

Supplementary Materials: Do Arguments  
About Immigration Ethics Change  
Minds?

# Contents

<b>A. Experimental design appendix</b>	<b>S3</b>
A.1. Human subject recruitment and consent . . . . .	S3
A.2. Sampling . . . . .	S3
A.3. Survey weights . . . . .	S4
A.4. Representativeness . . . . .	S6
A.5. Dependent variables . . . . .	S7
<b>B. Moderators in ‘Objections’ section (Table 2)</b>	<b>S8</b>
<b>C. Objections</b>	<b>S10</b>
C.1. Average Treatment Effect of Loyalty Argument (Simply ‘Gratitude Ar- gument’ in Main Text), Unweighted . . . . .	S13
C.2. Average Treatment Effect of Argument . . . . .	S14
<b>D. Comprehension tests</b>	<b>S15</b>
<b>E. Effects of moral argument vs. gratitude evoked</b>	<b>S17</b>

## A. Experimental design appendix

### A.1. Human subject recruitment and consent

The research was approved by the Ethics Committee at the [Blinded for peer review].

Respondents were recruited through the commercial survey firm Qualtrics. Qualtrics compensates their participation through a reward scheme that allocates points redeemable for cash or with retailers. Compensation is said to adhere to local standards of fair pay (e.g. above local minimum wage regulations). Upon entering the Qualtrics pool of respondents, detailed information is given about the purpose and scope of studies in which respondents may be invited to participate as well as the rights of respondents.

After being invited by Qualtrics to participate in the online survey presented in this manuscript, respondents were shown an initial consent screen informing them that the survey is part of an academic research study. The consent form used language approved by the Ethics Committee at the [Blinded for peer review] and following standard practices in online survey research. Additionally, the consent screen gave respondents information about how the data would be used and stored, as well as how the anonymity of responses is ensured. Respondents were asked to provide voluntary consent to continue with the study and they were given information on how to contact the investigators should they have any questions. Respondents who did not consent, did not continue with the study. The study did not involve any deception, nor did it intervene in political processes. The consent form also provided information about the principal investigator (PI), including contact information for the PI and contact information for the IRB office at the PI's home institution.

During the survey and experiment, Qualtrics stores observations for the defined variables on each subject on secure server space made accessible after the conclusion of the survey only to the authors. After the experiment is conducted, the data of respondents' decisions, already excluding any identifying information, is transferred to the authors' computers. Since no connection is established to the recorded data, confidentiality of the individual respondent is guaranteed. Even though data is provided on the respondent-level, no identifying information is provided; respondents are assigned a random number to keep track of the data produced in the survey and survey experiment.

### A.2. Sampling

Our data comes from a non-probability sample of the general U.S. population we commissioned with the survey research firm Qualtrics (N=2,024) and took place from late September to early October, 2021. It was filled using quota sampling, with quotas for gender, age, education level, and political ideology, as is standard practice. Qualtrics

instituted quotas for gender and age as ‘hard quotas’ in which potential respondents would be rejected if a certain quota level (e.g. ‘male’) was already filled. By contrast, education and ideology were instead implemented as ‘soft quotas’ where Qualtrics would send invites selectively in hopes of raising completes within a certain strata. Demographically, our sample was 51% female with an average age of 41.6 (sd = 16.8) with roughly 44% of the sample holding a university degree (Associate degree and above); 25.5% of the sample reported not to be White or Caucasian. In terms of political ideology, respondents score at an average of 5.8 (sd = 2.8) on the self-reported 0-10 ideology scale running from very liberal to very conservative.

### A.3. Survey weights

Accounting for potential bias in the estimates from a sample as ours drawn from a pre-compiled online panel, and in addition to the quota sampling introduced to rein in same selection effects, we use sampling weights in our treatment effect estimates and descriptive statistics. We generated weights from data on age, gender, and education in the American Community Survey (ACS). The weights are computed so that the sample distribution of age, gender, and education categories match the distribution in the ACS. Table S1 gives the weights by category.

Table S1: Sample weights computed to match the proportions of units in age, gender, and education categories in the American Community Survey.

