

In the format provided by the authors and unedited.

Nudging out support for a carbon tax

David Hagmann ^{1*}, Emily H Ho ² and George Loewenstein ¹

¹Department of Social and Decision Sciences, Carnegie Mellon University, Pittsburgh, PA, USA. ²Department of Psychology, Fordham University, New York, NY, USA. *e-mail: hagmann@cmu.edu

Supplementary Information
Nudging Out Support for a Carbon Tax

	Model 1	Model 2	Model 3	Model 4
Nudge Available	-0.661*	-1.211***	-1.207***	-1.428***
	(0.296)	(0.366)	(0.366)	(0.401)
Tax Effectiveness		0.791***	0.775***	0.711***
		(0.166)	(0.187)	(0.202)
Tax Painfulness		-0.658***	-0.647***	-0.731***
		(0.175)	(0.180)	(0.194)
Nudge Effectiveness			0.024	-0.091
			(0.199)	(0.214)
Nudge Painfulness			-0.067	0.245
			(0.214)	(0.241)
Climate Change Exists				0.246
				(0.242)
Conservative				-1.673***
				(0.409)
(Intercept)	0.861***	0.497	0.548	0.621
	(0.218)	(0.746)	(0.882)	(1.405)
Log Likelihood	-130.255	-102.000	-101.940	-90.632
Num. obs.	201	201	201	201

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$. Coefficients are expected log-odds.

Supplementary Table 1: **Introducing an option to implement a nudge decreases the likelihood of implementing the tax in Study 1A.** The table shows logistic regressions on the decision to implement the tax (or both the tax and the nudge). The finding holds with a series of controls, including how effective and painful participants rate the tax policy. Notably, effectiveness and painfulness of the nudge do not influence support for the tax.

Supplementary Note 1

In Study 1A, when participants could only implement the tax, we find that 70.30% supported its implementation. When an opportunity to implement the nudge was also available, 45.00% supported implementing both, 32.00% chose to implement the nudge only, 10.00% implemented only the tax, and 13.00% desired neither option. This implies that only 55.00% supported implementing the tax or both the tax and the nudge, which is significantly less support than in the policy only condition ($\chi^2(1, n = 201) = 4.39, p = .036$).

In Supplementary Table 1, we present a series of logistic regressions in which the dependent variable is 1 if the respondent decided to implement either the tax only or both the tax and the nudge, and 0 otherwise. Throughout our analyses, we will collapse the decisions in

the joint implementation conditions that way. Ideally, we could rely on cross-nested logistic regression to account for the fact that choosing to implement “both” policies in the condition that allows implementing the tax and the nudge is a stronger policy response than merely implementing the tax when both options are available. Moreover, for participants in the “Tax Only” condition, choosing to implement the tax does not tell us whether they would also have wanted to implement the nudge. However, we are not sufficiently powered to achieve model convergence for these more flexible models, which are ordinarily employed when the number of observations exceeds 10,000.³⁴

In our baseline Model 1, we show that the results from our chi-square analysis reported in the manuscript also hold in the regression framework. Introducing the option of a nudge decreases the log-odds of supporting the tax by half ($p < 0.05$). In Model 2, we add control variables for how effective and how painful participants thought the tax to be. Those who thought the tax was more effective were, not surprisingly, more likely to support its implementation, while those who believed it to be more painful were less likely to do so. The main effect of introducing the nudge remains significant ($p < 0.001$), now suggesting that the nudge reduced the log-odds of supporting the tax by 0.65. The addition of further controls in Models 3 and 4 does not diminish the main effect. Notably, we find that how effective or painful participants rated the nudge to be did not affect their decision to implement the tax.

Supplementary Note 2

To analyze Study 1B, we first conduct a manipulation check to see whether highlighting the (obvious) costs of a carbon tax to consumers lead participants to rate the tax as more painful. Indeed, the painfulness rating (on a five-point Likert scale) increases by a full point, from 2.06 to 3.16 ($\Delta M = -1.09$, 95% CI $[-1.25, -0.94]$, $t(797.79) = -13.88$, $p < .001$). The framing manipulation, importantly, does not affect the perceived effectiveness of the tax in Low Pain

	Model 1	Model 2	Model 3	Model 4
Tax + Nudge	-0.354*	-0.390	-0.495**	-0.546**
	(0.148)	(0.215)	(0.175)	(0.179)
High Pain	-1.084***	-1.118***	-0.533**	-0.623**
	(0.148)	(0.212)	(0.189)	(0.195)
Tax + Nudge x High Pain		0.067		
		(0.296)		
Tax Effectiveness			0.820***	0.802***
			(0.094)	(0.096)
Tax Painfulness			-0.757***	-0.758***
			(0.090)	(0.093)
Nudge Effectiveness			0.049	0.009
			(0.101)	(0.104)
Nudge Painfulness			-0.110	0.005
			(0.099)	(0.104)
Conservative				-1.003***
				(0.185)
(Intercept)	0.919***	0.937***	0.246	0.833
	(0.133)	(0.158)	(0.426)	(0.452)
Log Likelihood	-520.656	-520.630	-400.485	-385.410
Num. obs.	800	800	800	800

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$. Coefficients are expected log-odds.

Supplementary Table 2: **Framing the tax as more painful decreases willingness to implement it in Study 1B.** The table shows logistic regressions. Notably, we see no interaction effect between our choice set manipulation and the high pain framing.

