

Online Appendix

A1. Pilot Study

Pilot data collected in July, 2017 and March, 2018 used the same questions and a similar structure as the survey experiment reported here. Wave 1 of the study recruited 144 U.S. adults in July 2017. 63 females and 81 males, between 18 and 71 years old (mean age 36.9, s.d. = 10.4) were recruited on Amazon's Mechanical Turk platform to complete a survey (hosted on the Qualtrics online platform). Wave 2 of the study recruited 153 U.S. adults in March 2018. Wave 2 consisted of 61 females and 92 males between 21 and 72 (mean age 36.3, s.d.=10.9).¹ Subjects in both Waves were paid \$1.50 and completed the survey on average in 8.5 minutes.

¹ The research protocol was approved by MIT's Committee on the Use of Humans as Experimental Subjects (MIT COUHES). Data reported here include only individuals whose responses were accepted and paid for. Consistent with MIT COUHES policy, there were two reasons for rejection of a response. First, an attention check was embedded in the survey which asked individuals to identify the topics of the survey. There were four possible correct answers for each individual. Responses were rejected if a subject failed to successfully identify any of the survey topics (0 out of 4). The average number of correct responses for individuals who identified at least one correct topic was 3.8 across both Waves. Subjects were also warned prior to taking the survey that they would be paid only for one response. Four individuals re-took the survey in Wave 1 and their second responses were rejected. In Wave 2, a qualification was used to prevent re-takes.

In the combined sample, 75% self-identified as White, 11% as Black, 5% as Asian, and 4% as Latino. 25% of the final sample self-identified as Republican and 26% self-identified as Conservative.²

Subjects answered questions about four issues. The pilot study design was similar in that participants answered a general dangerousness question followed by an evaluation of threats and then emotion consideration. Unlike the main study, participants in the pilot who rated the dangerousness of an item as greater than 20 (out of 100) provided the Self-Ratings in subsequent questions. Only those rating the item as less than or equal to 20 on the dangerousness scale completed the perspective-taking exercises.

I used the pilot data to refine the experimental methodology in the main study and to test the viability of the analytical approach using hypervolumes. The choice of hypervolume method and parameters, as well as the parameters derived from the Principal Component Analysis, were established in pilot data and then remained unchanged for the main analysis.

² These include all individuals who score as Strong, Weak, or Independent Republican/Democrat and Extremely, Conservative/Liberal, or Slightly on the standard 7-point ANES scale.

A2. Main Study Demographics

Table A1: Sample by Condition

	Full	CC1	CC2	CC3	CC4	II1	II2	II3	II4
N	839	108	106	111	106	108	103	99	98
% Female	53.5	49.1	53.8	52.3	54.7	56.5	55.3	56.6	51
Mean Age (s.d)	41 (14.2)	39.3 (14.4)	41.9 (13.5)	40 (14.5)	41.9 (14.3)	40.7 (14.1)	40 (13.7)	42.9 (14.6)	41.8 (14.7)
%White	66	62	58.5	64.9	71.7	68.5	71.8	66.7	64.3
% College	35	41.7	34	37.8	34.9	31.5	30.1	34.3	35.7
% Democrat	38.9	37	48.1	32.4	45.3	41.7	37.9	32.3	35.7
% Indep.	14.9	16.7	14.2	14.4	11.3	13.9	15.5	17.2	16.3
% Republican	29.7	26.9	22.6	33.3	25.5	30.6	30.1	36.4	32.7
% Liberal	24.6	29.6	19.8	22.5	32.1	26.9	21.4	23.2	20.4
% Moderate	23.4	24.1	18.9	20.7	26.4	25	21.4	25.3	25.5
% Conservative	31.9	25.9	36.8	31.5	25.5	32.4	33	35.4	35.7

CC1: Climate Change, Mentalizers, Threats-First

CC2: Climate Change, Mentalizers, Emotions-First

CC3: Climate Change, Self-Raters, Threats-First

CC4: Climate Change, Self-Raters, Emotions-First

II1: Illegal Immigration, Mentalizers, Threats-First

II 2: Illegal Immigration, Mentalizers, Emotions-First

II 3: Illegal Immigration, Self-Raters, Threats-First

II 4: Illegal Immigration, Self-Raters, Emotions-First

A3. Main Study Survey Instrument

The survey consisted of three question blocks. These Blocks consisted of the following questions and options. Wording differed slightly for the Self-Rating and Mentalizing conditions. Threat and emotion option ordering was randomized between subjects for Blocks 2 and 3.

