UNIVERSITY OF AMSTERDAM
Faculty of Social and Behavioural Sciences

Feeling Within Reason: How appraisals shape emotional responses to politics.

Online Supplementary Material

Isabella REBASSO

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Chapter 2

Theoretical predictions per emotion

Tables B1–B3 show the theoretical predictions of appraisal profiles based on Scherer and Meuleman 2013 (Table 1 supplementary material) and Scherer 2001. Open means an appraisal check is not relevant for a specific appraisal profile. The bold columns show the final prediction per emotion family.

Appraisal Check	Disgust	Contempt	Irritation	Rage	**ANGER**
Relevance	low	low	medium	high	**medium**
Novelty					
Suddenness	open	open	low	high	**open**
Familiarity	low	open	open	low	**low**
Predictability	low	open	medium	low	**low/medium**
Pleasantness	low	open	open	open	**low**
Goal Relevance	low	low	medium	high	**medium**
Implication					
Cause: Other behavior	open	high	open	high	**high**
Cause: Own behavior	low	low	low	low	**low**
Intentionality	open	high	high	high	**high**
Cause: Chance	open	low	open	low	**low**
Goal Conduciveness	open	open	low	low	**low**
Goal Obstruction	open	open	high	high	**high**
Urgency	medium	low	medium	high	**medium**
Coping Potential					
Control	open	high	high	high	**high**
Power	open	low	medium	high	**medium**
Adjustment	open	high	high	high	**high**
Normative Significance					
Internal standards	open	low	open	open	**low**
External standards	open	low	low	low	**low**
Unjust consequences	low	medium	high	high	**medium/high**

Table B1: Theoretical predictions of appraisal profiles of four anger emotions, based on Scherer and Meuleman 2013 (Table 1 supplementary material) and Scherer 2001. Open means an appraisal check is not relevant for a specific appraisal profile. The last column shows our final prediction for the anger emotion family.

Appraisal Check	Sadness	Despair	**DESPAIR**	Anxiety	Fear	**ANXIETY**
Goal Relevance	high	high	**high**	medium	high	**medium/high**
Novelty						
Suddenness	low	high	**medium**	low	high	**medium**
Familiarity	low	very low	**low**	open	low	**low**
Predictability	open	low	**low**	open	low	**low**
Pleasantness	open	open	**open**	open	low	**low**
Implication						
Cause: Other behavior	open	medium	**medium**	medium	open	**medium**
Cause: Own behavior	low	low	low	low	**low**	
Intentionality	low	low	**low**	open	open	**open**
high						
Cause: Chance	high	medium	**high**	medium	open	**medium**
Goal Conduciveness	low	low	**low**	low	low	**low**
Goal Obstruction	high	high	**high**	high	high	**high**
Urgency	low	high	**medium**	medium	very high	**high**
Coping Potential						
Control	low	low	**low**	open	open	**open**
Power	very low	very low	**very low**	low	very low	**very low**
Adjustment	medium	very low	**low**	medium	low	**medium/low**
Normative Significance						
Internal standards	open	open	**open**	open	open	**open**
External standards	open	open	**open**	open	open	**open**
Unjust consequences	open	open	**open**	open	open	**open**

Table B2: Theoretical predictions of appraisal profiles of two despair and anxiety emotions, based on Scherer and Meuleman 2013 (Table 1 supplementary material) and Scherer 2001. Open means an appraisal check is not relevant for a specific appraisal profile. The bold columns show our final prediction per emotion family.

Appraisal Check	Joy	Pleasure	Surprise	Pride	**JOY**	Shame	Guilt	**GUILT/SHAME**
Goal Relevance	high	medium	open	high	**high**	high	high	**high**
Novelty								
Suddenness	med./high	low	high	open	**medium**	low	open	**low**
Familiarity	open	open	low	open	**low**	open	open	**open**
Predictability	low	medium	low	open	**low/med.**	open	open	**open**
Pleasantness	open	high	high	high	**high**	open	open	**open**
Implication								
Cause: Other	open	open	open	low	**open/low**	low	low	**low**
Cause: Self	open	low	open	high	**medium**	high	high	**high**
Intentionality	open	high	open	high	**open/high**	high	high	**high**
Cause: Chance	open/high	low	open	high	**open/high**	low	low	**low**
Goal Conduciven.	high	high	high	high	**high**	open	low	**low**
Goal Obstruction	low	low	low	low	**low**	open	high	**high**
Urgency	very low	low	open	low	**v.low /low**	high	medium	**med./high**
Coping Potential								
Control	open	open	open	open	**open**	open	open	**open**
Power	open	open	open	open	**open**	open	open	**open**
Adjustment	high	high	high	high	**high**	medium	medium	**medium**
Normative Signif.								
Internal standards	open	open	open	very high	**open/high**	very low	very low	**very low**
External standards	open	open	open	high	**open/high**	open	very low	**very low**
Unjust consequ.	low	low	open	low	**low**	open	medium	**medium**

Table B3: Theoretical predictions of appraisal profiles of four joy/pleasure and two guilt/shame emotions, based on Scherer and Meuleman 2013 (Table 1 supplementary material) and Scherer 2001. Open means an appraisal check is not relevant for a specific appraisal profile. The bold columns show our final prediction per emotion family.

