

Supplemental material for When Experts Matter: Variations in consensus messaging for vaccine and GMO safety

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1 Appendix A: Main text full results

Descriptive results

Table A1: Proportion of the population holding misperceptions by item

Question wording	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	Don't know	Mis-informed	Informed	Uninformed	Ratio
I believe that genetically modified food harms the environment.	10.93%	25.26%	29.95%	13.16%	3.55%	17.15%	36.19%	16.71%	47.10%	2.17
I believe genetically modified foods are as safe to eat as conventional foods.	5.39%	15.00%	26.97%	28.57%	14.96%	9.12%	43.52%	20.39%	36.08%	2.13
Most scientists think that ... GMOs are as safe to eat as conventional foods	5.47%	20.16%	29.83%	18.67%	8.40%	17.46%	27.07%	25.63%	47.29%	1.06
Most scientists think that genetically modified food does no harm to the environment	3.05%	18.94%	34.00%	17.27%	7.33%	19.41%	24.6%	21.99%	53.41%	1.12
I believe some vaccines cause autism in healthy children.	2.57%	6.18%	14.48%	24.74%	36.17%	15.86%	8.75%	60.91%	30.34%	0.14
Most experts believe some vaccines cause autism in healthy children	1.53%	7.32%	17.95%	25.93%	30.71%	16.56%	8.85%	56.64%	34.51%	0.16

Note: Reported ratios estimate the ratio of misinformed to informed responses. Weighted data from control conditions. Categories are defined as follows: “misinformed” (belief inconsistent with scientific evidence); “informed” (belief consistent with scientific evidence); “uninformed” (neither agreeing nor disagreeing or indicating that they do not know the answer).

Table A2: GMO outcomes by ideology

	Perc. consensus	Personal safety beliefs	Ban support	Conspiracy beliefs
Ideology (R)	0.0239 (0.0143)	-0.0087 (0.0117)	0.0182 (0.0188)	0.0195 (0.0159)
Age	-0.0058** (0.0022)	-0.0038* (0.0016)	0.0139*** (0.0024)	0.0080*** (0.0023)
Education	0.0220 (0.0140)	0.0170 (0.0096)	-0.0410* (0.0171)	-0.0158 (0.0147)
Female	-0.1758*** (0.0607)	-0.1027* (0.0448)	0.2380*** (0.0724)	-0.0569 (0.0647)
Religiosity	0.0168 (0.0183)	0.0150 (0.0141)	-0.0059 (0.0233)	0.0116 (0.0200)
Attention to politics	-0.0720* (0.0366)	-0.0694* (0.0270)	0.0149 (0.0438)	0.0496 (0.0382)
Constant	3.1411*** (0.1905)	3.1904*** (0.1296)	2.6140*** (0.2139)	2.6399*** (0.1945)
R^2	0.03	0.02	0.05	0.02
N	854	915	893	899

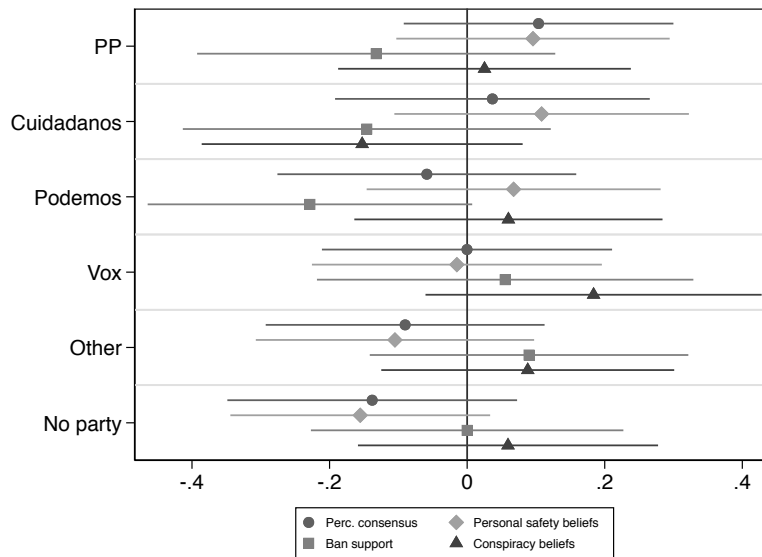
Notes: * $p < .05$, ** $p < .01$, *** $p < .005$ (two-sided). Cell entries are OLS coefficients. All outcomes measured on 5-pt. scales. Data come from the control condition. Models use survey weights.

Table A3: Vaccine outcomes by ideology

	Perc. consensus	Hesitancy	HPV	Flu	Autism	Conspiracy	Vacc. intent
Ideology (R)	0.0102 (0.0176)	0.0144 (0.0170)	0.0174 (0.0139)	0.0245 (0.0210)	0.0107 (0.0186)	0.0163 (0.0194)	-0.0159 (0.0151)
Age	-0.0017 (0.0022)	-0.0014 (0.0024)	0.0002 (0.0021)	0.0036 (0.0029)	-0.0048* (0.0022)	-0.0026 (0.0026)	-0.0068*** (0.0022)
Education	-0.0213 (0.0156)	-0.0470*** (0.0154)	-0.0456*** (0.0133)	-0.0540*** (0.0190)	-0.0091 (0.0170)	-0.0680*** (0.0163)	-0.0157 (0.0147)
Female	-0.2134*** (0.0645)	-0.3328*** (0.0662)	-0.3365*** (0.0547)	0.1830* (0.0826)	-0.2350*** (0.0695)	-0.1109 (0.0709)	0.2119*** (0.0609)
Religiosity	0.1000*** (0.0214)	0.0600*** (0.0208)	0.0762*** (0.0172)	0.0345 (0.0235)	0.0915*** (0.0219)	0.0626** (0.0222)	-0.0375 (0.0201)
Attention to politics	0.1015* (0.0441)	0.1224** (0.0435)	0.0431 (0.0370)	0.1243* (0.0521)	0.1126* (0.0452)	0.1622*** (0.0487)	-0.1484*** (0.0384)
Constant	1.9038*** (0.2006)	2.4421*** (0.2159)	2.3381*** (0.1853)	2.4869*** (0.2555)	1.9033*** (0.2124)	2.6945*** (0.2319)	3.9691*** (0.1848)
R^2	0.06	0.06	0.09	0.03	0.05	0.05	0.04
N	865	961	853	938	882	944	940