Variable	Weight
Age	
18-24	0.542
25-34	0.988
35-44	0.870
45-54	1.32
55-64	1.15
65+	1.52
Gender	
Female	1.01
Male	0.99
Education	
HS graduate or less	1.12
Some college/Assoc degree	0.987
College	0.891

Even without weights, our sample matches the census in the distribution of key socio-demographics, except for income. As in (1), we find little difference between weighted and unweighted estimates (See Table S4 in the Appendix). No difference

in these estimates as well as the fact that extensive panel recruitment activities by commercial survey firms like Qualtrics are said to alleviate the disadvantages of a non-probability sample in contrast to a probability sample in terms of representativeness (2), makes the estimates provided in the main text conservative estimates. Qualtrics also conducts internal quality control checks in which respondents are removed from the sample who complete the survey faster than half of the median completion time or engage in ‘straight-lining’, in which respondents simply answer down a line for the entire survey (e.g. always responding with the ‘neutral’ category). Note, however, we were not provided with any weights by Qualtrics and our weights do not account for non-responses. If selection into the online panel is correctly modeled by age, gender, and education, however, our sample estimates will be unbiased and any claim we make holds for the sample we collected. Given that this sample is approximating the ACS in several important social characteristics – except income – we believe our results could generalize to a broader target population such as the U.S. population; see Figure S1.