(3.12) and High Pain conditions (3.00, $\Delta M = 0.12$, 95% CI $[-0.04, 0.29]$, $t(797.54) = 1.51$, $p = .132$). Moreover, the pain framing is overall effective at decreasing support for the tax, from 67.58% to 41.60% ($\Delta M = 0.26$, 95% CI $[0.19, 0.33]$, $t(795.45) = 7.63$, $p < .001$).

Supplementary Table 2 presents results from a series of logistic regressions on the decision to implement the tax. The key finding is that introducing the nudge significantly reduces support for the tax in all models except Model 2. Framing the tax as painful reduces support for the tax in all models. In Model 1, introducing the tax reduces support by 36%, while the painful framing reduces support by 70%. The interaction between the two conditions is non-significant (Model 2), implying that the crowding out effect does not depend on the perceived painfulness of the tax. The main effect of both painfulness and choice set remain significant when controlling for perceived policy painfulness and effectiveness, political affiliation and

the interaction of our experimental conditions (Models 3 and 4). Our best-fitting Model 4 estimates that the decrease of support for the tax from introducing a nudge (42%) is approximately the same as from the painful framing (46%).

Supplementary Note 3

We begin our extended analysis of Study 2 by looking at the effectiveness and painfulness of the three policies. On a five-point Likert scale, participants believed the green energy nudge to be more effective than the carbon tax (3.25 vs. 2.91, $M_d = 0.36$, 95% CI [0.25, 0.47], $t(401) = 6.36$, $p < .001$). Moreover, participants thought the retirement nudge was more effective at increasing retirement savings (3.65) than the green energy nudge was at reducing pollution ($\Delta M = -0.40$, 95% CI [-0.53, -0.27], $t(798.16) = -5.92$, $p < .001$). Correspondingly, the carbon tax was viewed as more painful (3.22) than both the related nudge (1.71, $\Delta M = -1.50$, 95% CI [-1.63, -1.38], $t(993.42) = -23.51$, $p < .001$) as well as the unrelated nudge (1.71, $\Delta M = -1.51$, 95% CI [-1.63, -1.38], $t(1,001.01) = -23.76$, $p < .001$). There was no significant difference in how painfully the two nudges were rated ($\Delta M = 0.00$, 95% CI [-0.13, 0.13], $t(799.89) = 0.06$, $p = .953$).

In Supplementary Table 3, we conduct the analysis in a regression framework. Model 1 shows the main effects of our manipulations. Support for implementing a carbon tax decreased both when we introduced a nudge into the choice set ($p < 0.01$) as well as when participants were presented with a related nudge ($p < 0.05$). We test for the predicted interaction in Model 2 and confirm that the crowding-out effect is entirely driven by the condition in which the green energy nudge is introduced into the choice set ($p < 0.01$). Model 3 shows that this effect is robust to the controls we have used in previous studies. That is, participants who rated the carbon tax as more effective and who identify as liberal are both more likely to support its implementation (both $ps < 0.001$). The interaction between the choice set and

	Model 1	Model 2	Model 3	Model 4
Tax + Nudge	-0.391** (0.146)	0.023 (0.201)	0.006 (0.249)	-0.025 (0.253)
Related Nudge	-0.358* (0.146)	0.054 (0.201)	0.173 (0.246)	0.209 (0.250)
Tax + Nudge x Related Nudge		-0.870** (0.294)	-1.275*** (0.358)	-1.316*** (0.363)
Tax Effectiveness			0.913*** (0.095)	0.870*** (0.096)
Tax Painfulness			-0.845*** (0.083)	-0.819*** (0.084)
Conservative				-0.711*** (0.180)
(Intercept)	-0.047 (0.124)	-0.253 (0.143)	-0.360 (0.385)	0.042 (0.404)
Log Likelihood	-532.411	-528.001	-389.545	-381.715
Num. obs.	802	802	802	802

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$. Coefficients are expected log-odds.

Supplementary Table 3: **Crowding-out is limited to a nudge in the same domain in Study 2.** Table shows results from logistic regressions. Introducing a nudge aimed at increasing retirement savings into the choice set does not crowd-out support for the carbon tax. But, as before, introducing a green energy nudge leads to crowding-out. This finding holds when controlling for covariates.

the related nudge remains significant at the same level ($p < 0.01$). Model 3 estimates that introducing a related nudge decreases the log-odds of supporting the tax by 60.5%, which is in line with the estimate from our previous studies.

