APPENDIX

I. Text of the vignettes:

Pro-EU cultural: "Britain shares important values with our European neighbours, such as freedom of speech, gender equality, the rule of law, and respect for liberal democracy. Amid a world that seems less stable, and where there are competing ideologies, European countries can better promote and protect their values by acting together, as members of the European Union. For Britain, remaining in the EU would help defend its national culture, traditions and values."

Anti-EU cultural: "One of the founding pillars of the European Union is 'free movement', which allows citizens of EU member states to travel and work freely in other EU member states. But this free movement of migrant workers into Britain poses a threat to the country's long established values and ways of life. For Britain, leaving the EU would help protect its national culture, values and traditions."

Pro-EU economic: "Britain's membership of the European Union attracts significant inward foreign investment into the British economy. The EU is Britain's major trading partner, which in 2014 accounted for 45% of exports and 53% of imports of goods and services. It is estimated that over three million jobs in Britain are linked, directly or indirectly, to its exports to the European Union. By remaining in the EU, these economic benefits would be safeguarded."

Anti-EU economic: "The Eurozone economy is experiencing significant economic problems, including high debt and youth unemployment. Britain's membership of the EU is also costly. In 2014 alone, Britain's net contribution to the EU budget was an estimated £9.8 billion, up from £3.3 billion in 2008. For Britain, remaining in the EU would risk its economic recovery and endanger the jobs of British wage earners."

Pro-EU political: "If the European Union is to work in Britain's interests, then Britain needs to be involved in the decision-making process. France and Germany would have no incentive to listen to Britain if it is not working closely with them as a member of the EU. If Britain were to leave the EU, to continue to trade with EU countries it will need to apply EU rules on trade, investment, product standards and services, but it will have no say when these rules are made. For Britain, remaining in the EU would ensure that it enjoys these political benefits."

Anti-EU political: "By leaving the European Union, Britain would be able to set its own course. Britain does not need to be a member of the EU to play an important role in the world. Britain has a 'portfolio of power' in its own right, which includes membership of the G20 and G8 nations, a permanent seat on the UN Security Council, leadership of the Commonwealth of 54 nations, and a close relationship with the United States. London is the financial capital of the world. For Britain, leaving the EU would allow the country to regain its national sovereignty while continuing to be a major power on the world stage."

II. Details about the YouGov data and Sample Composition:

YouGov uses targeted quota sampling from a respondent panel database to conduct web-based surveys. Their proprietary software looks at all surveys that currently need panel members, and calculates how many people to send invites to every 30 minutes. Due to the way jobs are sampled there is no survey response rate, however, the overall cooperation rate for the panel is 21% with the average response time for a clicked email being 19 hours from the point of sending. The average breakoff rate (the proportion of individuals that started the survey but did not complete it) for our two surveys was 1.7%.

To obtain a sample that reflects national population characteristics, invitations are sent out to a sample that reflects the British 18+ population in terms of age, gender, social class, region, party identification and newspaper readership. Target percentages are derived from Census data and the National Readership Survey. The sample composition and population target statistics are presented in Figure A1 and Tables A1 to A5.

Table A1. Age and Gender

	Frequency	Percent	Target
Male 18-24	209	3.44	6.2
Male 25-39	438	7.21	12.8
Male 40-59	1238	20.38	16.9
Male 60+	1088	17.91	12.7
Female 18-24	333	5.48	5.9
Female 25-39	62	10.24	12.7
Female 40-59	1249	20.56	17.3
Female 60+	897	14.77	15.5
Total	**6074**	**100.00**	**100.00**

Table A2. Social grade

	Frequency	Percent	Target
AB – higher non-manual	2232	36.75	28.0
C1 – lower non-manual	1575	25.93	29.0
C2 – skilled manual	983	16.18	21.0
DE – semi- and unskilled manual	1284	21.14	22.0
Total	**6074**	**100.00**	**100.00**

Table A3. Party ID

	Frequency	Percent	Target
Labour	1436	25.35	32.5
Conservative	1462	25.81	28.5
Lib Dems	321	5.67	12.0
Others	760	13.42	3.0
Don't know/None	1686	29.76	24.0
Total	**5665**	**100.00**	**100.00**

Table A4. Region

	Frequency	Percent	Target
North	1507	24.81	24.6
Midlands	979	16.12	16.4
East	612	10.08	9.6
London	768	12.64	12.8
South	1381	22.74	22.9
Wales	325	5.35	5.0
Scotland	502	8.26	8.7
Total	**6074**	**100.00**	**100.00**

Table A5. Newspaper Readership (Main Daily)

	Frequency	Percent	Target
The Express/ The Daily Mail /The Scottish Daily Mail	916	15.12	15.0
The Sun/The Daily Star / The Daily Star of Scot	1254	20.71	21.5
The Mirror / Daily Record	586	9.67	15.5
The Guardian/The Independent	456	7.52	3.0
The Financial Times/ The Times/The Daily Telegraph	328	5.41	8.5
Other Newspaper	673	11.11	11.5
None	1,844	30.44	25.0
Total	**6057**	**100.00**	**100.00**