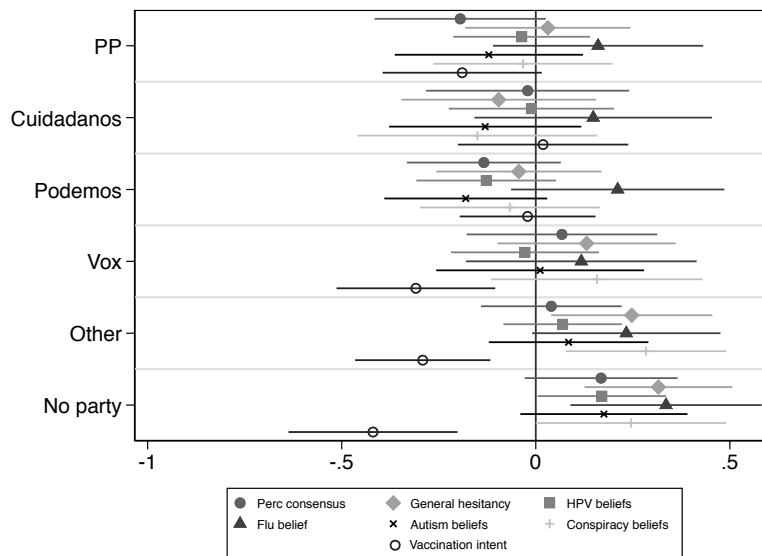
Notes: * $p < .05$, ** $p < .01$, *** $p < .005$ (two-sided). Cell entries are OLS coefficients. All outcomes measured on 5-pt. scales. All outcomes coded with misperceptions as higher scores except vaccination intent (intent is higher). Data come from the control condition. Models use survey weights.

Figure A1: GMO outcomes and party affiliation



Notes: OLS regression coefficients for each party across GMO outcome measures with PSOE, the current largest party in Spain, as the reference category. Error bars are 95% confidence intervals. All outcomes measured on 5-pt. scales. All models include age, education, gender, religiosity, and attention to politics as covariates and use survey weights. Data come from the control condition; n ranges from 876 to 940.

Figure A2: Vaccine outcomes and party affiliation



Notes: OLS regression coefficients for each party across vaccine outcome measures with PSOE, the current largest party in Spain, as the reference category. Error bars are 95% confidence intervals. All outcomes measured on 5-pt. scales. All outcomes coded with misperceptions as higher scores except vaccination intent (intent is higher). All models include age, education, gender, religiosity, and attention to politics as covariates and use survey weights. Data come from the control condition. n ranges from 880 to 994.

Table A4: GMO party models

	Perc. consensus	Personal safety beliefs	Ban support	Conspiracy beliefs
PP	0.0957 (0.1011)	0.1038 (0.0998)	-0.1322 (0.1325)	0.0252 (0.1083)
Ciudadanos	0.1083 (0.1090)	0.0367 (0.1164)	-0.1459 (0.1362)	-0.1526 (0.1188)
Podemos	0.0676 (0.1088)	-0.0586 (0.1106)	-0.2286 (0.1201)	0.0600 (0.1140)
Vox	-0.0149 (0.1073)	-0.0002 (0.1074)	0.0552 (0.1393)	0.1838 (0.1244)
Other	-0.1049 (0.1030)	-0.0901 (0.1032)	0.0900 (0.1179)	0.0881 (0.1084)
No party	-0.1554 (0.0961)	-0.1380 (0.1072)	-0.0000 (0.1156)	0.0594 (0.1110)
Constant	2.7627*** (0.1807)	2.9782*** (0.1832)	2.8619*** (0.2209)	3.0069*** (0.1986)
Controls	✓	✓	✓	✓
R^2	0.05	0.03	0.05	0.03
N	940	876	919	925

* $p < .05$, ** $p < .01$, *** $p < .005$ (two-sided). Cell entries are OLS coefficients. All outcomes measured on 5-pt. scales. PSOE is the reference category. All models include age, sex, education, and religiosity as co-variates and use survey weights. Data come from the control conditions.

Table A5: Vaccine party models

	Consensus	Hesitancy	HPV	Flu	Autism	Conspiracy	Vax intent
PP	-0.1945 (0.1124)	0.0312 (0.1084)	-0.0361 (0.0898)	0.1606 (0.1378)	-0.1209 (0.1234)	-0.0331 (0.1176)	-0.1897 (0.1044)
Ciudadanos	-0.0210 (0.1332)	-0.0956 (0.1277)	-0.0112 (0.1084)	0.1481 (0.1558)	-0.1303 (0.1260)	-0.1504 (0.1572)	0.0188 (0.1117)
Podemos	-0.1338 (0.1010)	-0.0436 (0.1084)	-0.1277 (0.0916)	0.2111 (0.1398)	-0.1804 (0.1068)	-0.0667 (0.1182)	-0.0210 (0.0891)
Vox	0.0674 (0.1250)	0.1311 (0.1169)	-0.0279 (0.0969)	0.1173 (0.1513)	0.0113 (0.1363)	0.1578 (0.1386)	-0.3089*** (0.1040)
Other	0.0400 (0.0922)	0.2474* (0.1057)	0.0692 (0.0777)	0.2333 (0.1236)	0.0846 (0.1046)	0.2839** (0.1050)	-0.2912*** (0.0887)
No party	0.1683 (0.1003)	0.3161*** (0.0969)	0.1702* (0.0842)	0.3357** (0.1254)	0.1755 (0.1096)	0.2453 (0.1249)	-0.4194*** (0.1108)
Constant	2.1625*** (0.1638)	2.7470*** (0.1761)	2.4898*** (0.1439)	2.7489*** (0.2004)	2.2280*** (0.1799)	3.1273*** (0.1785)	3.6358*** (0.1656)
Controls	✓	✓	✓	✓	✓	✓	✓
R^2	0.07	0.07	0.10	0.04	0.06	0.06	0.06
N	890	994	880	968	909	972	968