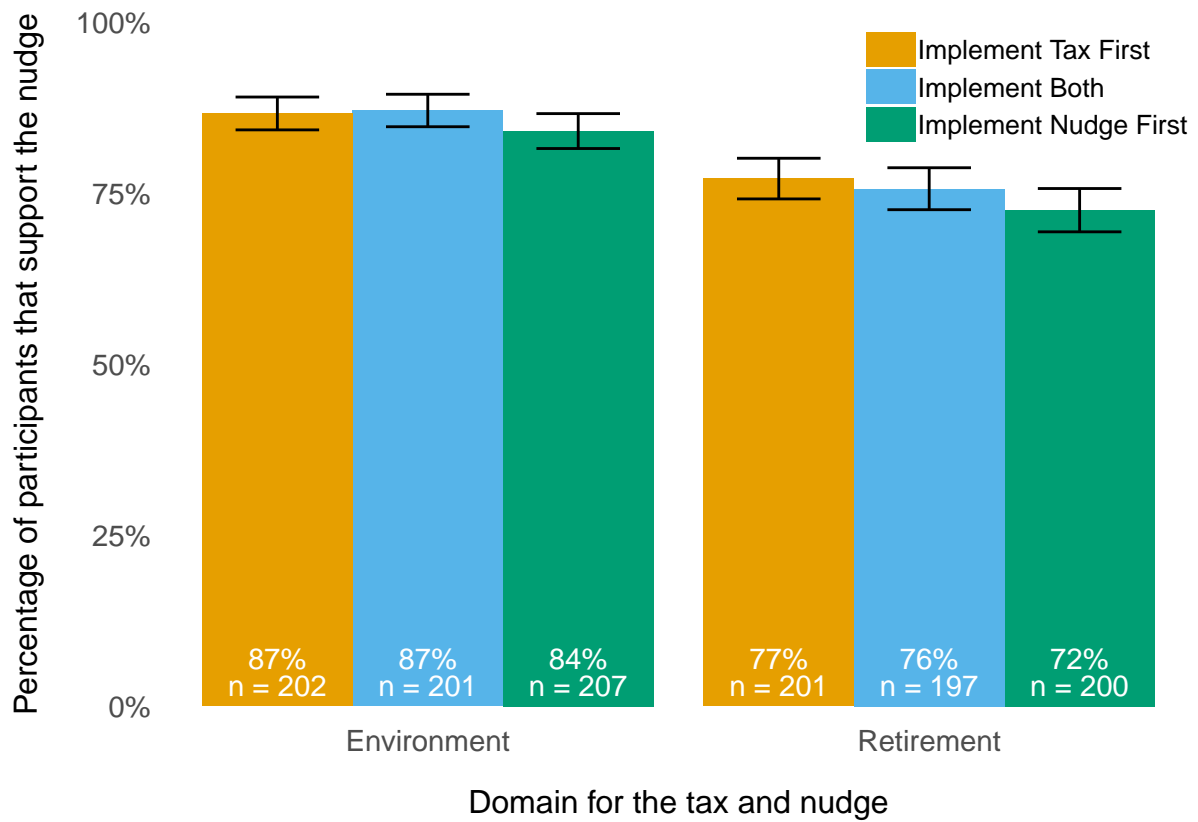
Supplementary Note 4

In our extended analyses of Study 3A, we follow our pre-registered plan to perform no comparisons across the two domains. Instead, we treat the environmental and retirement domains separately.

We begin by looking at the effectiveness and painfulness of the four policies. On a five-point Likert scale, participants believed the green energy nudge to be more effective at reducing carbon emissions and pollution (3.28) than the carbon tax (2.91, $M_d = 0.37$, 95% CI [0.27, 0.47], $t(609) = 7.29$, $p < .001$). At the same time, they thought the green energy nudge was less painful (1.67) than the carbon tax (3.01, $M_d = -1.35$, 95% CI [-1.44, -1.25], $t(609) = -26.76$, $p < .001$).

In the retirement domain, participants believed defaulting employees into 401(k) plans to be more effective at promoting retirement savings (3.17) than increasing contributions to and benefits from social security (2.96, $M_d = 0.20$, 95% CI [0.09, 0.31], $t(597) = 3.66$, $p < .001$). At the same time, they thought the default was less painful (1.98) than expanding the social security program (2.86, $M_d = -0.87$, 95% CI [-0.98, -0.77], $t(597) = -16.40$, $p < .001$).

It might be that merely having passed one policy diminishes support for a second policy; just as reading about a nudge first reduced support for taxes, reading about taxes may have a similar effect on support for the nudge. Because all participants also made a decision about whether or not to implement the nudge, we can look at the effect of our conditions on that decision. We show support for implementing the nudge (or both the tax and the nudge) in Supplementary Figure 1. F-tests confirm the graphic results in the figure: On average, 85.90%



Supplementary Figure 1: **The order in which the nudge is evaluated does not affect support for its implementation in Study 3A.** That is, we observe no crowding-out for the nudge as we do for the tax. Error bars show \pm one standard error.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Implement Both	-0.632** (0.202)	-0.965*** (0.246)	-0.975*** (0.250)	-0.669** (0.203)	-1.139*** (0.253)	-1.348*** (0.268)
Implement Nudge First	-0.745*** (0.201)	-1.060*** (0.246)	-1.066*** (0.249)	-0.736*** (0.203)	-1.116*** (0.251)	-1.355*** (0.267)
Tax Effectiveness		0.852*** (0.105)	0.823*** (0.109)		1.176*** (0.119)	1.209*** (0.129)
Tax Painfulness		-0.857*** (0.102)	-0.805*** (0.105)		-0.506*** (0.104)	-0.658*** (0.115)
Nudge Effectiveness			-0.046 (0.108)			-0.284* (0.112)
Nudge Painfulness			-0.037 (0.120)			0.397*** (0.108)
Conservative			-0.634** (0.202)			-0.611** (0.212)
(Intercept)	0.443** (0.144)	0.724 (0.444)	1.191* (0.573)	0.372** (0.144)	-1.460** (0.499)	-0.576 (0.625)
Log Likelihood	-414.760	-313.427	-308.172	-405.677	-300.229	-284.386
Num. obs.	610	610	610	598	598	598

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$. Coefficients are expected log-odds.