## A.4. Representativeness

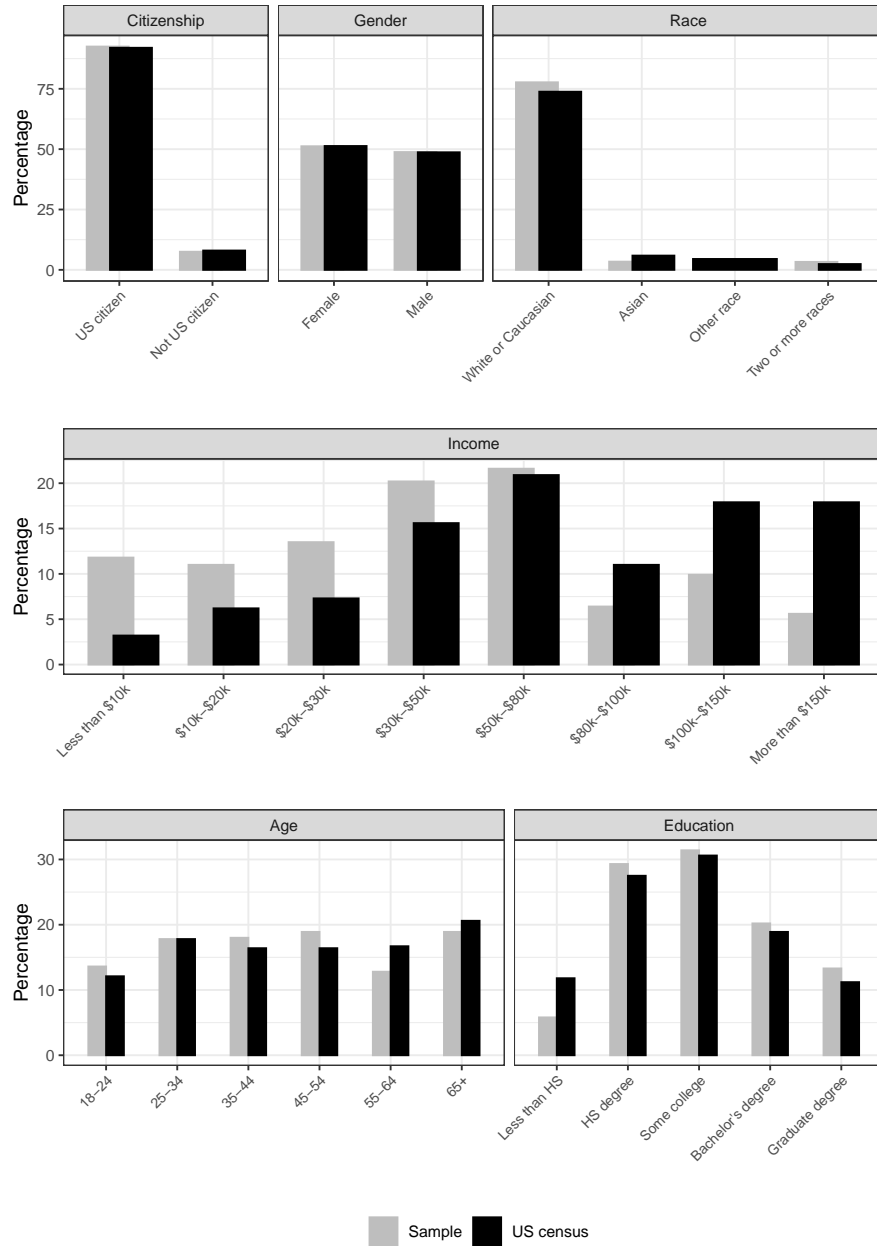


Figure S1: Distribution of socio-demographics in our sample and the American Community Survey

## A.5. Dependent variables

**Gratitude:** How much do you agree or disagree with the following statement: “Immigrants who provide important services should be rewarded.”

- Strongly disagree
- Disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Agree
- Strongly agree

**Rights Undoc.** Thinking of an undocumented migrant who provides important services, which of the following actions should the government take? Should they be...

- Deported and banned from re-entering the US
- Deported but allowed to visit the US as a tourist
- No action should be taken at this time
- Given a 1-year temporary visa
- Given a 3-year temporary visa
- Given permanent residence (a ‘Green Card’)
- Given US citizenship

**Rights, legal.** Thinking of a legal migrant with a temporary visa who provides important services, which of the following actions should the government take? Should they be...

- Deported and banned from re-entering the US
- Deported but allowed to visit the US as a tourist
- No action should be taken at this time

- Have their temporary visa extended for 1 year
- Have their temporary visa extended for 3 years
- Given permanent residence (a ‘Green Card’)
- Given US citizenship

## B. Moderators in ‘Objections’ section (Table 2)

**Loyalty index.** “When you decide whether something is right or wrong, to what extent are the following considerations relevant to your thinking?”

Individual responses to the following two items were average to create the loyalty index:

- “Whether or not someone’s action showed love for his or her country.”
- “Whether or not someone did something to betray his or her group”

**Occupations.** “Based on what you know, how many undocumented migrants are there working in the following occupations?” (Grid)

- Agriculture workers
- Package and courier delivery workers
- Professional healthcare workers
- Transportation workers
- Teachers and childcare workers
- Electricians and plumbers
- Store clerks

Scale:

- None
- Some
- Few



- Many
- Nearly All

**Rights for minorities index (modified RSS).** “Do you agree or disagree with the following statements on ethnic and racial minorities?” (Individual responses averaged).

- “Some minority groups overcame prejudice and worked their way up. Racial and ethnic minorities should do the same today without any special favors.”
- “Generations of slavery and discrimination have created conditions that make it difficult for racial and ethnic minorities to work their way out of the lower class.” (reverse-coded)
- “Over the past few years, racial and ethnic minorities have gotten less than they deserve.” (reverse-coded)
- “It’s really a matter of some people not trying hard enough; if racial and ethnic minorities would only try harder they could be just as well off as white people.”

Scale:

- Strongly disagree
- Disagree
- Neither agree nor disagree
- Agree
- Strongly agree

**Immigration attitudes.** “Thinking now about immigration in the United States, generally speaking do you support the government...” (Recoded: (1) Decrease, (2) Keep the same, (3) Increase)

- Increasing immigration levels
- Decreasing immigration levels
- Keeping immigration levels the same

**Ideology.** “In politics people sometimes talk about being liberal or conservative. In general, do you think of yourself as...” (0-10). Anchors: “Very liberal”, “Moderate”, “Very conservative”

## C. Objections

To help readers interpret the moderation tests below, we first reproduce some text and tables from the body.