III. Wave 2 Treatment Group Sizes and Balance Tests

Table A6. Sample Sizes for Each Treatment Group

Treatment Group	N
Pro Cultural, Pro Economic, Pro Political	636
Pro Cultural, Pro Economic, Anti Political	587
Anti Cultural, Pro Economic, Pro Political	551
Pro Cultural, Anti Economic, Pro Political	617
Anti Cultural, Anti Economic, Pro Political	553
Pro Cultural, Anti Economic, Anti Political	652
Anti Cultural, Pro Economic, Anti Political	610
Anti Cultural, Anti Economic, Anti Political	564

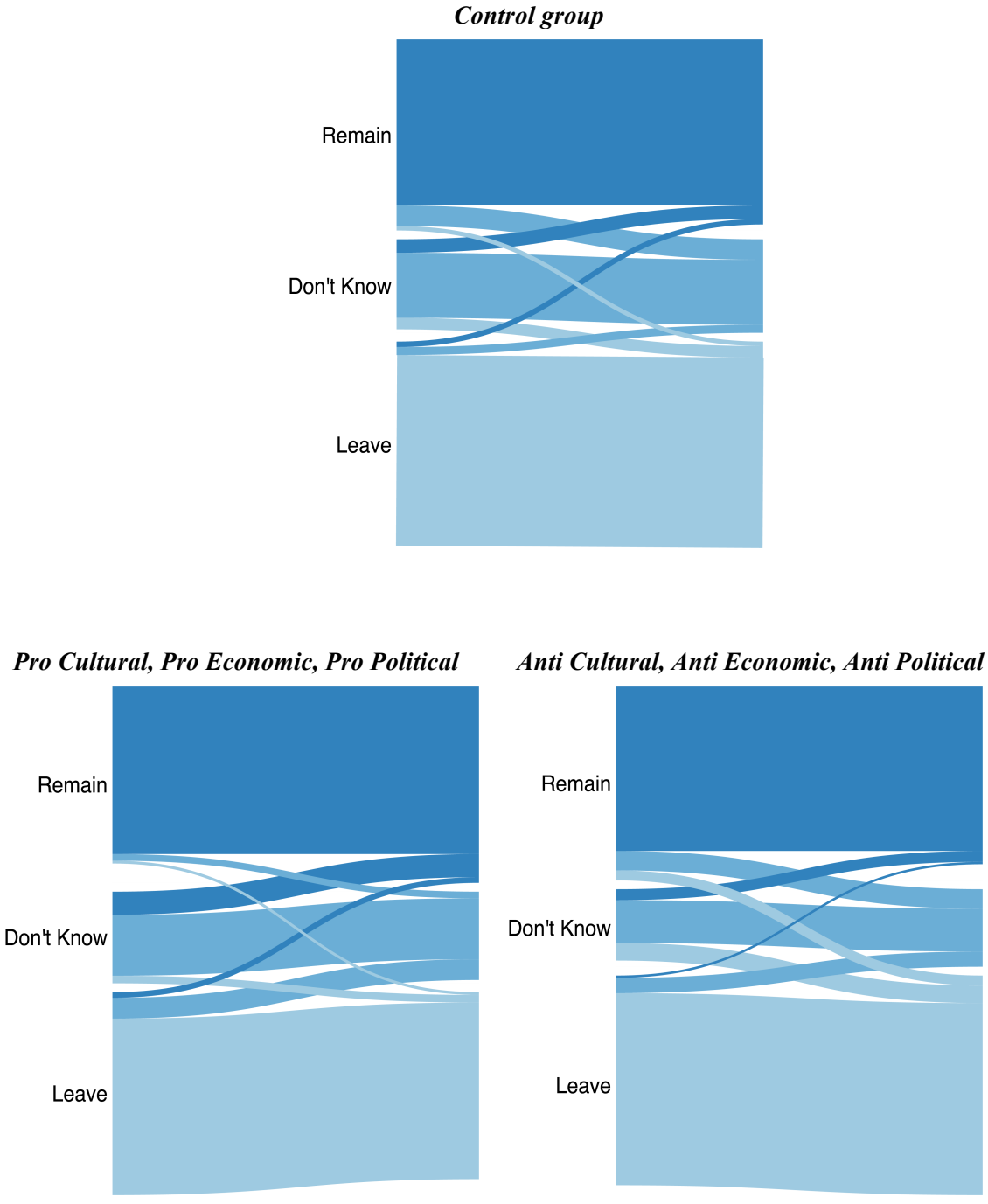
Table A7. Balance test across treatments

	Mean values for control and treatment groups									
	Control	+C+E+P	-C+E+P	+C-E+P	-C-E+P	+C+E-P	-C+E-P	+C-E-P	-C-E-P	P > F
Leave (%), wave1	0.439	0.431	0.390	0.429	0.398	0.422	0.439	0.406	0.442	0.550
Remain (%), wave1	0.382	0.376	0.426	0.407	0.392	0.400	0.392	0.410	0.408	0.786
Party ID 2015	7.31	8.21	10.12	8.13	8.20	7.32	7.38	8.52	8.86	0.366
Age	50.8	50.6	50.9	51.2	51.3	52.1	50.4	51.1	51.2	0.816
Education level	3.26	3.26	3.21	3.32	3.31	3.26	3.32	3.31	3.33	0.930
Ethnicity	1.54	1.52	1.51	1.60	1.60	1.60	1.49	1.41	1.54	0.874
Gender	1.53	1.52	1.52	1.49	1.47	1.51	1.51	1.50	1.51	0.731
Social grade	2.52	2.22	2.30	2.20	2.24	2.21	2.23	2.22	2.22	0.942
Region	3.46	3.37	3.34	3.40	3.37	3.50	3.37	3.42	3.39	0.918

Note: The table presents the unweighted means for these variables in the control group and each treatment group. The final column shows the F-statistic from a joint test of the null hypothesis that all slope coefficients are 0 in a linear regression of all socio-demographic variables on control and treatment group membership. The fact that these values are all greater than 0.100 means that there is no statistical difference in the composition of the groups on these variables.

