	-16.626	32.883
Verification	Positive Trait	Low	-23.760	14.491	46.179	-52.925	5.405
Violation	Non-Positive Trait	Medium	30.240	13.173	46.891	3.739	56.741
Verification	Non-Positive Trait	Medium	-14.471	11.909	46.209	-38.439	9.498
Violation	Positive Trait	Medium	9.425	9.894	46.973	-10.479	29.330
Verification	Positive Trait	Medium	-18.313	11.544	46.162	-41.547	4.921
Violation	Non-Positive Trait	High	27.586	7.891	47.305	11.715	43.457
Verification	Non-Positive Trait	High	-16.969	7.124	45.540	-31.312	-2.625
Violation	Positive Trait	High	11.279	5.922	44.870	-0.649	23.208
Verification	Positive Trait	High	-25.668	6.911	45.396	-39.585	-11.751

Table 21: Estimated Marginal Means at the different Self-Esteem levels

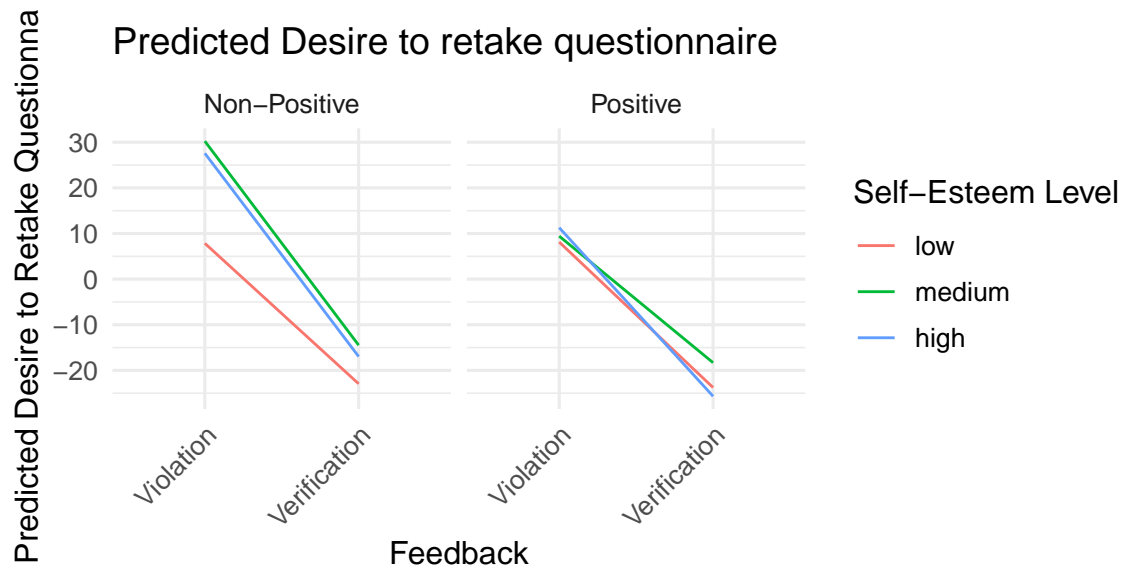| RSE	emmean	SE	df	lower.CL	upper.CL
Low	-7.680	10.913	46.405	-29.641	14.281
Medium	1.720	8.720	46.638	-15.825	19.265
High	-0.943	5.224	47.328	-11.451	9.566

Figure 4: Interaction between Feedback, Valence, and RSE on desire to retake questionnaire. The plot displays predicted data according to modelbased::estimate_relation, and not original data.