Table S2: Potential objections

		Descriptive results	Effects on treatment
<b>Premises</b>	‘Loyalty is not important’ (reject premise 1)	<i>Relevance to moral choice:</i> Loyalty: $\mu = 4.03$ (‘Somewhat relevant’)	None
	Disagree that frontline migrants exposed to risk from Covid-19? (reject premise 4)	“Covid-19 is similar to the seasonal flu.”; True : 39.48%; Unsure: 15.37%; False: 45.16% “It is NOT possible to get Covid-19” more than once” True : 10.38%; Unsure: 11.17%; False: 78.46% ”Covid-19 can be spread among people without symptoms” True : 83.79%; Unsure: 8.64% False: 7.56%	Beliefs that Covid-19 is not risky alters treatment effect in 3/12 comparisons. ( $p = 0.07$ , $p = 0.08$ , $p = 0.08$ )
	Disagree that undocumented migrants work in jobs mentioned in argument? (reject premise 4)	“How many undoc. migrants work in...?” Agriculture: $\mu = 3.59$ (‘Many’) Health: $\mu = 2.52$ (‘Some’) Store clerks: $\mu = 3.12$ (‘Some’) Overall: $\mu = 2.90$ (‘Some’)	None
<b>Counter-vailing reasons</b>	‘Immigration is detrimental’	<i>Support...</i> Increasing immigration: 22.63% Keep same: 32.95% Decrease immigration: 44.42%	None
	‘Minorities have enough rights’	<i>Modified RSS</i> $\mu = 3.13$ (/5)	None

See table S3 for the full set of hypotheses tests and Section ?? full question wording. ‘Minorities have enough rights’ could also be considered an objection to our penultimate premise – ‘When the government has an effective policy... it has good reason to implement this policy’ – rather than a countervailing reason. If individuals believe migrants already have enough rights, they might believe that a policy of granting additional rights is not necessary even if it would be effective at achieving its aims.

In addition to potential objections to the argument itself, we might have expected some external reasons to have affected its success: Lack of engagement with the argument

and respondents’ political allegiances. Though our comprehension test assured us that our argument was easy to understand, we might still expect respondents to vary in their willingness to engage with it. If the respondent was not willing to engage with the argument, we might have expected responses similar to those captured under the placebo. In other words, we would expect smaller differences in the means of the two groups among respondents with lower levels of engagement. We use the Need For Cognition (NFC) scale, which captures individuals’ willingness to engage with complex information (3). We find that NFC does not condition the effects of the treatment. It is possible that this argument was relatively easy to access (and agree with) because, as we noted earlier, versions of it have been salient throughout the pandemic. We do, however, find that conservative ideology diminishes the effect of the argument on the rights afforded to undocumented migrants ( $-0.06, p = 0.01$ ), but not legal migrants (or feelings of gratitude). This reflects a potent ideological divide on attitudes toward immigration, captured in US polls, which is particularly salient when it comes to the undocumented (4). Again, the full set of hypothesis tests over moderator effects are shown in Table S3. Figures S2 and S3 give a visualizations of the absence of difference in treatment effects across objections and moderator variables.

Table S3: Difference in treatment effects across levels of moderators on the three dependent variables.  $\beta_{int}$  gives the coefficient estimate of the interaction of loyalty treatment indicator and moderator values. If moderator is a factor variable,  $\beta_{int}$  at specific factor levels over a reference level is given.