IV. Vote Flows between Waves and Determinants of Support for Leaving the EU

Figure A1. Flows from Wave 1 to Wave 2 for control and two treatment groups



Note: These figures show the 'flow' of voters between the vote intentions in the referendum in Wave 1 and their vote intentions in Wave 2. The full results are presented in Table A3 in the Appendix.

Table A8. Flows from Wave 1 to Wave 2 for control and two treatment groups (Figure A2)

	Wave 2 vote intention		
Wave 1 vote intention	Remain	Don't Know	Leave
Control group			
Remain	87.0	10.7	2.3
	(2.3)	(2.1)	(1.0)
Don't Know	14.9	72.3	12.9
	(3.5)	(4.5)	(3.3)
Leave	2.8	4.0	93.1
	(1.1)	(1.3)	(1.6)
Treatment: 3 pro-EU arguments			
Remain	94.6	3.8	1.7
	(1.5)	(1.2)	(0.8)
Don't Know	25.2	66.7	8.1
	(3.9)	(4.3)	(2.5)
Leave	2.9	10.2	86.9
	(1.0)	(1.8)	(2.0)
Treatment: 3 anti-EU arguments			
Remain	84.8	10.0	5.2
	(2.4)	(2.0)	(1.5)
Don't Know	15.3	60.0	24.7
	(3.9)	(5.3)	(4.8)
Leave	1.2	7.2	91.6
	(0.7)	(1.6)	(1.8)

Note: The numbers are the marginal effects from a multinomial probit of the Wave 2 vote intention in the referendum, conditional on vote intention group in Wave 1, estimated separately for the control group and these two treatment groups. The numbers are presented as percentages, and the standard errors are in parentheses. As a result, the rows sum to 100.

Table A9. Determinants of support for leaving the EU in May 2015

	Coefficient	Standard error	P>|z|	Marginal effect
Top issue: immigration	1.716	0.076	0.000	0.329
Top issue: economy	-0.282	0.064	0.000	-0.053
Conservative voter	0.369	0.061	0.000	0.070
Labour voter	-0.867	0.062	0.000	-0.167
Age ≤25	-0.317	0.127	0.012	-0.062
Age 26-35	-0.110	0.091	0.216	-0.027
Age 36-45	0.237	0.085	0.006	0.045
Age 46-55	0.168	0.077	0.030	0.032
Age 56-65	0.179	0.072	0.014	0.034
Finished education before 17	0.987	0.063	0.000	0.190
Finished education 17-19	0.575	0.064	0.000	0.110
Income <£20k	0.562	0.152	0.000	0.105
Income £20-40k	0.285	0.149	0.066	0.053
Income £40-60k	-0.077	0.154	0.586	-0.016
Income £60-100k	-0.230	0.164	0.152	-0.045
London	0.470	0.102	0.273	-0.010
Northern England	0.432	0.080	0.000	0.090
Midlands & Eastern England	0.553	0.078	0.000	0.083
Southern England	0.237	0.080	0.000	0.106
Wales	0.221	0.103	0.003	0.045
Constant	-1.575	0.169	0.031	0.043
N	11,931			
Psuedo R-squared	0.174			
Log pseudolikelihood	-6571.69			

Note: Dependent variable: support leaving the EU. Analysis: logit. Analysis weighted by standard BES survey weights. The baseline categories are: other issues as important, vote for a party other than Conservatives or Labour, age over 65, finished education aged 20 or above, income greater than £100,000, Scotland.

V. Tables for Figures in Manuscript

Table A10. Difference-in-differences effects of the treatments (Figure 1)