* $p < .05$, ** $p < .01$, *** $p < .005$ (two-sided). Cell entries are OLS coefficients. All outcomes measured on 5-pt. scales. All outcomes coded with misperceptions as higher scores except vaccination intent (intent is higher). PSOE is the reference category. All models include age, sex, education, and religiosity as co-variates and use survey weights. Data come from the control conditions.

Table A6: Regional differences across GMO measures

	Perc. consensus	Personal safety beliefs	Ban support	Conspiracy beliefs
East	-0.0044 (0.1143)	0.0346 (0.0823)	-0.0978 (0.1245)	-0.1262 (0.1020)
South	0.0137 (0.0846)	-0.0670 (0.0631)	-0.0094 (0.1118)	-0.0541 (0.0937)
Madrid	-0.0112 (0.1017)	0.0262 (0.0763)	-0.0858 (0.1192)	-0.2084 (0.1223)
North	0.0094 (0.1127)	0.0520 (0.1016)	0.0894 (0.1555)	-0.0323 (0.1280)
Northwest	-0.1069 (0.1768)	-0.0038 (0.1311)	0.0396 (0.2181)	-0.0028 (0.1414)
Center	0.0754 (0.0961)	-0.0395 (0.0729)	-0.1564 (0.1091)	-0.0361 (0.1111)
Constant	3.1304*** (0.1958)	3.2142*** (0.1382)	2.6558*** (0.2245)	2.6937*** (0.2014)
Controls	✓	✓	✓	✓
R^2	0.03	0.03	0.05	0.03
N	854	915	893	899

* $p < .05$, ** $p < .01$, *** $p < .005$ (two-sided). Cell entries are OLS coefficients. All outcomes measured on 5-pt. scales. Northeast region is the reference category. All models include age, sex, education, and religiosity as co-variates and use survey weights. Data come from the control conditions.

Table A7: Regional differences across vaccine measures

	Consensus	Hesitancy	HPV	Flu	Autism	Conspiracy	Vax intent
East	0.0013 (0.1195)	-0.1300 (0.1177)	-0.1000 (0.0984)	0.0515 (0.1413)	-0.0173 (0.1153)	-0.1742 (0.1151)	0.1194 (0.0968)
South	-0.0195 (0.0938)	-0.0815 (0.0932)	-0.1254 (0.0798)	-0.0829 (0.1323)	-0.0742 (0.1003)	-0.2079* (0.0998)	0.0659 (0.0958)
Madrid	0.0060 (0.0996)	-0.2968*** (0.1035)	-0.0985 (0.0811)	-0.1996 (0.1197)	-0.0452 (0.1083)	-0.2559* (0.1132)	0.2452** (0.0903)
North	-0.1059 (0.1241)	-0.1993 (0.1332)	-0.0227 (0.1026)	-0.2159 (0.1514)	-0.1815 (0.1315)	-0.3582* (0.1434)	0.3409*** (0.1070)
Northwest	-0.1437 (0.1287)	-0.3545* (0.1436)	-0.2105 (0.1348)	-0.2028 (0.1637)	-0.1619 (0.1457)	-0.4953*** (0.1349)	0.1754 (0.1473)
Center	-0.1549 (0.1097)	-0.1497 (0.1202)	-0.3408*** (0.0946)	-0.1201 (0.1578)	-0.1228 (0.1170)	-0.1674 (0.1148)	0.0818 (0.1123)
Constant	1.9436*** (0.2007)	2.5451*** (0.2127)	2.4449*** (0.1881)	2.5719*** (0.2592)	1.9630*** (0.2136)	2.8487*** (0.2310)	3.8788*** (0.1880)
Controls	✓	✓	✓	✓	✓	✓	✓
R^2	0.06	0.07	0.11	0.04	0.05	0.07	0.06
N	865	961	853	938	882	944	940

* $p < .05$, ** $p < .01$, *** $p < .005$ (two-sided). Cell entries are OLS coefficients. All outcomes measured on 5-pt. scales. All outcomes coded with misperceptions as higher scores except vaccination intent (intent is higher). Northeast region is the reference category. All models include age, sex, education, and religiosity as co-variates and use survey weights. Data come from the control conditions.

Hypothesis test results: GMO study

Table A8: Scientific consensus message vs control on GMO beliefs

	Perc. consensus	Personal safety beliefs	Ban support	Conspiracy beliefs
Consensus treatment	0.1271*** (0.0362)	0.0878* (0.0345)	-0.1321*** (0.0426)	0.0247 (0.0367)
Constant	2.9256*** (0.0811)	2.6207*** (0.0780)	3.0273*** (0.0965)	3.1080*** (0.0829)
Controls	✓	✓	✓	✓
R^2	0.03	0.03	0.04	0.01
N	3217	3372	3303	3307

* $p < .05$, ** $p < .01$, *** $p < .005$ (two-sided). Cell entries are OLS coefficients. All outcomes measured on 5-pt. scales. Models pool all consensus messages compared against a control. All models include age, sex, education, and religiosity as co-variates.