Multinomial Logistic Regression

In addition to the main models, we estimate multinomial logistic models per domain, as it was included in the preregistration. This requires one additional step to deal with missing values. While the optimization algorithm uses pairwise deletion, which means that if participants indicated that an appraisal dimension does not apply, it is deleted from this observation but is not deleted from the overall analysis. In contrast, the multinomial model only uses complete observations. To avoid dropping all observations that have missing values on one appraisal dimension, we randomly impute a value for each missing value. This only adds noise to the estimate but retains the response. As a result, if for a specific emotion-appraisal combination, “not applicable" was selected frequently, the regression coefficient will not be significant, which we take as evidence that a specific appraisals is not relevant in predicting an emotion label. Moreover, multicollinearity is not a problem for the optimization procedure and it is especially suited to deal with high dimensional models. In the multinomial model, however, we run the risk of overfitting the model and biasing our estimates if several appraisal dimensions are highly related. Given the high alpha between pleasantness, goal conduciveness and goal obstruction (Cronbach's $\alpha = 0.86$), we combine them in one variable by creating the mean (goal obstruction reversed).

We estimate the multinomial models using the *nnet* package, which fits the models using neural networks. We present two models per domain, the first includes only the appraisals as predictors, the second includes a range of controls: age, education, ideology, political efficacy, political knowledge, political interest, dummy variables for the issues. In the nonpolitical model we use the same controls, but the issues differ. Of course we expect less of a difference between the model with and without controls in the nonpolitical domain, as the majority of controls are of political nature. The base category in all models is again anger.

Figure B1 shows the estimates of the nonpolitical models. Participants are more likely to have reported anxiety if they describe the event as higher in goal relevance, more sudden and was caused by chance. The event is less likely to have elicited anxiety if the event was caused by someone else, violated social norms and had unjust consequences. The difference between anger and despair is less pronounced.

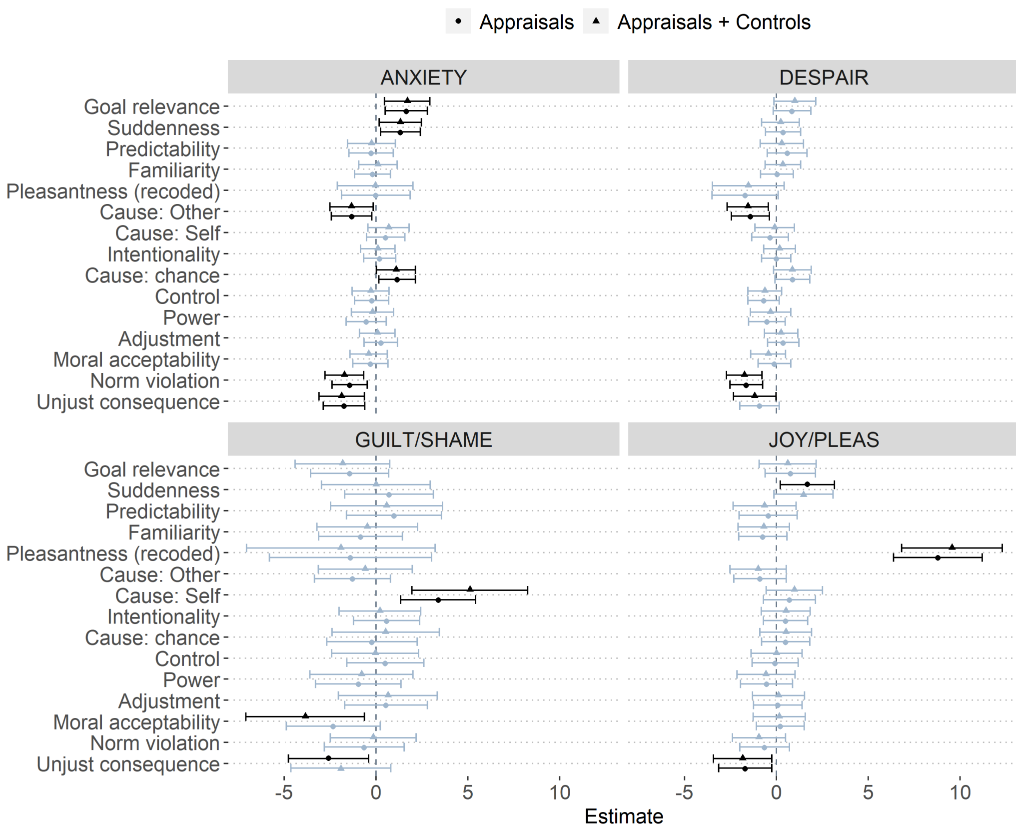

Figure B1. Multinomial Logistic Regression of emotions in the nonpolitical domain. Base category = Anger.

Despair is less likely if an event was caused by others, violated social norms and had unjust consequences. Guilt is more likely than anger to be the reported emotion when the even was caused by oneself. Joy, again is mainly predicted by high pleasantness.

Again, in the political domain, fewer appraisals predict distinct emotion families. Anxiety is less likely than anger, if an event is more familiar. Anxiety and despair are more likely the reported emotion if the event was morally acceptable and is appraised as being relevant to one's goals. But the latter effect only holds if we do not include control variables. Guilt is predicted by higher appraisals of power but none of the other effects are statistically significant.