Dependent variable:	Change in support for Remain (Wave 1 to Wave 2)			Change in support for Leave (Wave 1 to Wave 2)			Change in Don't Know (Wave 1 to Wave 2)			
Group	Coef.	Constant	R^2	Coef.	Constant	R^2	Coef.	Constant	R^2	N
Pro Cultural, Pro Economic, Pro Political	0.052***	-0.011	0.0078	-0.036**	0.002	0.0047	-0.015	0.009	0.0005	1,199
	(0.017)	(0.012)		(0.015)	(0.011)		(0.020)	(0.014)		
Pro Cultural, Pro Economic, Anti Political	0.031*	-0.011	0.0033	-0.031*	0.002	0.0033	-0.0004	0.009	0.0000	1,150
	(0.015)	(0.011)		(0.016)	(0.011)		(0.019)	(0.014)		
Anti Cultural, Pro Economic, Pro Political	-0.023	-0.011	0.0017	0.002	0.002	0.0000	-0.025	0.009	0.0016	1,114
	(0.017)	(0.012)		(0.016)	(0.011)		(0.019)	(0.013)		
Pro Cultural, Anti Economic, Pro Political	0.016	-0.011	0.0008	-0.018	0.002	0.0012	0.002	0.009	0.0000	1,180
	(0.016)	(0.012)		(0.015)	(0.012)		(0.019)	(0.014)		
Anti Cultural, Anti Economic, Pro Political	-0.004	-0.011	0.0000	0.011	0.002	0.0004	-0.007	0.009	0.0001	1,116
	(0.018)	(0.013)		(0.016)	(0.002)		(0.020)	(0.014)		
Pro Cultural, Anti Economic, Anti Political	-0.006	-0.011	0.0001	0.024	0.002	0.0022	-0.018	0.009	0.0008	1,215
	(0.016)	(0.012)		(0.015)	(0.011)		(0.019)	(0.014)		
Anti Cultural, Pro Economic, Anti Political	-0.011	-0.011	0.0003	0.021	0.002	0.0015	-0.011	0.009	0.0003	1,173
	(0.017)	(0.012)		(0.016)	(0.011)		(0.019)	(0.014)		
Anti Cultural, Anti Economic, Anti Political	-0.023	-0.011	0.0015	0.020	0.002	0.0012	0.004	0.009	0.0000	1,127
	(0.018)	(0.013)		(0.017)	(0.012)		(0.021)	(0.015)		

Note: The dependent variable in each model is the change in support for Remain/Leave/Don't Know. The coefficients are the effects of being in a treatment group relative to being in the control group. Each treatment group and vote intention group is estimated separately, using OLS regression (a linear probability model). Standard errors in parentheses. *p < 0.10, **p < 0.05, ***p < 0.01.

Table A11. Difference-in-differences effects of the relative volume of arguments (Figure 2)

Dependent variable:	Change in support for Remain (Wave 1 to Wave 2)			Change in support for Leave (Wave 1 to Wave 2)			Change in Don't Know (Wave 1 to Wave 2)			
Arguments	Coef.	Constant	R^2	Coef.	Constant	R^2	Coef.	Constant	R^2	N
3 Pro / 0 Anti	0.052***	-0.011	0.0078	-0.036**	0.002	0.0047	-0.015	0.009	0.0005	1,199
	(0.017)	(0.012)		(0.015)	(0.011)		(0.020)	(0.014)		
2 Pro / 1 Anti	0.023*	-0.011	0.0014	-0.016	0.002	0.0006	-0.007	0.009	0.0001	2,318
	(0.013)	(0.011)		(0.013)	(0.011)		(0.015)	(0.013)		
1 Pro / 2 Anti	-0.007	-0.011	0.0001	0.019	0.018	0.0009	-0.012	0.009	0.0002	2,378
	(0.014)	(0.012)		(0.013)	(0.017)		(0.016)	(0.014)		
0 Pro / 3 Anti	-0.023	-0.011	0.0015	0.020	0.002	0.0012	0.004	0.009	0.0000	1,127
	(0.018)	(0.013)		(0.017)	(0.012)		(0.021)	(0.015)		

Note: The dependent variable in each model is the change in support for Remain/Leave/Don't Know. The coefficients are the average effects of being in any treatment group that contains a particular group of arguments relative to being in the control group. Each argument group and vote intention group is estimated separately, using OLS regression (a linear probability model). Standard errors in parentheses. *p < 0.10, **p < 0.05, ***p < 0.01.

Table A12. Difference-in-differences effects of the relative volume of arguments, by EU position (Figure 3)

Dependent variable:	Change in support for Remain (Wave 1 to Wave 2)			Change in support for Leave (Wave 1 to Wave 2)			Change in Don't Know (Wave 1 to Wave 2)			
Arguments	Coef.	Constant	R^2	Coef.	Constant	R^2	Coef.	Constant	R^2	N
EU moderates										
3 Pro / 0 Anti	0.088**	-0.021	0.0127	-0.050	-0.008	0.0048	-0.038	0.029	0.0017	478
	(0.036)	(0.025)		(0.033)	(0.024)		(0.042)	(0.030)		
2 Pro / 1 Anti	0.051*	-0.021	0.0038	-0.019	-0.008	0.0005	-0.032	0.029	0.0010	933
	(0.027)	(0.023)		(0.028)	(0.024)		(0.033)	(0.028)		
1 Pro / 2 Anti	-0.014	-0.021	0.0002	0.041	-0.008	0.0023	-0.028	0.029	0.0008	964
	(0.028)	(0.025)		(0.028)	(0.024)		(0.032)	(0.028)		
0 Pro / 3 Anti	-0.043	-0.021	0.0030	0.047	-0.008	0.0038	-0.004	0.029	0.0000	474
	(0.036)	(0.025)		(0.035)	(0.025)		(0.043)	(0.030)		
Anti-EU extremists										
3 Pro / 0 Anti	0.008	0.005	0.0008	-0.061***	-0.005	0.0178	0.053***	0.000	0.0185	410
	(0.014)	(0.010)		(0.023)	(0.017)		(0.019)	(0.014)		
2 Pro / 1 Anti	0.006	0.005	0.0004	-0.042**	-0.005	0.0054	0.036*	0.000	0.0049	776
	(0.011)	(0.010)		(0.020)	(0.018)		(0.018)	(0.016)		
1 Pro / 2 Anti	-0.005	0.005	0.0005	-0.003	-0.005	0.0000	0.008	0.000	0.0004	808
	(0.009)	(0.008)		(0.016)	(0.014)		(0.015)	(0.013)		
0 Pro / 3 Anti	-0.010	0.005	0.0017	-0.010	-0.005	0.0006	0.020	0.000	0.0039	384
	(0.013)	(0.009)		(0.020)	(0.014)		(0.016)	(0.012)		
Pro-EU extremists										
3 Pro / 0 Anti	0.075***	-0.070***	0.0188	0.004	0.005	0.0002	-0.079***	0.065***	0.0249	399
	(0.027)	(0.020)		(0.013)	(0.010)		(0.025)	(0.018)		
2 Pro / 1 Anti	0.058***	-0.070***	0.0099	0.009	0.005	0.0007	-0.066***	0.065***	0.0148	830
	(0.020)	(0.028)		(0.012)	(0.010)		(0.019)	(0.017)		
1 Pro / 2 Anti	0.009	-0.070***	0.0002	0.022	0.005	0.0025	-0.031	0.065***	0.0027	804
	(0.024)	(0.021)		(0.016)	(0.014)		(0.021)	(0.018)		
0 Pro / 3 Anti	-0.009	-0.070***	0.0002	0.021	0.005	0.0034	-0.012	0.065***	0.0005	375
	(0.032)	(0.023)		(0.018)	(0.013)		(0.030)	(0.021)		