Supplementary Table 4: **Support for implementing a tax is higher if it is made prior to the decision to implement a nudge in Study 3A.** The table shows results of logistic regressions for the decision to implement the carbon tax (Models 1-3) and social security tax (Models 4-6).

supported the green energy nudge and 75.08% supported the 401(k) contribution default, and there are no significant differences across the three conditions ($F(2, 607) = 0.45$, $MSE = 0.12$, $p = .640$, $\hat{\eta}_G^2 = .001$, in the environment domain and, $F(2, 595) = 0.59$, $MSE = 0.19$, $p = .553$, $\hat{\eta}_G^2 = .002$, in the retirement domain). That is, introduction of the tax does not crowd out support for the nudge.

We again extend our analyses on the decision to implement the tax using logistic regression, shown in Supplementary Table 4. Our baseline Model 1 looks at the decision to implement the carbon tax. Confirming our previous analyses, we find that both the joint implementation decision and implementing the nudge first decrease the likelihood of supporting the tax ($p < 0.01$ and $p < 0.001$, respectively). Model 2 includes our previously used controls: the perceived effectiveness of the carbon tax at decreasing CO₂ emissions and pollution is

associated with a higher likelihood of choosing to implement the tax, whereas a greater perceived painfulness is associated with a decrease (both $ps < 0.001$). We find no effect on the implementation decision of how participants evaluated the nudge, while conservatives are again less likely to favor implementation of the carbon tax.

Models 3 and 4 perform the corresponding analyses in the retirement domain. We replicate all our findings in this domain, with a notable additional finding: When the decision involves increasing social security taxes, participants' perceived effectiveness and painfulness of the nudge does affect the decision to expand social security. In particular, those who thought a 401(k) default was more painful or less effective were also more likely to favor an expansion of social security.

We can further compare the coefficients for “Implement Both” and “Implement Nudge First” within each of the four models. Using a general linear hypothesis test, we cannot reject the null hypotheses that the coefficients are identical (all $ps > 0.60$). Making the joint implementation decision, therefore, appears to induce the same degree of crowding-out as does the decision to implement the nudge first.

Finally, in Supplementary Table 5 we present the same regression analyses as in Supplementary Table 4, but with the decision to implement the nudge (or both the tax and the nudge) as the dependent variable. As suggested by our previous analyses and apparent in Supplementary Figure 1, our experimental conditions do not affect the decision to implement the nudge. Participants who believe the nudge to be more effective and less painful are more likely to favor its implementation. We observe that for the politicized environmental domain, conservatives were also less likely to support implementing a nudge. Conversely, political orientation is not associated with support for the retirement savings nudge.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Implement Both	0.038 (0.295)	0.004 (0.300)	0.145 (0.349)	-0.082 (0.236)	-0.091 (0.237)	-0.036 (0.270)
Implement Nudge First	-0.206 (0.281)	-0.265 (0.288)	-0.157 (0.327)	-0.245 (0.231)	-0.252 (0.232)	-0.243 (0.266)
Tax Effectiveness		0.435*** (0.119)	0.078 (0.136)		0.063 (0.093)	-0.079 (0.113)
Tax Painfulness		-0.109 (0.110)	0.145 (0.136)		-0.072 (0.093)	0.091 (0.114)
Nudge Effectiveness			1.027*** (0.157)			1.078*** (0.125)
Nudge Painfulness			-0.746*** (0.145)			-0.533*** (0.105)
Conservative			-1.184*** (0.321)			-0.392 (0.225)
(Intercept)	1.869*** (0.207)	1.055 (0.554)	0.368 (0.743)	1.215*** (0.168)	1.241* (0.485)	-0.645 (0.646)
Log Likelihood	-247.674	-238.186	-176.858	-335.135	-334.273	-265.605
Num. obs.	610	610	610	598	598	598

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$. Coefficients are expected log-odds.

Supplementary Table 5: **Support for the nudge is not affected by experimental conditions in Study 3A.** The table shows results of logistic regressions for the decision to implement the green energy nudge (Models 1-3) and the retirement savings nudge (Models 4-6). Those who perceive the nudge to be more effective and less painful are more likely to support its implementation.

	Model 1	Model 2	Model 3	Model 4
Retirement Domain	-0.455*** (0.130)	-0.456*** (0.130)	0.059 (0.184)	0.059 (0.184)
Implement Tax First	0.358** (0.130)	0.724*** (0.202)	-0.235 (0.185)	-0.117 (0.311)
Second Domain	-0.072 (0.128)	0.281 (0.194)	0.045 (0.184)	0.168 (0.319)
Implement Tax First x Second Domain		-0.726* (0.300)		-0.237 (0.505)
(Intercept)	0.730*** (0.138)	0.561*** (0.152)	2.885*** (0.432)	2.823*** (0.442)
Log Likelihood	-826.914	-823.953	-525.975	-525.864
Num. obs.	1282	1282	1282	1282
Num. groups: id	641	641	641	641
Var: id (Intercept)	0.913	0.895	3.916	3.899

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$. Coefficients are expected log-odds.

Supplementary Table 6: **We observe a spillover effect on support for a tax in our Latin Squares design of Study 3B.** The table shows the results of mixed effects logistic regressions for the decision to implement the Tax (Models 1 and 2) and Nudge (Models 3 and 4). The significant interaction term in Model 2 suggests that the ordering manipulation is less effective in the second domain presented to participants.