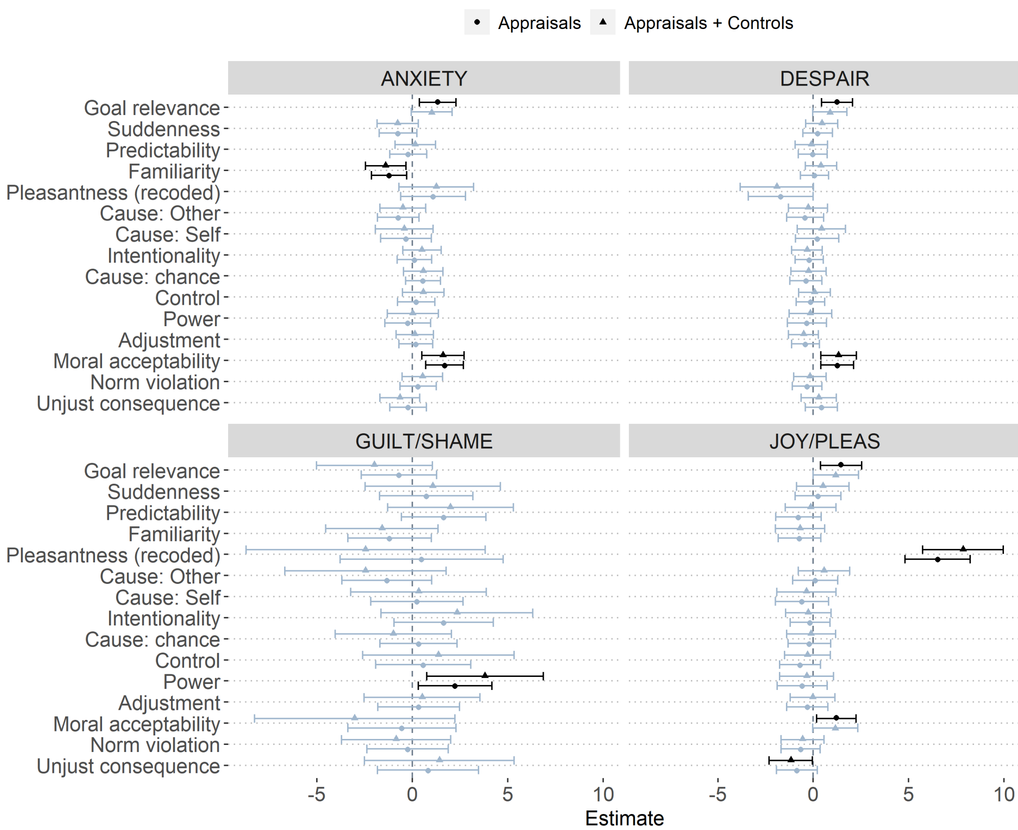

Figure B2. Multinomial Logistic Regression of emotions in the Ppolitical domain. Base category = Anger.

Contrasts of other Appraisal Profiles

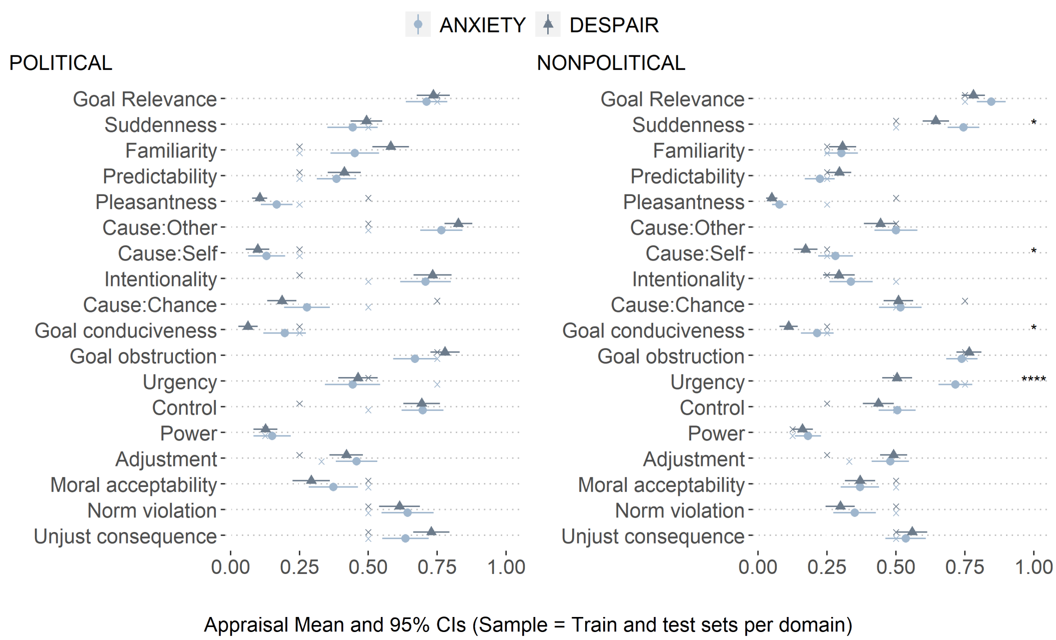

Figure B3. Appraisal profiles of anxiety and despair by domain (political vs. nonpolitical). Scherer's theoretical predictions are marked with an x (low = .25, medium/open = 0.5, high = .75), see also Table **??**. On the right side, we show the significance level of T-tests between the two emotions per domain correcting for multiple hypothesis using the Benjamini–Hochberg procedure.