Note: The dependent variable in each model is the change in support for Remain/Leave/Don't Know. The coefficients are the average effects of being in any treatment group with a particular group of arguments relative to being in the control group. Each argument group and vote intention group is estimated separately, using OLS regression (a linear probability model). Standard errors in parentheses. *p < 0.10, **p < 0.05, ***p < 0.01.

Table A13. Difference-in-differences effects of the relative volume of arguments, by subgroup (Figure 4)

A. by party support

Dependent variable:	Change in support for Remain (Wave 1 to Wave 2)			Change in support for Leave (Wave 1 to Wave 2)			Change in Don't Know (Wave 1 to Wave 2)			
Arguments	Coef.	Constant	R^2	Coef.	Constant	R^2	Coef.	Constant	R^2	N
Conservative voters										
3 Pro / 0 Anti	0.016	0.011	0.0007	-0.031	-0.016	0.0033	0.016	0.005	0.0005	371
	(0.031)	(0.022)		(0.028)	(0.020)		(0.036)	(0.026)		
2 Pro / 1 Anti	-0.011	0.011	0.0003	0.002	-0.016	0.0000	0.009	0.005	0.0001	683
	(0.023)	(0.020)		(0.027)	(0.023)		(0.028)	(0.024)		
1 Pro / 2 Anti	-0.014	0.011	0.0005	0.032	-0.016	0.0021	-0.018	0.005	0.0006	756
	(0.024)	(0.020)		(0.025)	(0.022)		(0.027)	(0.023)		
0 Pro / 3 Anti	-0.065**	0.011	0.0118	0.070**	-0.016	0.0299	-0.005	0.005	0.0001	351
	(0.032)	(0.022)		(0.032)	(0.022)		(0.036)	(0.025)		
Labour voters										
3 Pro / 0 Anti	0.078**	-0.014	0.0175	-0.007	-0.022	0.0002	-0.071**	0.036	0.0124	312
	(0.033)	(0.025)		(0.029)	(0.021)		(0.036)	(0.027)		
2 Pro / 1 Anti	0.036	-0.014	0.0029	0.022	-0.022	0.0011	-0.058*	0.036	0.0057	641
	(0.026)	(0.023)		(0.025)	(0.022)		(0.030)	(0.027)		
1 Pro / 2 Anti	-0.004	-0.014	0.0000	0.050**	-0.022	0.0069	-0.046	0.036	0.0040	636
	(0.028)	(0.024)		(0.024)	(0.021)		(0.029)	(0.026)		
0 Pro / 3 Anti	-0.014	-0.014	0.0006	0.036	-0.022	0.0043	-0.021	0.036	0.0012	277
	(0.035)	(0.025)		(0.033)	(0.023)		(0.038)	(0.026)		

Note: The dependent variable in each model is the change in support for Remain/Leave/Don't Know. The coefficients are the average effects of being in any of the treatment groups that contain a particular group of arguments relative to being in the control group. Each argument group and vote intention group is estimated separately, using OLS regression (a linear probability model). Standard errors in parentheses. *p < 0.10, **p < 0.05, ***p < 0.01.