Supplementary Note 5

In Study 3B, we asked participants to make decisions about implementing a tax and a nudge in both the environment and retirement domains. We used a Latin Squares design, with participants randomly assigned to evaluating a tax and a nudge in one domain first, followed by the opposite order of policies in the other domain. That is, someone who first decided whether to implement the green energy nudge followed by the decision to implement the carbon tax would then be asked whether she wanted to implement the expanded social security tax prior to making the decision to implement the 401(k) nudge. We relied on this design in the expectation that there would be no spillover across the two domains. That is, having seen a nudge in the domain of environment should not affect the decision to implement a tax in the retirement domain. We test for such a spillover using a mixed-effects logistic regression with fixed effects for the domain (retirement or environment), a dummy variable

	Model 1	Model 2	Model 3	Model 4	Model 5
Implement Nudge First	-0.802** (0.245)	-0.758* (0.307)	-0.418 (0.230)	-0.480 (0.267)	-0.569** (0.198)
Tax Effectiveness		1.101*** (0.168)		0.459*** (0.108)	0.671*** (0.090)
Tax Painfulness		-0.821*** (0.166)		-0.883*** (0.148)	-0.848*** (0.108)
Conservative		-0.970** (0.301)		-0.676* (0.267)	-0.791*** (0.197)
Retirement Domain					-0.594** (0.199)
(Intercept)	1.166*** (0.186)	0.752 (0.621)	0.594*** (0.171)	1.805*** (0.520)	1.825*** (0.418)
Log Likelihood	-196.680	-141.233	-214.855	-171.530	-318.908
Num. obs.	321	321	320	320	641

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$. Coefficients are expected log-odds.

Supplementary Table 7: **The carbon tax, but not the social security tax, is less likely to be implemented when presented after the nudge in Study 3B.** The table shows results of logistic regressions for the decision to implement the carbon tax (Models 1 and 2) and the expanded social security tax (Models 3 and 4). Model 5 combines both domains.

that is equal to 1 if the tax was shown first, a dummy variable that is equal to 1 if the response is in the second domain, and the interaction between those two variables. We also include a random effect at the individual level, accounting for the fact that participants made two decisions that might be correlated. We find a significant interaction between the two dummies in the decision to implement the nudge (shown in Supplementary Table 6). That is, respondents are less likely to implement a tax when it is shown first in the second domain. Because this suggests spillover, and consistent with our pre-registered analysis plan, we limit our analysis to only the first domain participants had encountered.

We conduct a series of logistic regressions on the decision to implement the environment and retirement taxes, shown in Supplementary Table 7. The dependent variable for Models 1 and 2 is the decision to implement the carbon tax. We observe that first making the decision to implement the nudge makes it less likely for the tax to be implemented, both without controls in baseline Model 1 ($p < 0.01$) and with controls in Model 2 ($p < 0.05$). In Models 3 and 4, we

	Model 1	Model 2	Model 3	Model 4	Model 5
Implement Nudge First	-0.098 (0.325)	-0.256 (0.435)	0.255 (0.299)	0.148 (0.333)	-0.014 (0.261)
Tax Effectiveness		1.539*** (0.290)		1.024*** (0.179)	1.211*** (0.150)
Tax Painfulness		-1.066*** (0.261)		-0.428* (0.183)	-0.673*** (0.147)
Conservative		-2.023*** (0.489)		-0.708* (0.335)	-1.250*** (0.268)
Retirement Domain					-0.579* (0.265)
(Intercept)	1.890*** (0.234)	0.959 (0.869)	1.464*** (0.210)	-0.491 (0.640)	0.380 (0.518)
Log Likelihood	-128.230	-72.352	-144.883	-118.015	-196.250
Num. obs.	321	321	320	320	641

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$. Coefficients are expected log-odds.

Supplementary Table 8: **We find no crowding-out effect for the nudge in Study 3B.** The table shows results of logistic regressions for the decision to implement the green energy nudge (Models 1 and 2) and the retirement savings nudge (Models 3 and 4). Model 5 combines both domains.

perform the corresponding analysis for the decision to implement the expanded social security tax. Contrary to Study 3A, we do not observe significant crowding-out here; although our predictions hold directionally, they do not reach conventional levels of significance ($p = 0.07$ with and without controls). In Model 5, we combine both domains and include a domain control variable. In the combined data, we again observe the hypothesized crowding-out effect ($p < 0.01$).

We conclude the analysis of our full data with a look at whether the tax may conversely have crowded out support for the nudge. We show the regressions in Supplementary Table 8, with the format following that of the previous table for the tax. That is, Models 1 and 2 look at the decision to implement the green energy nudge, Models 3 and 4 look at the decision to implement the 401(k) contribution nudge, and Model 5 combines both domains. As predicted, we observe no crowding-out when it comes to the decision to implement the nudge in either domain, with and without controls. Support for the nudge in the environment domain is virtually unchanged across the conditions, ranging from 84.06% to 87.06% ($F(2, 607) = 0.45$,

$MSE = 0.12$, $p = .640$, $\hat{\eta}_G^2 = .001$). This also holds in the retirement domain, where support ranges from 72.50% to 77.11% ($F(2, 595) = 0.59$, $MSE = 0.19$, $p = .553$, $\hat{\eta}_G^2 = .002$).