4.5 Trait Centrality Model

For each trait, participants rated how central that trait is to them. Centrality was significantly correlated with trait self-rating

Pearson correlation: $r(782) = 0.53$, $t = 17.56$, $p < .001$.
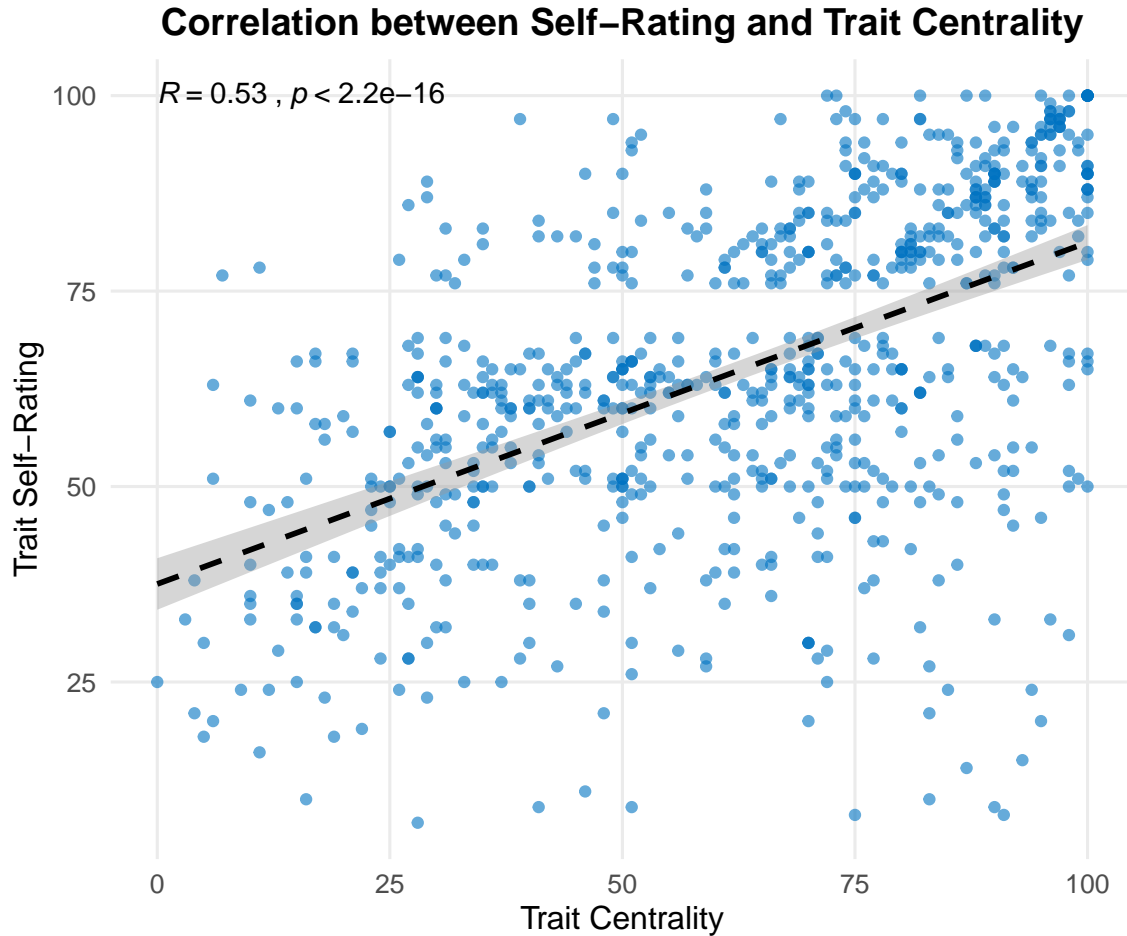

Figure 5: Correlation between self-rating and trait centrality

To help the interpretation of the centrality model, we person-mean centered centrality.

Adding trait centrality (centered) to the main model did not impact the significance of the effect of Feedback or Valence on the desire to retake questionnaires. Yet neither the trait centrality or its interaction with feedback, with valence or their three-way interaction, had a significant or consistent (across studies) effect on the desire to retake questionnaires.