Table A2: Survey Instrument

Question Wording	
Block 1	
Dangerousness (all conditions)	Different people have different concerns about the world around them. We would like to know if you personally think of [climate change / illegal immigration] as something that is dangerous. Using a scale of 0 to 100, where 0 is Not at All Dangerous and 100 is Extremely Dangerous, please rate the dangerousness of [climate change / illegal immigration]
Block 2 or 3	
Threat Ratings	
Self-Raters	Please use the scales to indicate how relevant these specific concerns are for you when you think about [climate change / illegal immigration] , where 0 is Not Relevant at All and 100 is Extremely Relevant
Mentalizers	Please use the scales to indicate how relevant you believe these specific concerns are for other people who are worried about [climate change / illegal immigration] , where 0 is Not Relevant at All and 100 is Extremely Relevant
Options	<ol style="list-style-type: none">(1) Physical bodily harm to [me/themselves](2) physical bodily harm to [my/their] loved ones(3) Losing something with economic value (a job, a house, etc.)(4) Losing [my/their] rights and freedoms(5) Losing [my/their] personal or social group status(6) Being infected by a disease or pathogen(7) Having [my/their] personal moral or spiritual purity compromised(8) Having [my/their] social group's identity or purity compromised(9) Having [my/their] physical environment polluted

Question Wording

Block 2 or 3

**Emotion
Ratings**

Self-Raters Please use the scales to indicate how much **you feel** these specific **emotions** when you think about **[climate change / illegal immigration]**, where 0 is Do Not Feel at All and 100 is Feel Strongly

Mentalizers Please use the scales to indicate how much you believe **other people who are worried** about **[climate change / illegal immigration]** feel these specific **emotions** when they think about **[climate change / illegal immigration]**, where 0 is Do Not Feel at All and 100 is Feel Strongly

Options

(1) Fear, (2) Anger, (3) Disgust, (4) Pity, (5) Resentment, (6) Contempt, (7) Sadness, (8) Happiness, (9) Pride, (10) Anxiety

A4. Principal Components for Hypervolumes

PC loadings for threat perception are shown in Table A3. PC loadings for emotional responses are shown in Table A4.

Table A3: Threat Perception: First Three Principal Components

	Climate Change			Illegal Immigration		
	PC1	PC2	PC3	PC1	PC2	PC3
Physical Harm (self)	0.38	-0.35	0.07	0.34	0.39	-0.09
Physical Harm (loved one)	0.33	-0.40	-0.06	0.31	0.32	-0.27
Economic Loss	0.35	0.18	-0.33	0.32	0.06	0.72
Rights Loss	0.35	-0.01	-0.70	0.37	0.25	-0.14
Status Loss (self or group)	0.33	0.43	0.32	0.25	-0.53	-0.33
Infection	0.28	-0.43	0.14	0.37	0.08	0.22
Purity (Self)	0.40	0.23	0.20	0.37	-0.19	0.21
Purity (Group)	0.37	0.38	0.21	0.32	-0.59	0.04
Environmental Pollution	0.13	-0.35	0.43	0.34	0.05	-0.43

Table A4: Emotion Response: First Three Principal Components

	Climate Change			Illegal Immigration		
	PC1	PC2	PC3	PC1	PC2	PC3
Fear	-0.33	0.19	-0.24	0.35	0.17	0.12
Anger	-0.37	0.15	0.07	0.37	0.33	0.14
Disgust	-0.4	0.07	0.10	0.35	0.30	-0.33
Happy	-0.09	-0.63	-0.07	0.26	-0.51	-0.28
Sad	-0.35	0.2	-0.43	0.29	-0.20	0.77
Pity	-0.24	-0.25	-0.45	0.22	-0.50	0.16
Resentment	-0.39	-0.05	0.37	0.35	0.19	-0.04
Contempt	-0.35	-0.11	0.59	0.34	0.03	-0.25
Pride	-0.14	-0.63	-0.11	0.25	-0.42	-0.31
Anxiety	-0.35	0.13	-0.17	0.35	0.11	0.02

A5. Accuracy and Minimum Euclidean Distance

Once I created a hypervolume of Self-Ratings for each condition, all Mentalizing guesses (PCA-transformed) were evaluated using two functions from the `hypervolume` package. The first function, `hypervolume_inclusion_test()`, provided a binary value of 0 if the guess fell outside the volume and 1 if the guess fell inside. Using the inclusion test results, I calculate accuracy rates as the number of correct guesses over the total number of guesses. I refer to this as the binary accuracy rate. Differences between conditions/groups in binary accuracy are evaluated using χ^2 tests.

To evaluate the quality of guesses that were not accurate, I used a second function, `hypervolume_distance()`, which provided the Euclidean distance between each point and the nearest edge of the hypervolume. I refer to the results of the distance calculation as the *miss distance*. Differences between conditions/groups in miss distance were first evaluated for their distributional properties. Nearly all vectors of misses could not be treated as normally distributed. Where appropriate, I used the median as the group's summary statistic and compared the distribution of misses using Wilcoxon Rank-Sum (or Mann-Whitney U) test.