Table A9: Effects scientific consensus on GMO beliefs from 60-95%

	Perc. consensus	Personal safety beliefs	Ban support	Conspiracy beliefs
60%	0.0851 (0.0607)	0.0332 (0.0583)	-0.1640* (0.0724)	0.0717 (0.0624)
65%	0.1279 (0.0653)	0.1471* (0.0628)	-0.1724* (0.0771)	-0.0237 (0.0665)
70%	0.1605* (0.0626)	0.0723 (0.0604)	-0.1369 (0.0747)	0.0614 (0.0641)
75%	0.1644** (0.0606)	0.0900 (0.0582)	-0.1095 (0.0711)	0.0383 (0.0617)
80%	0.1618** (0.0605)	0.0937 (0.0583)	-0.0721 (0.0718)	0.0318 (0.0624)
85%	0.0700 (0.0643)	0.1226* (0.0617)	-0.1378 (0.0755)	0.0034 (0.0655)
90%	0.2012*** (0.0623)	0.1024 (0.0600)	-0.1692* (0.0742)	0.0085 (0.0638)
95%	0.0488 (0.0596)	0.0574 (0.0572)	-0.1083 (0.0705)	-0.0008 (0.0606)
Constant	2.9228*** (0.0811)	2.6208*** (0.0781)	3.0272*** (0.0966)	3.1069*** (0.0829)
Controls	✓	✓	✓	✓
R^2	0.03	0.03	0.04	0.01
N	3217	3372	3303	3307

* $p < .05$, ** $p < .01$, *** $p < .005$ (two-sided). Cell entries are OLS coefficients. All outcomes measured on 5-pt. scales. All models include age, sex, education, and religiosity as co-variates.

Hypothesis test results: vaccine study

Table A10: Effects of vaccine consensus vs. control

	Consensus	Hesitancy	HPV	Flu	Autism	Conspiracy	Vax intent
Consensus treatment	0.0064 (0.0379)	0.0493 (0.0373)	0.0207 (0.0316)	0.0415 (0.0449)	0.0372 (0.0395)	0.0170 (0.0410)	-0.0110 (0.0359)
Constant	2.3763*** (0.0863)	2.7321*** (0.0858)	2.4394*** (0.0723)	3.0727*** (0.1037)	2.4193*** (0.0907)	3.0572*** (0.0942)	3.3035*** (0.0824)
Controls	✓	✓	✓	✓	✓	✓	✓
R^2	0.05	0.04	0.08	0.02	0.04	0.04	0.02
N	3036	3392	2966	3276	3071	3320	3294

* $p < .05$, ** $p < .01$, *** $p < .005$ (two-sided). Cell entries are OLS coefficients. All outcomes measured on 5-pt. scales. All outcomes coded with misperceptions as higher scores except vaccination intent (intent is higher). Models pool all consensus messages compared against a control. All models include age, sex, education, and religiosity as co-variates.

Table A11: Scientific and social consensus effects on vaccine beliefs

	Consensus	Hesitancy	HPV	Flu	Autism	Conspiracy	Vax intent
Scientists: 90%	0.0616 (0.0523)	0.0741 (0.0518)	0.0378 (0.0441)	0.1108 (0.0621)	0.0902 (0.0548)	0.0817 (0.0568)	-0.0022 (0.0494)
Scientists: 75%	-0.0104 (0.0517)	0.0093 (0.0510)	0.0146 (0.0433)	-0.0527 (0.0613)	0.0052 (0.0540)	-0.0056 (0.0561)	0.0369 (0.0489)
Public: 90%	0.0209 (0.0516)	0.0803 (0.0510)	0.0245 (0.0431)	0.1002 (0.0615)	0.0562 (0.0540)	0.0328 (0.0560)	-0.0906 (0.0491)
Public: 75%	-0.0454 (0.0520)	0.0345 (0.0510)	0.0067 (0.0436)	0.0103 (0.0616)	-0.0017 (0.0546)	-0.0385 (0.0561)	0.0121 (0.0493)
Constant	2.3782*** (0.0863)	2.7327*** (0.0858)	2.4399*** (0.0724)	3.0759*** (0.1036)	2.4203*** (0.0907)	3.0597*** (0.0942)	3.3018*** (0.0823)
Controls	✓	✓	✓	✓	✓	✓	✓
R^2	0.05	0.05	0.08	0.02	0.04	0.04	0.02
N	3036	3392	2966	3276	3071	3320	3294

* $p < .05$, ** $p < .01$, *** $p < .005$ (two-sided). Cell entries are OLS coefficients. All outcomes measured on 5-pt. scales. All outcomes coded with misperceptions as higher scores except vaccination intent (intent is higher). All models include age, sex, education, and religiosity as co-variates.

2 Appendix B: Additional results

Latent variable and single item variable models

In this section we report results of additional models in which our outcome measures are latent variables revealed by factor analysis. Using principal-component factor analysis with orthogonal rotation revealed that GMO items loaded onto two factors: personal beliefs (items 1 and 2 in Table C2) and consensus beliefs (items 3 and 4) loaded onto the first factor, while ban support (item 5) and conspiracy beliefs (items 6 and 7) loaded onto a second. The same method revealed that vaccine items loaded onto two factors: All items with negative valence regarding vaccines loaded onto the first factor, while the two positive-valenced items (items 6 and 9; HPV vaccine protects against cancer and intent to vaccinate) loaded onto a second. We then report consensus effects for each outcome item individually.