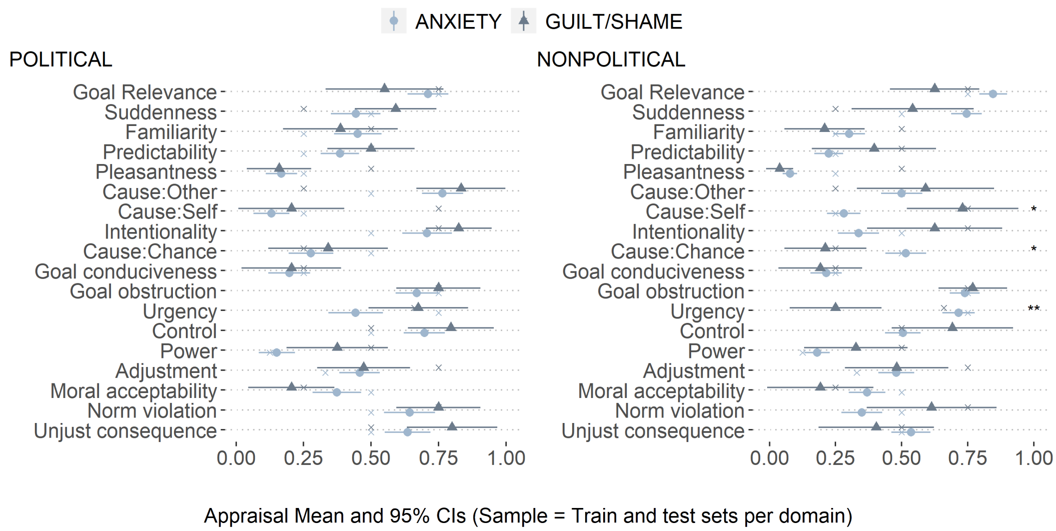

Figure B4. Appraisal profiles of anxiety and guilt by domain (political vs. non-political). Scherer's theoretical predictions are marked with an x (low = .25, medium/open = 0.5, high = .75), see also Table **??**. On the right side, we show the significance level of T-tests between the two emotions per domain correcting for multiple hypothesis using the Benjamini–Hochberg procedure.

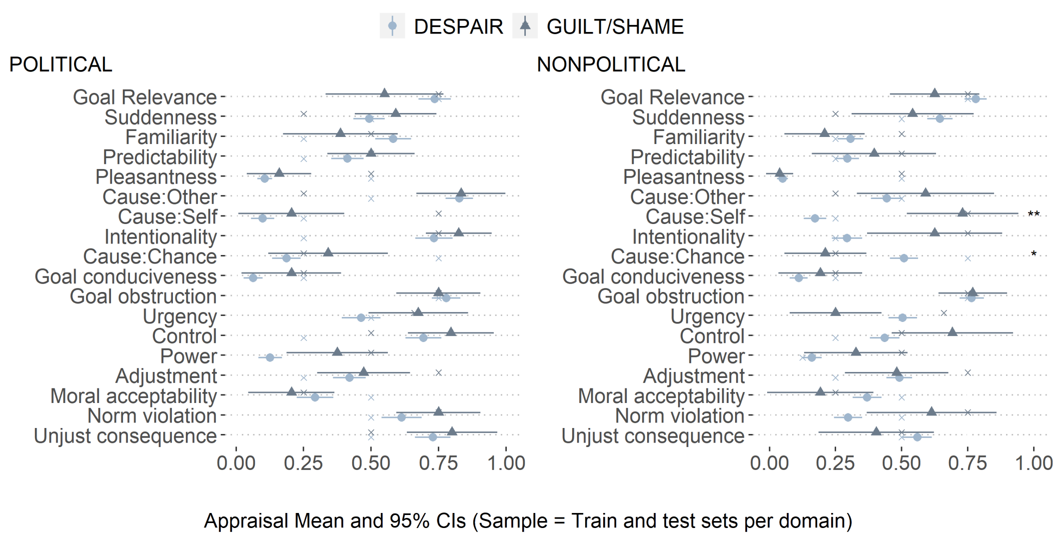

Figure B5. Appraisal profiles of despair and guilt by domain (political vs. non-political). Scherer's theoretical predictions are marked with an x (low = .25, medium/open = 0.5, high = .75), see also Table **??**. On the right side, we show the significance level of T-tests between the two emotions per domain correcting for multiple hypothesis using the Benjamini–Hochberg procedure.

Chapter 3

Study 1: Pre-Test Results

Table B4: Study 1 Pre-Test Results

Dimension	M(High)	M(Low)	p-value	Dimension	Issue
Certainty	4.00	2.06	0.00	Certainty	Vaccination Rates
Control	3.36	3.00	0.24	Certainty	Vaccination Rates
Responsibility	2.21	2.22	0.98	Certainty	Vaccination Rates
Certainty	3.00	3.65	0.11	Control	Vaccination Rates
Control	4.07	2.94	0.01	Control	Vaccination Rates
Responsibility	2.79	2.76	0.96	Control	Vaccination Rates
Certainty	2.94	3.44	0.31	Responsibility	Vaccination Rates
Control	3.71	3.19	0.13	Responsibility	Vaccination Rates
Responsibility	4.59	2.56	0.00	Responsibility	Vaccination Rates
Certainty	3.82	2.25	0.00	Certainty	Painkiller Addiction
Control	3.35	2.69	0.03	Certainty	Painkiller Addiction
Responsibility	3.18	2.38	0.10	Certainty	Painkiller Addiction
Certainty	3.67	2.50	0.01	Control	Painkiller Addiction
Control	3.73	2.44	0.00	Control	Painkiller Addiction
Responsibility	2.53	2.83	0.49	Control	Painkiller Addiction
Certainty	3.00	2.71	0.54	Responsibility	Painkiller Addiction
Control	3.25	3.53	0.30	Responsibility	Painkiller Addiction
Responsibility	4.25	3.71	0.17	Responsibility	Painkiller Addiction
Certainty	3.94	1.18	0.00	Certainty	Pesticide Contamination
Control	2.88	2.88	1.00	Certainty	Pesticide Contamination
Responsibility	1.94	1.47	0.19	Certainty	Pesticide Contamination
Certainty	2.56	2.22	0.37	Control	Pesticide Contamination
Control	4.06	3.17	0.00	Control	Pesticide Contamination
Responsibility	3.88	3.50	0.33	Control	Pesticide Contamination
Certainty	2.17	3.88	0.00	Responsibility	Pesticide Contamination
Control	3.22	3.62	0.15	Responsibility	Pesticide Contamination
Responsibility	4.44	2.44	0.00	Responsibility	Pesticide Contamination
Certainty	3.33	1.53	0.00	Certainty	Refugees
Control	1.93	2.42	0.10	Certainty	Refugees
Responsibility	3.27	2.74	0.30	Certainty	Refugees
Certainty	2.35	2.44	0.83	Control	Refugees
Control	3.76	1.89	0.00	Control	Refugees
Responsibility	3.41	3.22	0.70	Control	Refugees
Certainty	2.65	2.41	0.54	Responsibility	Refugees
Control	2.71	2.41	0.33	Responsibility	Refugees
Responsibility	3.76	1.71	0.00	Responsibility	Refugees