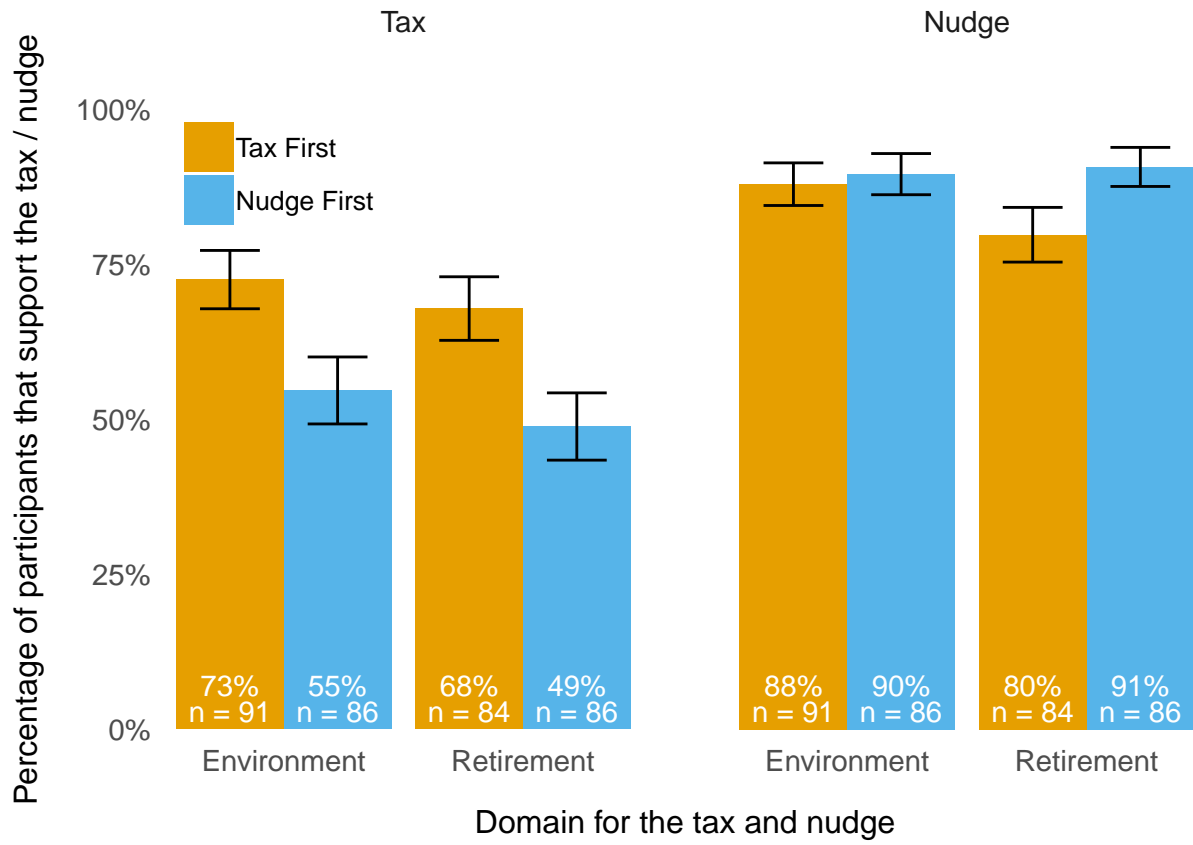
Policymakers

As pre-registered, we repeat the analysis for the subset of participants ($n = 347$) who report active involvement in either impacting or informing public policy. We parallel the analysis for the full set of respondents.

Policymakers evaluated the nudge as no more (or less) effective than a carbon tax at reducing CO₂ emissions and pollution (3.18 vs 3.06, $\Delta M = 0.12$, 95% CI $[-0.09, 0.34]$, $t(347.23) = 1.12$, $p = .265$). In the retirement domain, policymakers, much like the full sample, believed a 401(k) nudge to be more effective than an expansion of social security (3.33 vs 2.99, $\Delta M = 0.34$, 95% CI $[0.10, 0.59]$, $t(302.87) = 2.73$, $p = .007$). Similar to our previous respondents, they also view the nudges as less painful than the taxes in both domains (1.66 vs 2.75 in environment, $\Delta M = -1.10$, 95% CI $[-1.29, -0.90]$, $t(338.43) = -11.26$, $p < .001$; 1.54 vs 2.44 in retirement $\Delta M = -0.89$, 95% CI $[-1.10, -0.69]$, $t(322.18) = -8.55$, $p < .001$).

Supplementary Figure 2 shows support for the tax in the domains of environment and retirement (left panel), and the support for the nudge (right panel), conditional on making the decision to implement a tax first (orange bar) or the nudge first (blue bar). In both domains, we see that presenting the nudge first reduces support for the tax. In the environment domain, support declines from 72.53% to 54.65% ($\chi^2(1, n = 177) = 5.37$, $p = .020$); in the retirement domain, we see (in contrast to the full sample) also a significant decline from 67.86% to 48.84% ($\chi^2(1, n = 170) = 5.56$, $p = .018$).

Consistent with the results from the previous study and the full sample, we find no crowding-out in support for the nudge. In the environment domain, 87.91% support implementing the nudge when it is made prior to the decision to implement the tax and 89.53% do so when it follows that decision ($\chi^2(1, n = 177) = 0.01$, $p = .918$). In the retirement domain, we



Supplementary Figure 2: **Policymakers' support for a carbon tax or social security tax increase (left panel) is diminished after having the option to implement the nudge in Study 3B.** We observe no comparable crowding-out of support for the nudge in both domains (right panel). Error bars show \pm one standard error.