B. by age finished educational

Dependent variable:	Change in support for Remain (Wave 1 to Wave 2)			Change in support for Leave (Wave 1 to Wave 2)			Change in Don't Know (Wave 1 to Wave 2)			
Arguments	Coef.	Constant	R^2	Coef.	Constant	R^2	Coef.	Constant	R^2	N
17 or Younger										
3 Pro / 0 Anti	0.074***	-0.023	0.0152	-0.065**	0.019	0.0102	-0.009	0.005	0.0002	451
	(0.028)	(0.020)		(0.030)	(0.022)		(0.033)	(0.024)		
2 Pro / 1 Anti	0.055**	-0.023	0.0075	-0.028	0.019	0.0015	-0.027	0.005	0.0012	877
	(0.021)	(0.019)		(0.024)	(0.021)		(0.026)	(0.023)		
1 Pro / 2 Anti	0.019	-0.023	0.0009	0.001	0.019	0.0000	-0.019	0.005	0.0007	894
	(0.021)	(0.018)		(0.022)	(0.019)		(0.025)	(0.022)		
0 Pro / 3 Anti	0.013	-0.023	0.0005	0.001	0.019	0.0000	-0.014	0.046	0.0004	420
	(0.030)	(0.021)		(0.032)	(0.022)		(0.036)	(0.025)		
Between 17 & 19										
3 Pro / 0 Anti	0.019	0.006	0.0013	-0.034	-0.006	0.0050	0.015	0.000	0.0005	361
	(0.027)	(0.020)		(0.025)	(0.019)		(0.034)	(0.025)		
2 Pro / 1 Anti	-0.021	0.006	0.0000	-0.016	-0.006	0.0006	0.018	0.000	0.0006	658
	(0.022)	(0.019)		(0.025)	(0.022)		(0.029)	(0.025)		
1 Pro / 2 Anti	-0.032	0.006	0.0025	0.024	-0.006	0.0013	0.008	0.000	0.0001	660
	(0.024)	(0.022)		(0.025)	(0.022)		(0.029)	(0.025)		
0 Pro / 3 Anti	-0.068**	0.006	0.0151	0.062**	-0.006	0.0120	0.006	0.000	0.0001	324
	(0.031)	(0.022)		(0.031)	(0.022)		(0.038)	(0.027)		
20 or Older										
3 Pro / 0 Anti	0.041	0.000	0.0044	0.018	-0.019	0.0000	-0.042	0.019	0.0038	328
	(0.034)	(0.025)		(0.024)	(0.028)		(0.038)	(0.028)		
2 Pro / 1 Anti	0.037	0.000	0.0000	0.002	-0.019	0.0000	-0.006	0.019	0.0001	691
	(0.025)	(0.022)		(0.020)	(0.018)		(0.026)	(0.023)		
1 Pro / 2 Anti	-0.025	0.000	0.0013	0.043*	-0.019	0.0045	-0.017	0.019	0.0005	709
	(0.026)	(0.023)		(0.024)	(0.021)		(0.030)	(0.027)		
0 Pro / 3 Anti	-0.034	0.000	0.0030	0.014	-0.019	0.0009	0.020	0.019	0.0009	334
	(0.034)	(0.025)		(0.025)	(0.019)		(0.036)	(0.026)		

Note: The dependent variable in each model is the change in support for Remain/Leave/Don't Know. The coefficients are the average effects of being in any of the treatment groups that contain a particular group of arguments relative to being in the control group. Each argument group and vote intention group is estimated separately, using OLS regression (a linear probability model). Standard errors in parentheses. *p < 0.10, **p < 0.05, ***p < 0.01.

VI. Additional difference-in-differences effects sub-group analysis

Splitting the sample into higher (ABC1) and lower (C2DE) social grades (Table A.15 – panel A), we see that the effects of pro-EU arguments are largely constrained to the lower social grades, increasing Remain and decreasing Leave votes. Looking at the effects for different age groups (Table A.14 – panel B), we see that the largest effects for the three pro-EU arguments is amongst the youngest group (18 to 24 year-olds), increasing Remain votes and reducing those that Don't Know what they'll vote. The strongest effects of three or two anti-EU arguments is amongst the next oldest group (25 to 35 year-olds). Three anti-EU arguments reduces Remain votes and increases those who Don't Know. Two anti-EU arguments decreases Remain and increases Leave votes. By region (Table A.14 – panel C), the largest effects are found in the Midlands and Eastern England and in northern England. Vignettes with either three or two pro-EU arguments increase the Remain vote within the Midlands and East, while the vignette with three anti-EU arguments increases the Leave vote in the North.

Overall, Pro-EU frames increase support for Remain among voters who lean toward Labour, are undecided, are aged less than 26 years old, from lower social grades, and live in Northern England. Anti-arguments, when combined, reduce support for remaining in the EU among Conservative voters, people aged 25 to 39, and who reside in Northern England.