Moderator			Gratitude		Rights, undoc		Rights, Legal	
			$\beta_{int}$ (std err)	p-value	$\beta_{int}$ (std err)	p-value	$\beta_{int}$ (std err)	p-value
<b>Premises</b>	Loyalty matters		-0.05 (0.07)	0.50	-0.04 (0.05)	0.47	-0.02 (0.05)	0.65
	Covid-19 just like flu	True	-0.19 (0.17)	0.27	-0.24 (0.14)	0.08	-0.13 (0.14)	0.35
		Unsure	0.38 (0.22)	0.09	0.00 (0.18)	0.98	0.31 (0.18)	0.08
	Get Covid-19 only once	True	-0.20 (0.29)	0.49	-0.34 (0.21)	0.11	-0.38 (0.21)	0.07
		Unsure	0.19 (0.24)	0.43	-0.06 (0.21)	0.79	0.16 (0.20)	0.42
	Covid-19 spreads	True	0.05 (0.32)	0.87	0.05 (0.24)	0.83	0.36 (0.26)	0.16
		Unsure	0.03 (0.40)	0.93	0.09. (0.34)	0.78	0.22 (0.34)	0.52
	Agriculture		-0.09 (0.09)	0.32	0.08. (0.07)	0.28	0.08 (0.07)	0.25
	Store clerks		-0.00 (0.08)	0.96	-0.01 (0.06)	0.90	0.02 (0.06)	0.76
	Delivery		-0.04 (0.09)	0.63	-0.01 (0.07)	0.83	-0.06 (0.07)	0.40
	Health		-0.04 (0.08)	0.65	0.01 (0.06)	0.89	-0.03 (0.06)	0.56
	Plumbing		0.01 (0.08)	0.94	-0.02 (0.06)	0.73	-0.05 (0.06)	0.44
	Teaching		0.04 (0.08)	0.59	0.06 (0.06)	0.35	-0.05 (0.06)	0.44
	Transport		-0.03 (0.09)	0.76	0.05 (0.07)	0.43	0.03 (0.06)	0.68
<b>Countervailing reasons</b>	Immigration	Keep same	-0.10 (0.20)	0.63	0.23 (0.17)	0.19	0.24 (0.17)	0.16
		Decrease	-0.29 (0.20)	0.16	0.09 (0.16)	0.58	-0.06 (0.16)	0.72
	Racism scale		-0.05 (0.08)	0.56	-0.02 (0.06)	0.68	-0.00 (0.06)	0.94
	Ideology		-0.01 (0.03)	0.76	-0.02 (0.02)	0.27	-0.06 (0.02)	0.01
	Need for cognition		0.01 (0.11)	0.91	0.00 (0.08)	0.99	0.11 (0.09)	0.21

Figure S2: Treatment effect by moderator (categorical variables)

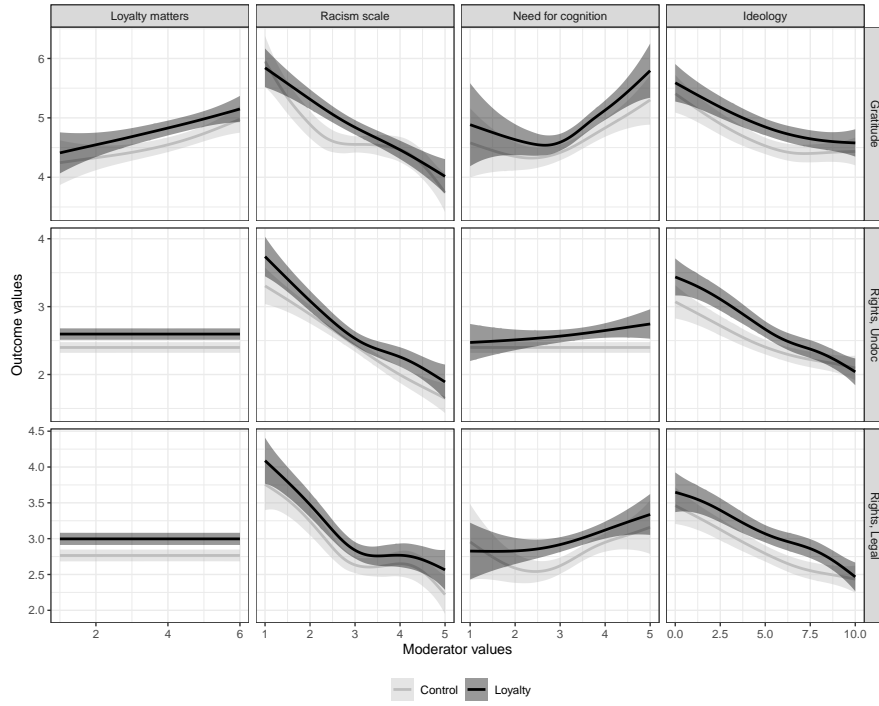
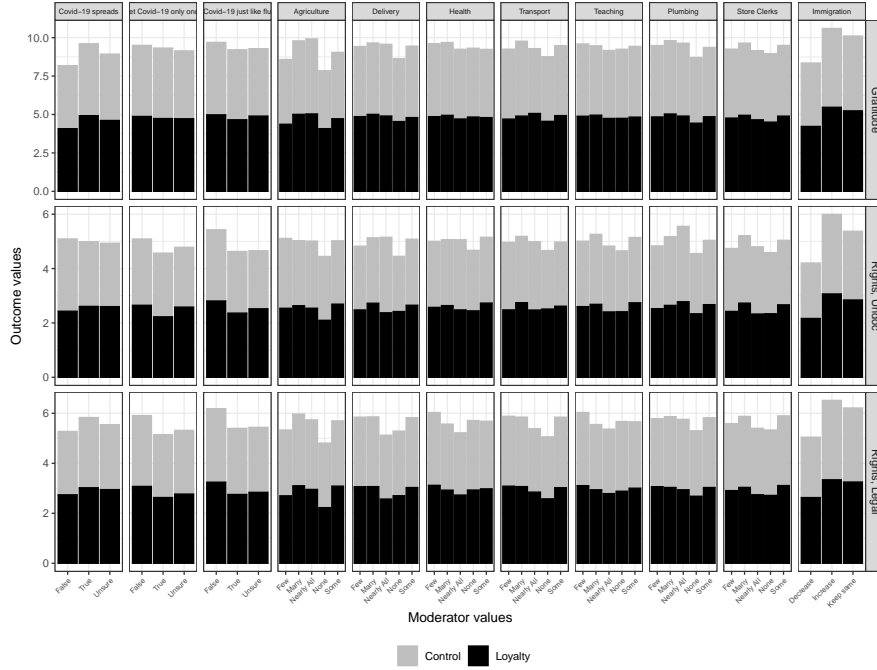