Study 2: Pre-Test Results

Table B5: Study 2 Pre-Test Results

Dimension	M(High)	M(Low)	p-value	Dimension	Issue
Certainty	4.85	3.45	0.00	Certainty	Antibiotics
Control	2.97	2.77	0.33	Certainty	Antibiotics
Responsibility	2.09	1.91	0.57	Certainty	Antibiotics
Certainty	2.83	2.47	0.32	Control	Antibiotics
Control	4.00	2.68	0.00	Control	Antibiotics
Responsibility	3.04	2.91	0.68	Control	Antibiotics
Certainty	2.64	3.48	0.02	Responsibility	Antibiotics
Control	3.39	3.73	0.13	Responsibility	Antibiotics
Responsibility	4.07	3.58	0.10	Responsibility	Antibiotics
Certainty	4.10	2.16	0.00	Certainty	Painkiller Addiction
Control	3.29	2.72	0.00	Certainty	Painkiller Addiction
Responsibility	2.94	1.84	0.00	Certainty	Painkiller Addiction
Certainty	3.41	2.64	0.04	Control	Painkiller Addiction
Control	3.97	1.84	0.00	Control	Painkiller Addiction
Responsibility	2.25	1.76	0.08	Control	Painkiller Addiction
Certainty	3.19	3.77	0.09	Responsibility	Painkiller Addiction
Control	3.19	2.80	0.05	Responsibility	Painkiller Addiction
Responsibility	4.70	1.63	0.00	Responsibility	Painkiller Addiction
Certainty	4.19	1.65	0.00	Certainty	Pesticide Contamination
Control	2.62	2.81	0.43	Certainty	Pesticide Contamination
Responsibility	1.75	1.96	0.47	Certainty	Pesticide Contamination
Certainty	3.74	3.43	0.37	Control	Pesticide Contamination
Control	4.22	2.23	0.00	Control	Pesticide Contamination
Responsibility	2.52	2.54	0.95	Control	Pesticide Contamination
Certainty	2.63	2.22	0.23	Responsibility	Pesticide Contamination
Control	3.34	3.09	0.40	Responsibility	Pesticide Contamination
Responsibility	3.89	1.74	0.00	Responsibility	Pesticide Contamination
Certainty	4.04	2.42	0.00	Certainty	Refugees
Control	2.00	2.03	0.89	Certainty	Refugees
Responsibility	3.39	3.71	0.32	Certainty	Refugees
Certainty	2.69	2.66	0.92	Control	Refugees
Control	3.90	4.03	0.58	Control	Refugees
Responsibility	3.72	3.90	0.58	Control	Refugees
Certainty	2.53	2.38	0.63	Responsibility	Refugees
Control	3.24	2.04	0.00	Responsibility	Refugees
Responsibility	4.12	1.88	0.00	Responsibility	Refugees

Chapter 5

Pilot Study

Experimental manipulations of confidence-in-knowledge are scarce. The approach to experimentally manipulate confidence through question difficulty is not entirely new (**???**) but has not been widely adopted. We therefore conducted a pilot study to first, test it's effectiveness and second obtain expected effect sizes to conduct a power analysis for the main study. We conducted the pilot study in the US using an MTurk sample. The sample consisted of 756 respondents (46.3 % women, and 53.7 % men) who were either exposed to difficult or easy knowledge questions. The manipulations of question difficulty were consistent with those in the main study. We manipulated difficulty using two methods, question format using open instead of closed question formats (**??**) or question content using questions that will be less accessible to participants due to for instance temporal distance, or using trick questions, such as who is the speaker of the US Senate (The US senate has no speaker).

The results were in line with our theoretical expectations. Confidence-in-knowledge, but not actual knowledge increased self-reported emotions (see Figure B6. Participants in the easy condition reported higher levels of confidence ($p = 0.06$) and higher levels of anger ($b = 0.209$, $p < 0.05$) and anxiety ($b = -0.213$, $p < 0.05$), controlling for confidence, knowledge and interest.

First and foremost, the pilot showed that the manipulation of confidence through question difficulty is successful and that the coefficients point in the expected direction. However, the pilot study had several shortcomings. The most fundamental was that we did not ask any knowledge questions that were constant across the two conditions. This makes it impossible to estimate the relationship between factual knowledge on self-reported emotions independent of experimental manipulation. Similarly, we only measured confidence in knowledge post-treatment, which again means that our measure is biased by the experimental manipulation. Both of these decisions can substantially bias our estimates concerning the effects of political knowledge and confidence. In the main study, we added five knowledge questions before the experimental manipulation. These questions are equal in both conditions.

We further measure confidence-in-knowledge both pre- and post-treatment.

Following and informed by the pilot study, we pre-registered the hypotheses laid out above.