Table A14. Additional difference-in-differences effects sub-group analysis

A. by social grade

Dependent variable:	Change in support for Remain (Wave 1 to Wave 2)			Change in support for Leave (Wave 1 to Wave 2)			Change in Don't Know (Wave 1 to Wave 2)			
Arguments	Coef.	Constant	R^2	Coef.	Constant	R^2	Coef.	Constant	R^2	N
Social grade: ABC1										
3 Pro / 0 Anti	0.037*	-0.014	0.0038	-0.022	-0.003	0.0019	-0.015	0.017	0.0005	750
	(0.022)	(0.016)		(0.018)	(0.013)		(0.025)	(0.018)		
2 Pro / 1 Anti	0.018	-0.014	0.0008	0.0001	-0.003	0.0000	-0.018	0.017	0.0006	1,439
	(0.017)	(0.014)		(0.016)	(0.014)		(0.019)	(0.017)		
1 Pro / 2 Anti	-0.022	-0.014	0.0010	0.029*	-0.003	0.0019	-0.007	0.017	0.0001	1,476
	(0.018)	(0.015)		(0.017)	(0.015)		(0.020)	(0.018)		
0 Pro / 3 Anti	-0.020	-0.014	0.0010	0.009	-0.003	0.0002	0.011	0.017	0.0003	694
	(0.024)	(0.017)		(0.021)	(0.015)		(0.026)	(0.019)		
Social grade: C2DE										
3 Pro / 0 Anti	0.078**	-0.005	0.0192	-0.061**	0.009	0.0261	-0.017	-0.005	0.0006	449
	(0.026)	(0.019)		(0.027)	(0.020)		(0.032)	(0.023)		
2 Pro / 1 Anti	0.032	-0.005	0.0027	-0.042*	0.009	0.0538	0.011	-0.005	0.0002	879
	(0.021)	(0.018)		(0.022)	(0.019)		(0.026)	(0.023)		
1 Pro / 2 Anti	0.018	-0.005	0.0007	0.004	0.009	0.0000	-0.022	-0.005	0.0008	902
	(0.022)	(0.019)		(0.021)	(0.019)		(0.026)	(0.022)		
0 Pro / 3 Anti	-0.028	-0.005	0.0025	0.037	0.009	0.0042	-0.009	-0.005	0.0002	433
	(0.027)	(0.019)		(0.028)	(0.019)		(0.033)	(0.024)		

B. by age group, part 1 (18-24 and 25-39)

Dependent variable:	Change in support for Remain (Wave 1 to Wave 2)			Change in support for Leave (Wave 1 to Wave 2)			Change in Don't Know (Wave 1 to Wave 2)			
Arguments	Coef.	Constant	R^2	Coef.	Constant	R^2	Coef.	Constant	R^2	N
Age 18-24										
3 Pro / 0 Anti	0.194**	-0.080	0.0676	-0.017	0.040	0.0024	-0.176**	0.040	0.0460	94
	(0.075)	(0.051)		(0.037)	(0.025)		(0.084)	(0.057)		
2 Pro / 1 Anti	0.065	-0.080*	0.0098	-0.055	0.040	0.0091	-0.010	0.040	0.0002	185
	(0.048)	(0.041)		(0.042)	(0.036)		(0.060)	(0.051)		
1 Pro / 2 Anti	0.080	-0.080	0.0070	-0.033	0.040	0.0037	-0.047	0.040	0.0025	195
	(0.069)	(0.059)		(0.039)	(0.034)		(0.068)	(0.058)		
0 Pro / 3 Anti	0.056	-0.080	0.0067	-0.088**	0.040	0.0438	0.031	0.040	0.0015	92
	(0.072)	(0.049)		(0.043)	(0.029)		(0.085)	(0.057)		
Age 25-39										
3 Pro / 0 Anti	0.008	0.039	0.0001	-0.027	-0.029	0.0026	0.019	-0.010	0.0006	208
	(0.050)	(0.036)		(0.037)	(0.026)		(0.053)	(0.038)		
2 Pro / 1 Anti	-0.050	0.039	0.0050	0.026	-0.029	0.0018	0.024	-0.010	0.0009	382
	(0.036)	(0.031)		(0.031)	(0.027)		(0.042)	(0.036)		
1 Pro / 2 Anti	-0.078**	0.039	0.0094	0.072**	-0.029	0.0094	0.007	-0.010	0.0001	409
	(0.040)	(0.035)		(0.036)	(0.032)		(0.045)	(0.039)		
0 Pro / 3 Anti	-0.119**	0.039	0.0300	-0.011	-0.029	0.0003	0.130**	-0.010	0.0280	202
	(0.048)	(0.034)		(0.043)	(0.030)		(0.054)	(0.038)		

B. by age group, part 2 (40-59 and 60+)

Dependent variable:	Change in support for Remain (Wave 1 to Wave 2)			Change in support for Leave (Wave 1 to Wave 2)			Change in Don't Know (Wave 1 to Wave 2)			
Arguments	Coef.	Constant	R^2	Coef.	Constant	R^2	Coef.	Constant	R^2	N
Age 40-59										
3 Pro / 0 Anti	0.041*	-0.014	0.0069	-0.043*	0.032*	0.0063	0.001	-0.018	0.0000	507
	(0.022)	(0.017)		(0.024)	(0.018)		(0.028)	(0.022)		
2 Pro / 1 Anti	0.049**	-0.014	0.0062	-0.063***	0.032*	0.0091	0.014	-0.018	0.0004	960
	(0.020)	(0.018)		(0.021)	(0.019)		(0.024)	(0.021)		
1 Pro / 2 Anti	0.004	-0.014	0.0000	-0.015	0.032*	0.0005	0.014	-0.018	0.0004	963
	(0.019)	(0.017)		(0.022)	(0.020)		(0.024)	(0.021)		
0 Pro / 3 Anti	-0.003	-0.014	0.0000	0.014	0.032*	0.0007	-0.011	-0.018	0.0003	456
	(0.025)	(0.018)		(0.024)	(0.018)		(0.031)	(0.022)		
Age 60+										
3 Pro / 0 Anti	0.056**	-0.015	0.0100	-0.045	-0.026	0.0068	-0.011	0.041*	0.0003	390
	(0.028)	(0.020)		(0.028)	(0.020)		(0.033)	(0.023)		
2 Pro / 1 Anti	0.017	-0.015	0.0009	0.027	-0.026	0.0020	-0.045*	0.041**	0.0043	791
	(0.020)	(0.017)		(0.022)	(0.019)		(0.024)	(0.021)		
1 Pro / 2 Anti	-0.001	-0.015	0.0000	0.044**	-0.026	0.0056	-0.043*	0.041*	0.0040	811
	(0.021)	(0.018)		(0.020)	(0.018)		(0.024)	(0.021)		
0 Pro / 3 Anti	-0.017	-0.015	0.0009	0.064**	-0.026	0.0386	-0.047	0.041*	0.0050	377
	(0.030)	(0.021)		(0.031)	(0.021)		(0.034)	(0.024)		