Figure S3: Treatment effect by moderator (interval variables)



C.1. Average Treatment Effect of Loyalty Argument (Simply 'Gratitude Argument' in Main Text), Unweighted

Table S4: Average Treatment Effects of Loyalty Argument, Unweighted

	<i>Dependent Variables</i>		
	Gratitude	Rights, Legal	Rights, Undoc.
Treatment	0.250*** (0.072)	0.259*** (0.074)	0.249*** (0.082)
(Intercept)	4.595*** (0.050)	4.567*** (0.052)	4.000*** (0.057)
R <sup>2</sup>	0.006	0.006	0.005
Adj. R <sup>2</sup>	0.005	0.005	0.004
Num. obs.	2024	2024	2024
RMSE	1.628	1.673	1.835

\*\*\* $p < 0.001$ ; \*\* $p < 0.01$ ; \* $p < 0.05$

## C.2. Average Treatment Effect of Argument

Table S5: Average Treatment Effects, National Gratitude Argument

	<i>Dependent Variables</i>		
	Gratitude	Rights, Legal	Rights, Undoc.
Treatment	0.279*** (0.076)	0.271*** (0.085)	0.264*** (0.076)
(Intercept)	4.548*** (0.053)	3.973*** (0.059)	4.569*** (0.052)
R <sup>2</sup>	0.007	0.005	0.006
Adj. R <sup>2</sup>	0.007	0.005	0.006
Num. obs.	2024	2024	2024
RMSE	1.631	1.834	1.646

\*\*\* $p < 0.01$ ; \*\* $p < 0.05$ ; \* $p < 0.1$

Table S6: Average Treatment Effects of National Gratitude Argument, Ordered Logit

	<i>Dependent Variables</i>	
	Rights, Legal	Rights, Undoc.
Treatment	0.297*** (0.079)	0.252*** (0.079)
1—2	-2.519*** (0.096)	-1.651*** (0.073)
2—3	-1.861*** (0.077)	-1.106*** (0.064)
3—4	-1.211*** (0.066)	-0.767*** (0.061)
4—5	-0.116** (0.059)	0.405*** (0.059)
5—6	0.617*** (0.060)	1.157*** (0.064)
6—7	1.999*** (0.077)	2.391*** (0.086)
AIC	7334.125	7451.518
BIC	7373.415	7490.808
Log Likelihood	-3660.062	-3718.759
Deviance	7320.125	7437.518
Num. obs.	2024	2024

\*\*\* $p < 0.001$ ; \*\* $p < 0.01$ ; \* $p < 0.05$

## D. Comprehension tests

In addition to ensuring a constant level of effort and other potential sources of variation across groups, we ensured our arguments were, independently, easy to comprehend by pre-testing the argument with 50 respondents using open-form questions.