Table B1: Latent variable models

	GMO 1	GMO 2	GMO 1	GMO 2	Vax 1	Vax 2	Vax 1	Vax 2
GMO consensus	0.1254*** (0.0340)	0.0276 (0.0316)						
Scientists: 60%			0.0991 (0.0574)	0.0010 (0.0536)				
Scientists: 65%			0.1449* (0.0618)	0.0906 (0.0575)				
Scientists: 70%			0.1418* (0.0595)	0.0101 (0.0552)				
Scientists: 75%			0.1466* (0.0570)	0.0140 (0.0530)				
Scientists: 80%			0.1648*** (0.0574)	-0.0063 (0.0537)				
Scientists: 85%			0.0867 (0.0604)	0.0477 (0.0564)				
Scientists: 90%			0.1599** (0.0589)	0.0451 (0.0548)				
Scientists: 95%			0.0647 (0.0564)	0.0311 (0.0525)				
Vax consensus					-0.0427 (0.0304)	0.0349 (0.0308)		
Scientists: 90%							0.0965* (0.0420)	0.0106 (0.0425)
Scientists: 70%							-0.0016 (0.0415)	-0.0093 (0.0420)
Public: 90%							0.0598 (0.0415)	-0.0952* (0.0422)
Public: 70%							0.0182 (0.0415)	-0.0447 (0.0422)
Constant	2.7727*** (0.0770)	2.8926*** (0.0715)	2.7712*** (0.0770)	2.8932*** (0.0715)	2.7254*** (0.0668)	3.1508*** (0.0680)	2.6842*** (0.0697)	3.1869*** (0.0709)
Controls	✓	✓	✓	✓	✓	✓	✓	✓
R ²	0.04	0.02	0.04	0.02	0.06	0.03	0.06	0.03
N	3390	3430	3390	3430	3489	3406	3489	3406

* $p < .05$, ** $p < .01$, *** $p < .005$ (two-sided). Cell entries are OLS coefficients. All outcomes measured on 5-pt. scales. All models include age, sex, education, and religiosity as co-variables.

Table B2: GMO outcome single item models

	Enviro harm	Safe	Enviro exp.	Safe exp.	Ban	Conspiracy 1	Conspiracy 2
Consensus	0.0528 (0.0416)	0.1081* (0.0422)	0.1213*** (0.0409)	0.1050* (0.0419)	-0.1321*** (0.0426)	-0.0028 (0.0442)	-0.0417 (0.0426)
Constant	2.6399*** (0.0938)	2.6243*** (0.0954)	2.8801*** (0.0920)	2.9942*** (0.0937)	3.0273*** (0.0965)	2.8726*** (0.0994)	2.8652*** (0.0962)
R^2	0.01	0.04	0.02	0.02	0.04	0.01	0.01
N	3118	3306	3017	3128	3303	3177	3088

* $p < .05$, ** $p < .01$, *** $p < .005$ (two-sided). Cell entries are OLS coefficients. All outcomes measured on 5-pt. scales. All models include age, sex, education, and religiosity as co-variables.

Table B3: Vaccine outcome single item models

	Judged	Immunity	Autism	Autism exp.	HPV sex	HPV cancer	HPV sex exp.	Flu	Intent	Consp. 1	Consp. 2
Consensus	0.0742 (0.0450)	0.0191 (0.0441)	0.0621 (0.0434)	-0.0009 (0.0434)	0.0011 (0.0428)	-0.0812 (0.0462)	0.0051 (0.0431)	0.0415 (0.0449)	-0.0110 (0.0359)	0.0204 (0.0467)	0.0127 (0.0468)
Constant	2.6785*** (0.1042)	2.7760*** (0.1014)	2.3027*** (0.0996)	2.5361*** (0.0991)	2.2477*** (0.0975)	3.0567*** (0.1065)	2.2630*** (0.0986)	3.0727*** (0.1037)	3.3035*** (0.0824)	3.2231*** (0.1070)	2.7995*** (0.1068)
R^2	0.03	0.04	0.04	0.04	0.07	0.03	0.07	0.02	0.02	0.02	0.05
N	3113	3328	2935	2885	2725	2538	2631	3276	3294	3250	2907

* $p < .05$, ** $p < .01$, *** $p < .005$ (two-sided). Cell entries are OLS coefficients. All outcomes measured on 5-pt. scales. All models include age, sex, education, and religiosity as co-variates.

Differential acceptance

Importantly, consensus messages are likely to be less accepted by some members of the public than others. Prior attitudes have been shown to moderate message effects for vaccines and GMOs (G. N. Dixon et al., 2015; G. Dixon, 2016; Clarke et al., 2015). When examining climate change in the U.S., as many of these studies have, political identities are an obvious factor (Ma et al., 2019; Benegal & Scruggs, 2018). Moving outside this context and examining issues without ideological polarization, a number of psychological traits may condition the acceptance of information handed down from scientific experts: epistemic overconfidence (Motta et al., 2018; Fernbach et al., 2019; Lyons et al., 2020), conspiracy predispositions (Lewandowsky et al., 2013; Klofstad et al., 2019), need for affect and reliance on intuition (Martel et al., 2019; Garrett & Weeks, 2017; Anspach et al., 2019), lower cognitive reflection (Pennycook et al., 2015), need for uniqueness (Imhoff & Lamberty, 2017), and lower general social trust. These traits have not been examined in consensus message research to date, so we offer an initial test of differential acceptance based around these here.

Pre-registered expectations

It is important to stress that we did not forward formal hypotheses on these questions. Due to the number of moderators we examine, and because these differential effects are not the primary concern of the study, we indicated tests would be reported as exploratory. Still, there is reason to believe consensus treatments will be less effective for participants who are high in epistemic overconfidence, high in anti-expert sentiments, low in cognitive reflection, high in need for uniqueness, and high in conspiracy theory mindset, since each of these predispositions often manifests in rejection of mainstream sources and acceptance of dubious claims (Klofstad et al., 2019; Han et al., 2022; Martel et al., 2019). Similarly, reliance on intuition and need for affect may be negatively associated with uptake of consensus information (as found with corrections more generally (Anson, 2022; Anspach et al., 2019)). Meanwhile, general social trust might increase acceptance of official guidelines or the prevailing views of the general public (Ackah et al., 2022). Finally, we might expect that those holding warmer views toward scientists also to be more amenable to scientific consensus (G. N. Dixon et al., 2015).