C. by English region, part 1 (London and Southern)

Dependent variable:	Change in support for Remain (Wave 1 to Wave 2)			Change in support for Leave (Wave 1 to Wave 2)			Change in Don't Know (Wave 1 to Wave 2)			
Arguments	Coef.	Constant	R^2	Coef.	Constant	R^2	Coef.	Constant	R^2	N
London										
3 Pro / 0 Anti	0.026	0.000	0.0015	-0.053	-0.000	0.0082	0.026	0.000	0.0015	142
	(0.057)	(0.042)		(0.050)	(0.036)		(0.057)	(0.042)		
2 Pro / 1 Anti	0.005	-0.000	0.0000	0.028	-0.000	0.0017	-0.033	-0.000	0.0016	278
	(0.044)	(0.038)		(0.041)	(0.036)		(0.050)	(0.044)		
1 Pro / 2 Anti	0.005	0.000	0.0000	0.039	-0.000	0.0032	-0.044	-0.000	0.0032	270
	(0.047)	(0.040)		(0.042)	(0.037)		(0.048)	(0.042)		
0 Pro / 3 Anti	-0.066	-0.000	0.0081	0.000	0.000	0.0000	0.066	0.000	0.0081	142
	(0.061)	(0.045)		(0.057)	(0.042)		(0.061)	(0.045)		
Southern										
3 Pro / 0 Anti	0.011	0.016	0.0004	-0.007	-0.000	0.0002	-0.004	-0.016	0.0000	279
	(0.031)	(0.022)		(0.030)	(0.022)		(0.039)	(0.029)		
2 Pro / 1 Anti	-0.013	0.016	0.0008	-0.013	0.000	0.0005	0.026	-0.016	0.0015	507
	(0.021)	(0.018)		(0.027)	(0.023)		(0.030)	(0.026)		
1 Pro / 2 Anti	-0.030	0.016	0.0022	0.016	-0.000	0.0007	0.014	-0.016	0.0003	552
	(0.027)	(0.024)		(0.027)	(0.024)		(0.034)	(0.030)		
0 Pro / 3 Anti	-0.031	0.016	0.0045	-0.008	0.000	0.0002	0.039	-0.016	0.0043	254
	(0.030)	(0.021)		(0.033)	(0.023)		(0.038)	(0.027)		

C. by English region, part 2 (Midlands & Eastern and Northern)

Dependent variable:	Change in support for Remain (Wave 1 to Wave 2)			Change in support for Leave (Wave 1 to Wave 2)			Change in Don't Know (Wave 1 to Wave 2)			
Arguments	Coef.	Constant	R^2	Coef.	Constant	R^2	Coef.	Constant	R^2	N
Midlands & Eastern										
3 Pro / 0 Anti	0.077**	-0.031	0.0172	-0.041	0.006	0.0056	-0.036	0.025	0.0026	334
	(0.032)	(0.023)		(0.030)	(0.022)		(0.039)	(0.028)		
2 Pro / 1 Anti	0.047*	-0.031	0.0055	-0.028	0.006	0.0017	-0.019	0.025	0.0006	660
	(0.025)	(0.021)		(0.026)	(0.023)		(0.029)	(0.025)		
1 Pro / 2 Anti	0.003	-0.031	0.0000	0.022	0.006	0.0014	-0.025	0.025	0.0013	627
	(0.026)	(0.022)		(0.023)	(0.020)		(0.028)	(0.024)		
0 Pro / 3 Anti	-0.045	-0.031	0.0056	0.032	0.032	0.0034	0.013	0.025	0.0004	292
	(0.035)	(0.024)		(0.006)	(0.022)		(0.040)	(0.026)		
Northern										
3 Pro / 0 Anti	0.078*	-0.008	0.0129	-0.028	-0.023	0.0025	-0.050	0.031	0.0041	285
	(0.041)	(0.030)		(0.034)	(0.025)		(0.046)	(0.034)		
2 Pro / 1 Anti	0.037	-0.008	0.0028	-0.006	-0.023	0.0001	-0.031	0.031	0.0015	546
	(0.030)	(0.026)		(0.027)	(0.023)		(0.034)	(0.030)		
1 Pro / 2 Anti	-0.013	-0.008	0.0003	0.040	-0.023	0.0029	-0.027	0.031	0.0010	604
	(0.030)	(0.027)		(0.030)	(0.027)		(0.035)	(0.031)		
0 Pro / 3 Anti	-0.005	-0.008	0.0001	0.076**	-0.023	0.0266	-0.070	0.031	0.0028	282
	(0.037)	(0.027)		(0.034)	(0.025)		(0.046)	(0.034)		