The final survey tested respondents' comprehension using a 5-item questionnaire which asked respondents whether or not a given statement was present in the text they had read. Three options were true and two were false. All true statements referred to comparable premises in either treatment or placebo condition and all false statements were constructed to be comparable as well. The 50-sample pre-test was conducted using a Prolific sample.

The tests were as follows:

**Prompt:** "Now we would like to ask you some reading comprehension questions to test your understanding of the arguments that you just read. We've provided the argument again below for your reference.

Which of the following statements were made in the argument you read? NOTE: We are NOT asking whether or not you agree with these statements."

### Placebo

- "It is important that all children have access to a high school education."
- "The US government should help children have access to a high school education."
- "If children are feeling pressure to drop out of school, the government has good reason to legally require children to attend school."
- "Children should only be allowed to go to school if they do their homework."
- "None of the above statements were made in the argument I read."

### Treatment

- "It is important that people show loyalty to the United States."
- "The U.S. government should show gratitude to those who are loyal."
- "If migrants risk their lives for American citizens, the government has good reason to give them the legal right to remain in the country."
- "Migrants should only be allowed to stay in the U.S. if they pay taxes."

- “None of the above statements were made in the argument I read.”

## Results

	N	Mean	SD	Median
Placebo	1032	3.83	1.11	4
Treatment	992	3.74	1.2	4

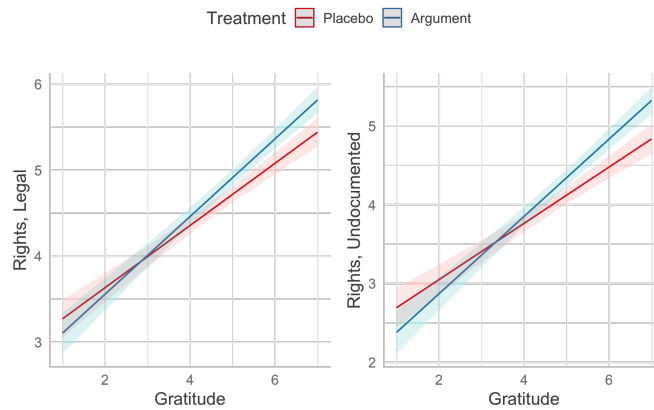


## E. Effects of moral argument vs. gratitude evoked

The finding that our argument increased the rights respondents were willing to award migrants – regardless of their legal status – is promising. We may ask, however, to what extent are pro-rights attitudes driven by the argument’s logic and to what extent are they driven by the feelings of gratitude that the argument invokes. In other words, might any intervention that invokes feelings of gratitude do the same job? Assuming that feelings of gratitude increase people’s willingness to grant more rights to migrants, we can test whether exposure to a relevant logical argument has a unique, enhancing effect.

Figure S4 shows the effects of the gratitude on rights for respondents assigned to the placebo (red) and respondents assigned to the gratitude argument (blue), for each of our two rights: legal migrants (left) and undocumented migrants (right). If exposure to a relevant moral argument has a unique effect on rights-enhancing attitudes, we would observe a stronger relationship between gratitude and rights among treated respondents than we would among placebo respondents. That is, the slopes of the red and blue lines should be significantly different – even if the gratitude experienced by those exposed to the argument is higher. Indeed, across panels, we see that the blue lines are significantly steeper than the red lines (left: 0.08,  $p < 0.05$ ; right: 0.12,  $p < 0.001$ ). This indicates that exposure to a relevant moral argument has a rights-enhancing effect that can be considered separate from the feelings of gratitude that it evokes.

Figure S4: Effects of gratitude on rights by treatment assignment



## References

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