Moderators

Epistemic overconfidence was measured using a scale developed for this survey, with the following items on a 5-point Likert scale from *strongly disagree* to *strongly agree*: “I am more confident in my opinion than other people’s facts,” “Most of the time I know just as much as experts,” “Experts really don’t know that much,” “I am very knowledgeable about many different topics,” “I feel that I have a pretty good understanding of what is true and what is false,” and “I consider myself well-qualified on most issues” ($M = 2.94$, $SD = 0.67$, $\alpha = .76$).

Conspiratorial worldview (Uscinski et al., 2016) was measured using the following items on a 5-point Likert scale from *strongly disagree* to *strongly agree*: “Much of our lives are being controlled by plots hatched in secret places,” “Even though we live in a democracy, a few people will always run things anyway,” “The people who really ‘run’ the country are not known to the voter,” and “Big events like wars, recessions, and the outcomes of elections are controlled by small groups of people who are working in secret against the rest of us,” ($M = 3.65$, $SD = 0.82$, $\alpha = .77$).

General social trust was measured using the following item: “Generally speaking would you say that most people can be trusted or that you need to be very careful in dealing with people? Please use this scale from 1 (You can’t be too careful) to 5 (Most people can be trusted) to tell us what you think,” ($M = 2.91$, $SD = 1.03$).

Need for affect (Maio & Esses, 2001) was measured with the following items on a 7-pt. Likert scale from *strongly disagree* to *strongly agree*: “I feel that I need to experience strong emotions regularly,” “Emotions help people to get along in life,” “It is important for me to be in touch with my feelings,” and “It is important for me to know how others are feeling,” ($M = 2.96$, $SD = 1.17$, $\alpha = .69$).

Need for uniqueness (Lynn & Harris, 1997) was measured with the following items on a 5-pt. Likert scale from *strongly disagree* to *strongly agree*: “Being distinctive is important to me,” “I have a need for uniqueness,” and “I prefer being different from other people,” ($M = 3.24$, $SD = .83$, $\alpha = .77$).

Reliance on intuition (Garrett & Weeks, 2017) was measured using the following items on a 5-point Likert scale from *strongly disagree* to *strongly agree*: “I trust my gut to tell me what’s true and what’s not,” “I trust my initial feelings about the facts,” and “I can usually feel when a claim is true or false even if I can’t explain how I know,” ($M = 3.67$, $SD = .70$, $\alpha = .75$).

A cognitive reflection test (CRT) (Thomson & Oppenheimer, 2016) was administered using the average of two items, in multiple choice format: “If you are running a race and you pass the person in second place, what place are you in?” (Second) and “In a lake, there is a patch of lily pads. Every day, the patch doubles in size. If it takes 48 days for the patch to cover the entire lake, how long would it take for the patch to cover half the lake, in days?” (47 days) (M correct = .50, $SD = .33$).

Finally, respondents rated their feelings toward scientists in general from 0 (Coldly) to 100 (Warmly) ($M = 84.73$, $SD = 18.93$), and issue concern was measured with the following items on a 5-pt. Likert scale from *strongly disagree* to *strongly agree*: “I am concerned about serious negative effects of GMOs,” ($M = 3.73$, $SD = 1.08$) and “I am concerned about serious negative side effects of vaccines,” ($M = 3.03$, $SD = 1.32$).

Are the effects of scientific consensus on GMO beliefs conditional?

As referenced in the main text, we examined whether the GMO consensus message effects were conditional on a series of predispositions, as GMO but not vaccine consensus messages yielded main effects. Although many of these measures are associated with GMO beliefs, there is limited evidence of any consistent moderation effects. In fact, we find that consensus messages result in larger decreases in support for a GMO ban among the most conspiratorial, those most reliant on intuition, and those lowest in general trust. We report these models in full in the Tables B4 through B7.

Table B4: GMO consensus perception interaction models

	Subjective knowledge	Conspiracy	Sci. feel	Concern	Trust	NFA	Intuition	NFU	CRT
Consensus treatment	0.1681 (0.1659)	0.1507 (0.1690)	0.2298 (0.1655)	0.2251 (0.1220)	0.0701 (0.1095)	-0.1004 (0.1452)	0.2490 (0.2877)	-0.1002 (0.2038)	0.0011 (0.0960)
Consensus X Subj. know	0.0135 (0.0548)								
Subj. know	0.0890*** (0.0284)								
Consensus X Conspiracy		0.0064 (0.0451)							
Conspiracy		-0.0819*** (0.0235)							
Consensus X Sci. feel			0.0012 (0.0019)						
Sci feel			-0.0006 (0.0010)						
Consensus X Concern				0.0252 (0.0315)					
Concern				-0.2696*** (0.0168)					
Consensus X Trust					-0.0199 (0.0356)				
Trust					0.0816*** (0.0187)				
Consensus X NFA						-0.0748 (0.0445)			
NFA						0.0200 (0.0228)			
Consensus X Intuition							0.0332 (0.0769)		
Intuition							0.0112 (0.0383)		
Consensus X NFU								-0.0700 (0.0608)	
NFU								0.0518 (0.0330)	
Consensus X CRT									-0.2534 (0.1633)
CRT									0.1733* (0.0826)
Constant	2.6403*** (0.1596)	3.2030*** (0.1629)	2.8679*** (0.1588)	3.7240*** (0.1224)	2.8071*** (0.1161)	3.1954*** (0.1656)	2.8681*** (0.2647)	2.9856*** (0.2004)	3.0573*** (0.1331)
R ²	0.03	0.03	0.03	0.12	0.03	0.03	0.03	0.02	0.03
N	3214	3213	3178	3192	3197	1608	1606	1602	1608

* $p < .05$, ** $p < .01$, *** $p < .005$ (two-sided). Cell entries are OLS coefficients. All outcomes measured on 5-pt. scales. All models include age, sex, education, and religiosity as co-variables.