Figure B6. Pilot Test Results

The Three Sophistication Components

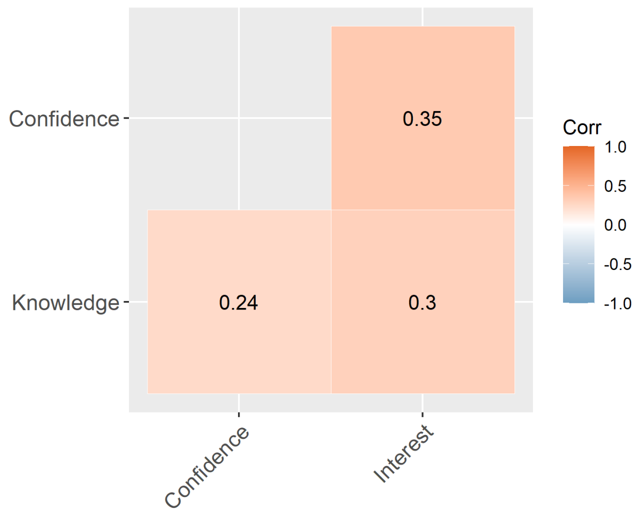

Figure B7. Correlations between three sophistication components in the 2020 ANES wave.

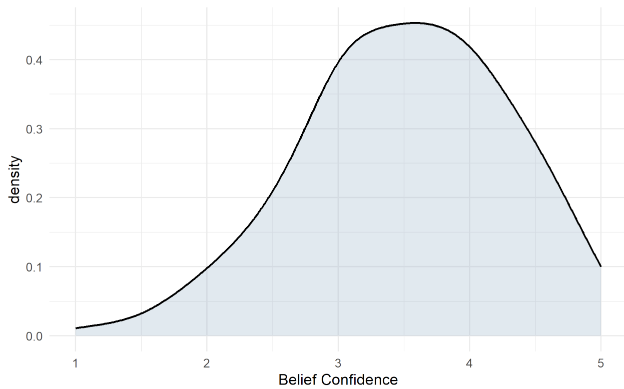

Figure B8. Density plot of confidence measure in the 2020 ANES wave (not standardized). Mean = 3.5, sd = 0.8. The measure is the mean value across six items. Respondents were asked which of two statements is more likely to be correct, then how confident they were in their judgment. The items were: "Russia tried/did not try to interfere in the 2016 presidential election"; "Whose administration deported more unauthorized immigrants during the first three years? Barack Obama's administration/Donald Trump's administration"; "Most scientific evidence shows childhood vaccines (do not) cause autism"; "World temperatures have (not) risen on average over the last 100 years"; "The novel coronavirus (COVID-19) was (not) developed intentionally in a lab"; "(No) scientific evidence that hydroxychloroquine is a safe and effective treatment for COVID-19".

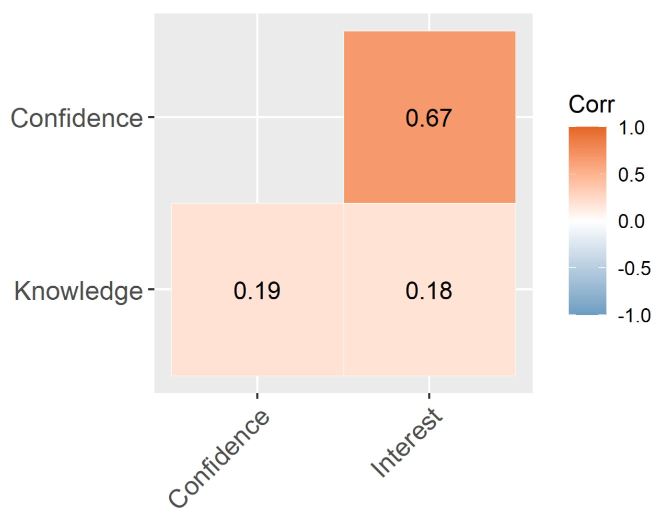

Figure B9. Correlations between three sophistication components in the Dutch Dynata Sample (Study 1).

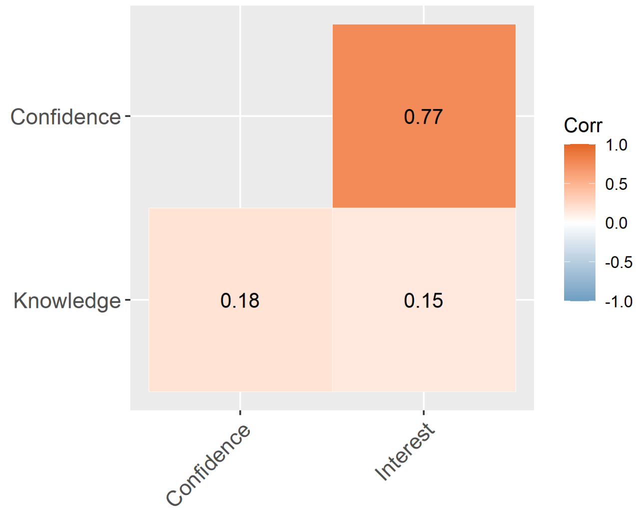

Figure B10. Correlations between three sophistication components in the US Prolific Sample (Study 2).

ANES 2020: Effect of Knowledge and Interest on nine emotions

Table B6: ANES 2020. Effects of political knowledge, confidence, and interest on nine self-reported emotions.