Table 22: Fixed Effects from Centrality Model

term	β	SE	t value	df	p.value	conf.low	conf.high
Intercept	-1.566	4.096	-0.382	49.359	0.704	-9.795	6.664
Feedback	19.195	3.055	6.283	48.874	0.000	13.055	25.335
Valence	5.901	1.617	3.650	63.178	0.001	2.670	9.131
Centrality	0.093	0.071	1.315	71.780	0.193	-0.048	0.234
Feedback × Valence	1.490	1.837	0.811	33.686	0.423	-2.244	5.224
Feedback × Centrality	-0.004	0.064	-0.057	317.502	0.955	-0.130	0.123
Valence × Centrality	0.040	0.069	0.578	189.549	0.564	-0.096	0.175
Feedback × Valence × Centrality	0.026	0.069	0.372	120.111	0.710	-0.112	0.163

Table 23: Estimated Slopes of Centrality Across Feedback and Valence Conditions

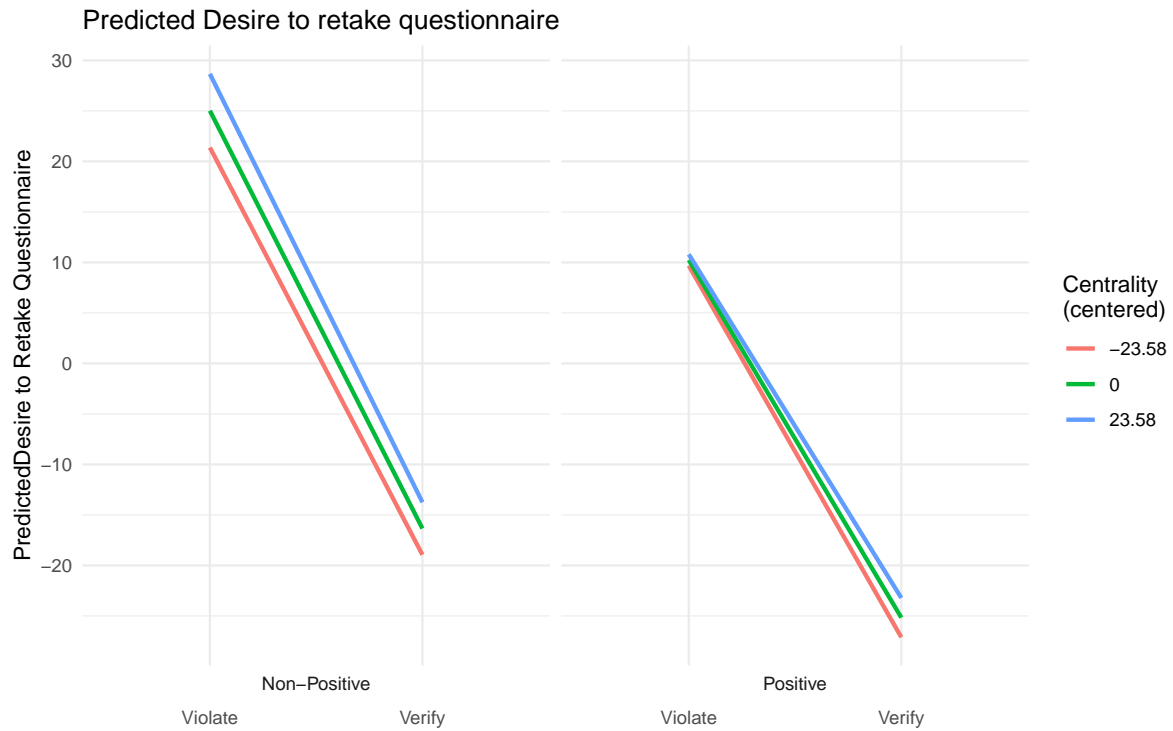| feedback	valence	Slope of Centrality	SE	df	lower.CL	upper.CL
Violation	Non-Positive Trait	0.155	0.136	32.234	-0.122	0.431
Verification	Non-Positive Trait	0.110	0.163	28.318	-0.222	0.443
Violation	Positive Trait	0.024	0.145	32.586	-0.271	0.318
Verification	Positive Trait	0.083	0.194	24.959	-0.316	0.482

Figure 6: Interaction between Feedback, Valence, and Trait Centrality on desire to retake questionnaire. The plot displays predicted data according to ggeffects::ggpredict, not original data.