	Model 1	Model 2	Model 3	Model 4	Model 5
Implement Nudge First	-0.784* (0.319)	-0.777 (0.429)	-0.794* (0.318)	-0.592 (0.367)	-0.590* (0.272)
Tax Effectiveness		1.362*** (0.230)		0.509*** (0.144)	0.790*** (0.120)
Tax Painfulness		-0.636** (0.221)		-0.901*** (0.203)	-0.796*** (0.145)
Conservative		-0.842* (0.422)		-0.465 (0.368)	-0.659* (0.271)
Retirement Domain					-0.409 (0.274)
(Intercept)	0.971*** (0.235)	-0.879 (0.861)	0.747** (0.234)	1.573* (0.645)	1.026 (0.533)
Log Likelihood	-112.737	-74.909	-112.334	-90.379	-171.990
Num. obs.	177	177	170	170	347

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$. Coefficients are expected log-odds.

Supplementary Table 9: **The subset of participants with policymaking experience in Study 3B also shows signs of crowded-out support for the tax.** The table shows results of logistic regressions for policymakers' decisions to implement the carbon tax (Models 1 and 2) and the expanded social security tax (Models 3 and 4). Both taxes are less likely to be implemented without controls (Models 1 and 3), but the effect is not significant with controls included (Models 2 and 4). When we combine both domains (Model 5), crowding-out again reaches the conventional level of significance.

similarly see no significant decrease with 79.76% supporting its implementation when asked first and 90.70% do so when asked second ($\chi^2(1, n = 170) = 3.23, p = .072$).

We next conduct a series of logistic regressions on the decision to implement the environment and retirement taxes, shown in Supplementary Table 9. The dependent variable for Models 1 and 2 is the decision to implement the carbon tax. We observe in Model 1 that, without additional controls, first making the decision to implement the nudge makes it less likely for the tax to be implemented ($p < 0.05$). When we add controls in Model 2, however, this effect is no longer significant ($p = 0.07$). We similarly observe crowding-out for the social security tax without further controls (Model 3, $p < 0.05$), but not with controls (Model 4; $p = 0.11$). In Model 5, we combine both of our domains and include a domain control variable. In the combined data, we again observe the hypothesized crowding-out effect ($p < 0.05$).

	Model 1	Model 2	Model 3	Model 4	Model 5
Implement Nudge First	0.162 (0.477)	-0.470 (0.696)	0.906* (0.460)	0.813 (0.520)	0.369 (0.397)
Tax Effectiveness		2.268*** (0.553)		1.297*** (0.303)	1.553*** (0.250)
Tax Painfulness		-1.317** (0.489)		-0.205 (0.264)	-0.534* (0.215)
Conservative		-1.787* (0.729)		-0.968 (0.513)	-1.306** (0.405)
Retirement Domain					-0.722 (0.403)
(Intercept)	1.984*** (0.322)	-0.035 (1.290)	1.371*** (0.272)	-1.598 (1.051)	-0.597 (0.790)
Log Likelihood	-62.375	-30.487	-68.925	-52.391	-87.462
Num. obs.	177	177	170	170	347

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$. Coefficients are expected log-odds.

Supplementary Table 10: **Support for the nudge remains largely unaffected by experimental condition among policymakers in Study 3B.** The table shows results of logistic regressions for policymakers' decision to implement the carbon nudge (Models 1 and 2) and the retirement savings nudge (Models 3 and 4). Model 5 combines both domains. There is some evidence for crowding out of the retirement savings nudge in Model 3 that disappears with controls and in the combined model.