	Hopeful	Afraid	Outraged	Angry	Happy
Interest	0.048**	0.173***	0.238***	0.219***	0.0006
	(0.015)	(0.016)	(0.016)	(0.016)	(0.013)
Confidence	−0.016	0.109***	0.184***	0.174***	−0.037**
	(0.015)	(0.016)	(0.016)	(0.015)	(0.013)
Knowledge	−0.007	−0.036*	−0.016	−0.020	−0.005
	(0.015)	(0.016)	(0.016)	(0.015)	(0.013)
Age	0.0006	0.002*	−0.0004	−0.002*	0.0004
	(0.0008)	(0.0009)	(0.0009)	(0.0009)	(0.0007)
Gender (W)	−0.094***	0.297***	0.166***	0.154***	−0.075**
	(0.027)	(0.029)	(0.029)	(0.028)	(0.024)
Race (White)	−0.087**	0.040	0.014	0.015	0.004
	(0.031)	(0.033)	(0.034)	(0.032)	(0.028)
Education (College)	0.068	−0.061	−0.020	−0.029	0.047
	(0.055)	(0.058)	(0.058)	(0.056)	(0.048)
Education (Professional/PhD)	0.056	0.046	−0.099	−0.077	−0.0009
	(0.062)	(0.066)	(0.066)	(0.064)	(0.054)
Education (Academic)	−0.022	−0.062	0.068	0.066	−0.080
	(0.059)	(0.062)	(0.063)	(0.061)	(0.052)
Education (High School)	0.062	0.037	0.037	0.017	0.025
	(0.044)	(0.047)	(0.047)	(0.045)	(0.039)
Education (Less than HS)	0.046	0.058	0.110	0.115	0.071
	(0.072)	(0.077)	(0.077)	(0.074)	(0.063)
Education (College, no degr.)	0.075+	0.042	0.063	0.025	0.012
	(0.039)	(0.042)	(0.042)	(0.040)	(0.034)
Income	−0.002	−0.002	−0.00006	−0.002	−0.002
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Ideology	0.00002	0.00004	−0.001*	−0.0006	−0.00009
	(0.0004)	(0.0005)	(0.0005)	(0.0005)	(0.0004)
PID Strength	0.228***	−0.192***	−0.158***	−0.156***	0.214***
	(0.006)	(0.007)	(0.007)	(0.006)	(0.005)
Num.Obs.	6282	6287	6288	6287	6287
R2	0.205	0.205	0.200	0.197	0.238
RMSE	1.03	1.09	1.10	1.06	0.90
Std.Errors	Robust	Robust	Robust	Robust	Robust

+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table B7: ANES 2020. Effects of political knowledge, confidence, and interest on nine self-reported emotions.

	Worried	Proud	Irritated	Nervous
Interest	0.173***	0.064***	0.166***	0.168***
	(0.015)	(0.015)	(0.015)	(0.016)
Confidence	0.117***	−0.046**	0.133***	0.112***
	(0.014)	(0.014)	(0.014)	(0.015)
Knowledge	−0.011	−0.010	0.012	−0.014
	(0.015)	(0.014)	(0.014)	(0.015)
Age	−0.002+	0.002**	−0.003**	−0.002**
	(0.0008)	(0.0008)	(0.0008)	(0.0009)
Gender (W)	0.199***	−0.036	0.090***	0.278***
	(0.027)	(0.026)	(0.026)	(0.028)
Race (White)	0.060+	−0.001	0.073*	0.096**
	(0.031)	(0.030)	(0.030)	(0.032)
Education (College)	−0.100+	0.017	−0.042	−0.092+
	(0.054)	(0.052)	(0.053)	(0.056)
Education (Professional/PhD)	0.008	0.052	0.046	−0.001
	(0.061)	(0.059)	(0.060)	(0.063)
Education (Academic)	−0.064	−0.027	0.072	−0.027
	(0.058)	(0.056)	(0.057)	(0.060)
Education (High School)	−0.062	0.114**	−0.032	−0.059
	(0.043)	(0.042)	(0.042)	(0.045)
Education (Less than HS)	−0.077	0.040	−0.044	−0.034
	(0.071)	(0.069)	(0.070)	(0.074)
Education (College, no degr.)	−0.024	0.048	−0.0001	−0.016
	(0.039)	(0.037)	(0.038)	(0.040)
Income	−0.0006	−0.003	0.003	0.0007
	(0.002)	(0.002)	(0.002)	(0.002)
Ideology	−0.0002	0.0003	−0.001*	−0.0003
	(0.0004)	(0.0004)	(0.0004)	(0.0004)
PID Strength	−0.191***	0.241***	−0.141***	−0.189***
	(0.006)	(0.006)	(0.006)	(0.006)
Num.Obs.	6287	6286	6288	6289
R2	0.226	0.251	0.173	0.213
RMSE	1.01	0.98	0.99	1.05
Std.Errors	Robust	Robust	Robust	Robust

+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Distributions of Knowledge Scores by Experimental Treatment

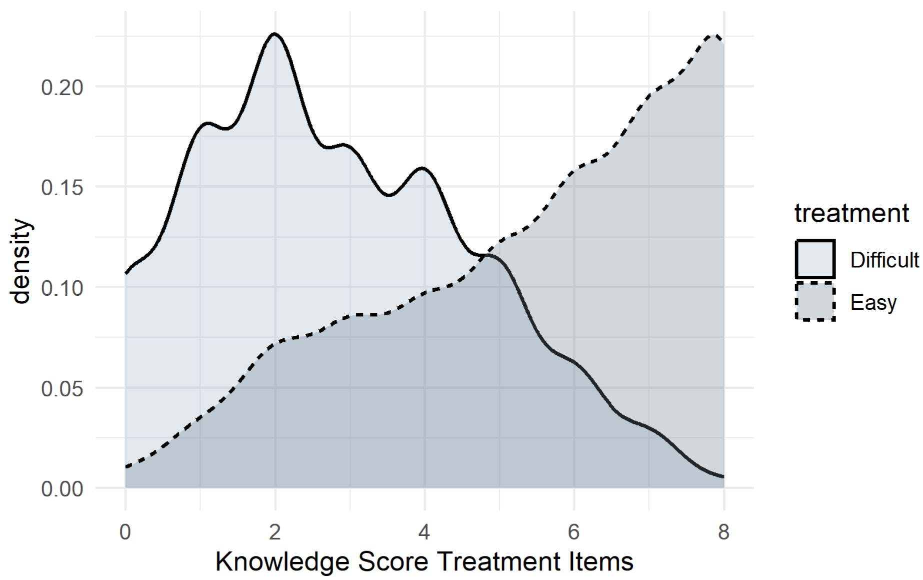

Figure B11. Dutch Dynata Sample: Scores on treatment knowledge items by treatment group.