Table B5: GMO safety belief interaction models

	Subjective knowledge	Conspiracy	Sci. feel	Concern	Trust	NFA	Intuition	NFU	CRT
Consensus treatment	-0.0067 (0.1583)	0.0039 (0.1570)	0.3033 (0.1589)	0.1031 (0.1090)	0.2203* (0.1052)	-0.1098 (0.1388)	0.1109 (0.2723)	0.0731 (0.1991)	0.0307 (0.0921)
Consensus X Subj. know	-0.0318 (0.0524)								
Subj. know	-0.0554* (0.0275)								
Consensus X Conspiracy		-0.0208 (0.0419)							
Conspiracy		-0.2287*** (0.0221)							
Consensus X Sci. feel			0.0026 (0.0018)						
Sci. feel			-0.0003 (0.0010)						
Consensus X Concern				0.0023 (0.0282)					
Concern				-0.4045*** (0.0151)					
Consensus X Trust					0.0453 (0.0341)				
Trust					0.0558*** (0.0181)				
Consensus X NFA						-0.0780 (0.0428)			
NFA						0.0544* (0.0224)			
Consensus X Intuition							-0.0031 (0.0728)		
Intuition							-0.0971** (0.0373)		
Consensus X NFU								-0.0016 (0.0595)	
NFU								-0.0606 (0.0324)	
Consensus X CRT									-0.1772 (0.1574)
CRT									0.3430*** (0.0809)
Constant	2.8677*** (0.1521)	3.5353*** (0.1514)	2.4232*** (0.1521)	3.9592*** (0.1092)	2.3855*** (0.1113)	2.7372*** (0.1598)	3.0376*** (0.2499)	2.8841*** (0.1966)	2.5766*** (0.1277)
R ²	0.04	0.08	0.03	0.25	0.04	0.04	0.04	0.03	0.04
N	3370	3369	3334	3343	3349	1681	1680	1682	1682

* $p < .05$, ** $p < .01$, *** $p < .005$ (two-sided). Cell entries are OLS coefficients. All outcomes measured on 5-pt. scales. All models include age, sex, education, and religiosity as co-variables.

Table B6: GMO ban support interaction models

	Subjective knowledge	Conspiracy	Sci. feel	Concern	Trust	NFA	Intuition	NFU	CRT
Consensus treatment	0.1849 (0.1932)	0.2559 (0.1921)	-0.0212 (0.1954)	-0.2017 (0.1354)	-0.3720*** (0.1296)	-0.1544 (0.1716)	0.6595* (0.3297)	-0.1382 (0.2418)	-0.1148 (0.1126)
Consensus X Subj. know	0.1072 (0.0640)								
Subj. know	0.2173*** (0.0337)								
Consensus X Conspiracy		0.1030* (0.0513)							
Conspiracy		0.3200*** (0.0269)							
Consensus X Sci. feel			0.0014 (0.0023)						
Sci. feel			-0.0029* (0.0012)						
Consensus X Concern				-0.0183 (0.0349)					
Concern				0.4828*** (0.0187)					
Consensus X Trust					-0.0824* (0.0420)				
Trust					-0.0734*** (0.0223)				
Consensus X NFA						0.0134 (0.0529)			
NFA						-0.0569* (0.0274)			
Consensus X Intuition							0.2307** (0.0881)		
Intuition							0.1889*** (0.0452)		
Consensus X NFU								-0.0107 (0.0724)	
NFU								0.1100** (0.0395)	
Consensus X CRT									0.1377 (0.1925)
CRT									-0.5099*** (0.0982)
Constant	2.1088*** (0.1855)	1.4728*** (0.1855)	3.1608*** (0.1874)	1.4762*** (0.1363)	3.4080*** (0.1375)	3.0737*** (0.1972)	1.4189*** (0.3020)	2.5153*** (0.2389)	3.1335*** (0.1571)
R ²	0.06	0.10	0.04	0.24	0.04	0.04	0.07	0.04	0.06
N	3301	3299	3262	3278	3283	1649	1648	1642	1650

* $p < .05$, ** $p < .01$, *** $p < .005$ (two-sided). Cell entries are OLS coefficients. All outcomes measured on 5-pt. scales. All models include age, sex, education, and religiosity as co-variables.

Table B7: GMO conspiracy belief interaction models

	Subjective knowledge	Conspiracy	Sci. feel	Concern	Trust	NFA	Intuition	NFU	CRT
Consensus treatment	0.3410* (0.1634)	0.2782 (0.1587)	-0.2776 (0.1682)	-0.0555 (0.1234)	-0.0922 (0.1115)	0.1852 (0.1480)	0.3087 (0.2824)	-0.1752 (0.2028)	-0.0291 (0.0977)
Consensus X Subj. know	0.1067* (0.0541)								
Subj. know	0.2921*** (0.0286)								
Consensus X Conspiracy		0.0672 (0.0425)							
Conspiracy		0.3984*** (0.0225)							
Consensus X Sci. feel			-0.0036 (0.0019)						
Sci. feel			-0.0029*** (0.0010)						
Consensus X Concern				-0.0215 (0.0319)					
Concern				0.3000*** (0.0171)					
Consensus X Trust					-0.0403 (0.0361)				
Trust					-0.0624*** (0.0193)				
Consensus X NFA						0.0670 (0.0455)			
NFA						-0.0731*** (0.0236)			
Consensus X Intuition							0.0886 (0.0757)		
Intuition							0.2563*** (0.0388)		
Consensus X NFU								-0.0550 (0.0607)	
NFU								0.1569*** (0.0333)	
Consensus X CRT									-0.0435 (0.1664)
CRT									-0.3576*** (0.0850)
Constant	1.9865*** (0.1567)	1.3945*** (0.1529)	3.6316*** (0.1611)	2.1723*** (0.1240)	3.3547*** (0.1183)	3.1934*** (0.1700)	1.9131*** (0.2593)	2.7927*** (0.1998)	3.3610*** (0.1359)
R ²	0.06	0.14	0.02	0.12	0.02	0.02	0.05	0.03	0.03
N	3305	3303	3266	3285	3284	1656	1655	1635	1657

* $p < .05$, ** $p < .01$, *** $p < .005$ (two-sided). Cell entries are OLS coefficients. All outcomes measured on 5-pt. scales. All models include age, sex, education, and religiosity as co-variables.