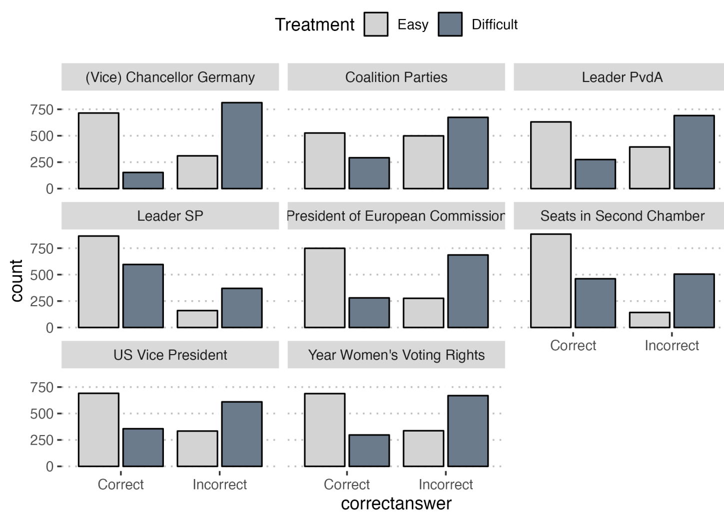

Figure B12. Study 1 (Dutch sample) Treatment Knowledge Questions.

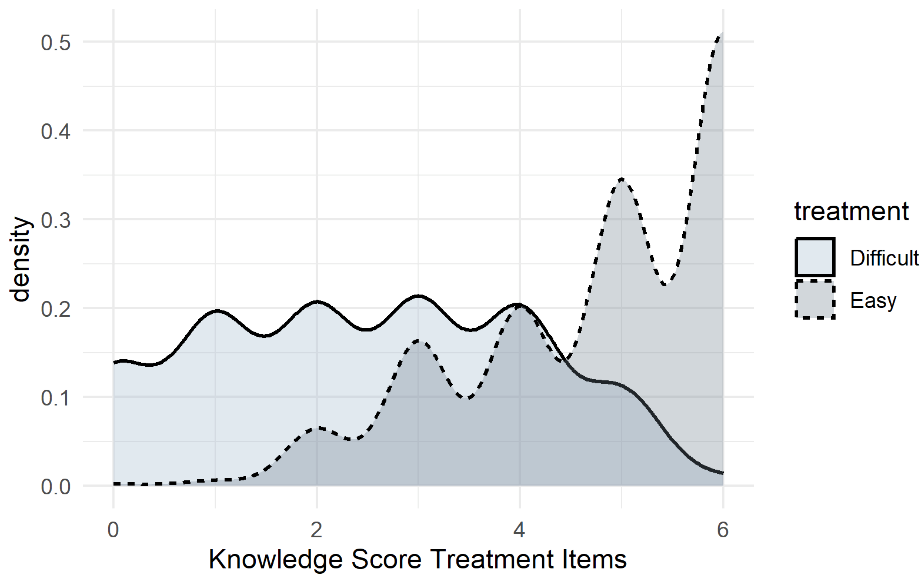

Figure B13. US MTurk Sample: Scores on treatment knowledge items by treatment group.

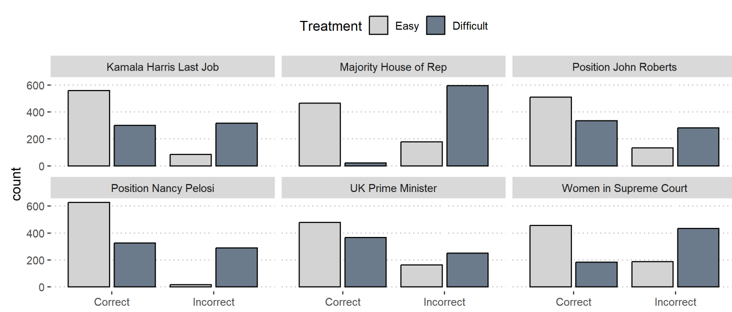

Figure B14. Study 2 (US sample) Treatment Knowledge Questions.

Mediation Analysis: Study 1

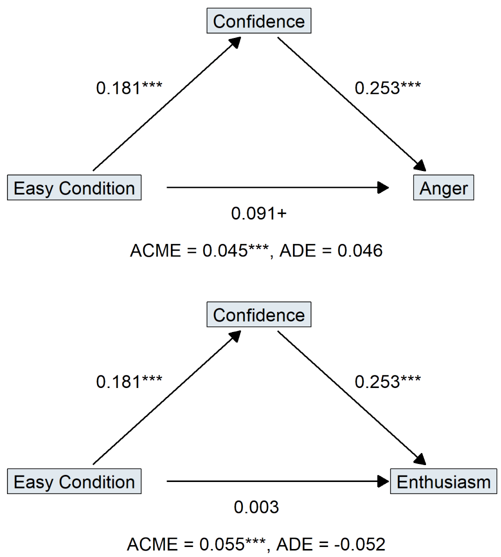

Figure B15. Mediation analysis. Effect of treatment on anger, anxiety, pride, and hope mediated by confidence, controlling for political knowledge, gender, age, education, and ideology. Sample: Study 1, Dutch Sample, N = 1940