3 Appendix C: Additional method detail

Table C1: GMO and vaccine treatment groups

GMO treatment	N	Vaccine treatment	N
Control	1008	Control	1031
Scientists: 60%	337	Scientists: 75%	613
Scientists: 65%	284	Scientists: 90%	630
Scientists: 70%	307	Public: 75%	632
Scientists: 75%	349	Public: 90%	633
Scientists: 80%	341		
Scientists: 85%	297		
Scientists: 90%	316		
Scientists: 95%	348		
Total	3587		3539

Table C2: GMO and vaccine outcome variable items

Item		M	SD
1	I believe that genetically modified food harms the environment	3.24	1.05
2	I believe genetically modified foods are as safe to eat as conventional foods	2.72	1.11
3	Most scientists think that genetically modified foods (sometimes known as GMOs) are as safe to eat as conventional foods	3.05	1.05
4	Most scientists think that genetically modified food does no harm to the environment	2.99	1.01
5	Growing genetically modified crops should be banned	2.99	1.01
6	Giant multinational corporations that produce GM seeds want to destroy organic or ecological agriculture to protect their benefits	3.23	1.12
7	The real aim of agrochemical and pharmaceutical companies is to use what goes into our bodies as a way to control us	3.03	1.07
1	I feel that I can't share my doubts about vaccines with doctors	2.64	1.16
2	I believe it is better for kids to be exposed to germs and develop natural immunity than to receive vaccines	2.27	1.18
3	I believe some vaccines cause autism in healthy children	2.02	1.09
4	Most experts believe some vaccines cause autism in healthy children	2.09	1.08
5	I believe HPV vaccination at age 12 promotes sexual activity	2.04	1.05
6	I believe that the HPV vaccination can help protect against certain types of cancer	3.30	1.08
7	Most experts believe HPV vaccination at age 12 promotes sexual activity	2.14	1.04
8	I believe you can get the flu from the flu vaccine	2.90	1.18
9	When it comes to your future vaccination plans, which of the following statements reflect your intentions best?	3.18	.95
10	Pharmaceutical companies, scientists and academics work together to cover up the dangers of vaccines to serve their own interests	2.90	1.23
11	The government is trying to cover up the link between vaccines and autism in order to protect pharmaceutical profits	2.37	1.17

Note: All variables measured on 5-pt. scales except the vaccination intent item, where the options included: "I am planning to get all recommended vaccines" (4), "I am planning to get most of the recommended vaccines" (3), "I am planning to get some of the recommended vaccines" (2) and "I am not planning to get any of the recommended vaccines" (1). Means are for original coding and do not correspond to reverse-coding described in scale construction in text.

4 Debriefing messages

1. All respondents saw the following message:

Earlier, we asked you which types of cancer the HPV vaccine can help protect against. The HPV vaccine has been shown to reduce the risk of cervical, penile, anal, and throat cancer. Additionally, the HPV vaccination also protects against genital warts. For more information on the HPV and its vaccination, please read this article: http://www.mscbs.gob.es/ciudadanos/enfLesiones/enfTransmisibles/sida/docs/hojaInformativaVPH_22Feb18.pdf

2. Those in the GMO experiment saw the following message:

The purpose of this study is to examine how information about expert beliefs affects support for genetically modified foods. The evidence that GMOs are safe to eat is overwhelming. We asked you to imagine a news headline stating a percentage of experts believe GMOs are safe for consumption. In reality, the percentage of scientists that believe GMOs are safe for consumption is higher than what you read in the news headline. Current expert consensus is that GMOs in food and animal feed are perfectly safe. The exact percentage reported in the news headline was different for different people. We did this so that everyone would have the same amount of information about these beliefs. This helps us make clearer conclusions about our experiment. While different people were told different percentages, the information we provided to you that GMOs are safe for consumption is accurate. For more information about GMOs and their consumption, please read the following articles:

- https://www.bbc.com/mundo/noticias/2016/05/160519_ciencia_alimentos_modificados_peligros_ninguno_gtg
- <https://www.sciencedirect.com/science/article/pii/S187704281305533X>
- <https://allianceforscience.cornell.edu/blog/2016/05/gmo-safety-debate-is-over/>

3. Those in the vaccine experiment saw the following message:

The purpose of this study is to examine how information about public or expert beliefs affects support for vaccinations. The evidence that the MMR vaccinations does not cause autism is overwhelming. We asked you to imagine a news headline stating a percentage of the public or of experts that do NOT believe that the MMR vaccination causes autism. In reality, the percentage of medical professionals that do NOT link vaccinations with autism is higher than what you read in the news headline. As for public opinion, in 2017 only 8% of the Spanish population incorrectly believe there is a link between autism and vaccinations. The exact percentage or group reported in the news headline was different for different people. We did this so that everyone would have the same amount of information about these beliefs. This helps us make clearer conclusions about our experiment. While different people were told different percentages, the information we provided to you that MMR vaccines do NOT cause autism is accurate. For more information about the scientific studies invalidating the link between vaccination and autism please read the following articles:

- <https://www.vacunas.org/las-vacunas-no-causan-autismo/>
- <https://www.sciencedirect.com/science/article/pii/S0264410X14006367?via%3Dihub>
- <https://www.bbc.com/mundo/noticias-40776371>

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