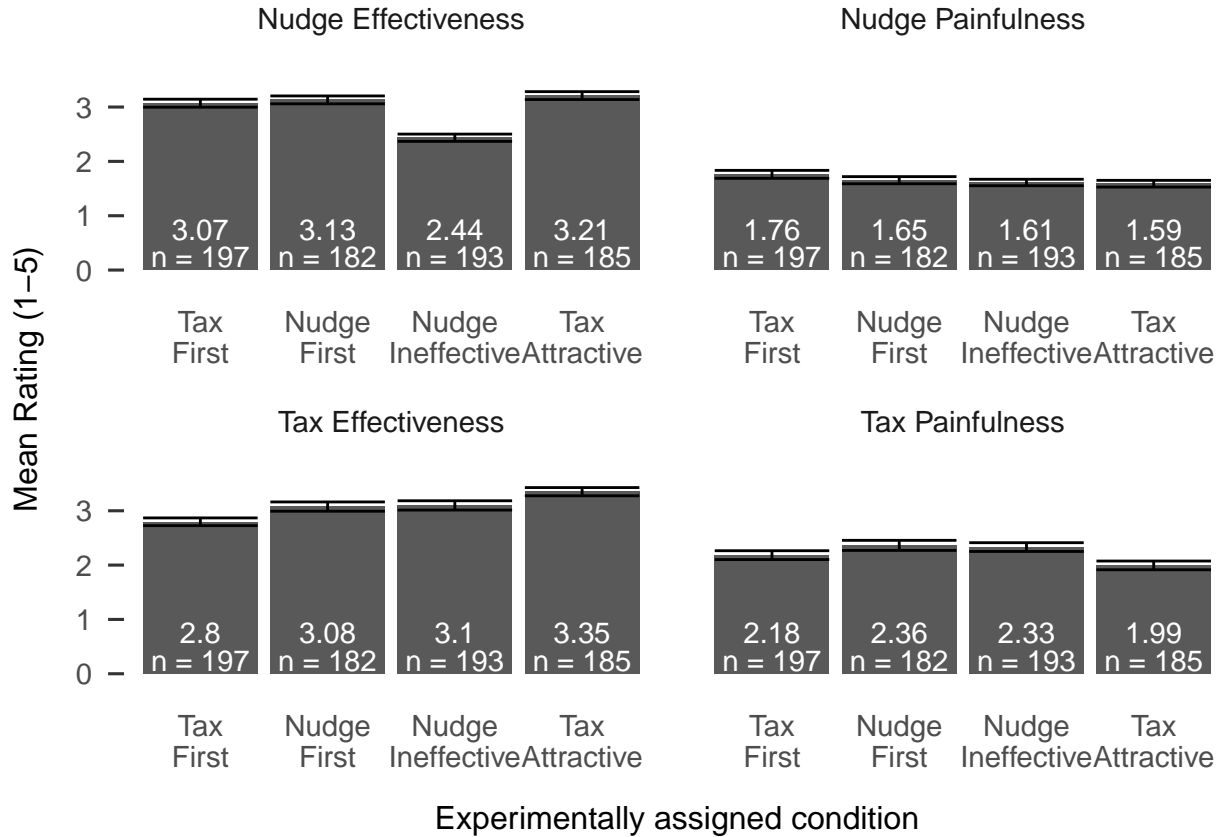
We conclude the analysis of the policymaker respondents with a look at whether the tax may have crowded out support for the nudge. We show the regressions in Supplementary Table 10, with the format following that of the previous table for the tax. That is, Models 1 and 2 look at the decision to implement the green energy nudge, Models 3 and 4 look at the decision to implement the 401(k) contribution nudge, and Model 5 combines both domains. Against our predictions and previous results, we do observe some crowding out of the retirement savings nudge without controls (Model 3). This effect again disappears with controls (Model 4, $p = 0.12$) and when we combine both domains (Model 5, $p = 0.35$).

As before, we observe no comparable crowding-out for the nudge in either the environmental domain ($F(1, 319) = 0.09$, $MSE = 0.12$, $p = .763$, $\hat{\eta}_G^2 = .000$) or the retirement domain ($F(1, 318) = 0.73$, $MSE = 0.14$, $p = .394$, $\hat{\eta}_G^2 = .002$). That is, respondents appear to be willing to implement two policies, just as long as the second option offered to them is a (painless) nudge rather than a (painful) tax.

Supplementary Note 6

We begin the extended analysis of Study 4 by testing the effect of our two experimental manipulations. The mean ratings for effectiveness and painfulness of both policies and for each condition are shown in Supplementary Figure 3. First, we look at whether providing additional information in the “Nudge Ineffective” condition lowers participants’ rating of the nudge. Indeed, we find that with information about the nudge’s effect size, perceived effectiveness declines from 3.13 (“Nudge First”) to 2.44 ($\Delta M = 0.70$, 95% CI [0.50, 0.89], $t(368.54) = 7.07$, $p < .001$). Notably, there is no change in the perceived painfulness of the nudge (1.65 and 1.61, respectively; $\Delta M = 0.04$, 95% CI [-0.13, 0.22], $t(366.81) = 0.48$, $p = .631$)

When we make the tax more attractive, by highlighting that the funds could be used to offset



Supplementary Figure 3: **Ratings for painfulness and effectiveness of a green energy nudge and a carbon tax across conditions in Study 4.** Participants evaluate the nudge as less effective when receiving information about its expected effect, suggesting they overestimate it in the absence of such information. Error bars show \pm one standard error.

other taxes and promote investments, participants rated the tax as less painful (1.99) than in the “Nudge First” condition (2.36), which featured the identical ordering of questions but with this information omitted ($\Delta M = 0.37$, 95% CI [0.13, 0.61], $t(356.58) = 3.00$, $p = .003$). Participants also rated such a tax as more effective at reducing emissions (3.35) than when the tax was introduced without this additional information (3.08, $\Delta M = -0.27$, 95% CI [-0.50, -0.05], $t(358.76) = -2.41$, $p = .017$).

We next return to our logistic regression analysis, shown in Supplementary Table 11. We use as baseline the “Nudge First” condition, in which we observed the least support for the carbon tax. In Model 1, we regress dummy variables for the conditions on the decision to implement the tax. Consistent with the chi-square regression reported in the manuscript,

ordering on its own did not significantly change support for the tax. However, framing either the nudge as ineffective or the carbon tax as being less painful increases support for the tax. Model 2 includes controls for how effective participants rated the carbon tax and the green energy nudge. Consistent with our previous findings, rating the tax as more attractive and less painful are correlated with increased support for implementing it (both $ps < 0.001$). With these controls included, we now see an effect of ordering (“Tax First”) as well as framing the nudge as ineffective (both $ps < 0.05$), with the effect of the tax attractive manipulation absorbed in the effect of painfulness. Finally, Model 3 includes a control for political affiliation. Conservatives are less likely to support the tax ($p < 0.001$), but the coefficients on the other variables remain nearly unchanged.

We also asked participants how they thought their own carbon emissions compared to the average household’s, whether they thought human activity or nature was primarily driving global climate change, and whether they thought the government should intervene in reducing carbon emissions. Although we preregistered no hypotheses, we report descriptively how these groups differed in their support for the tax and the nudge.

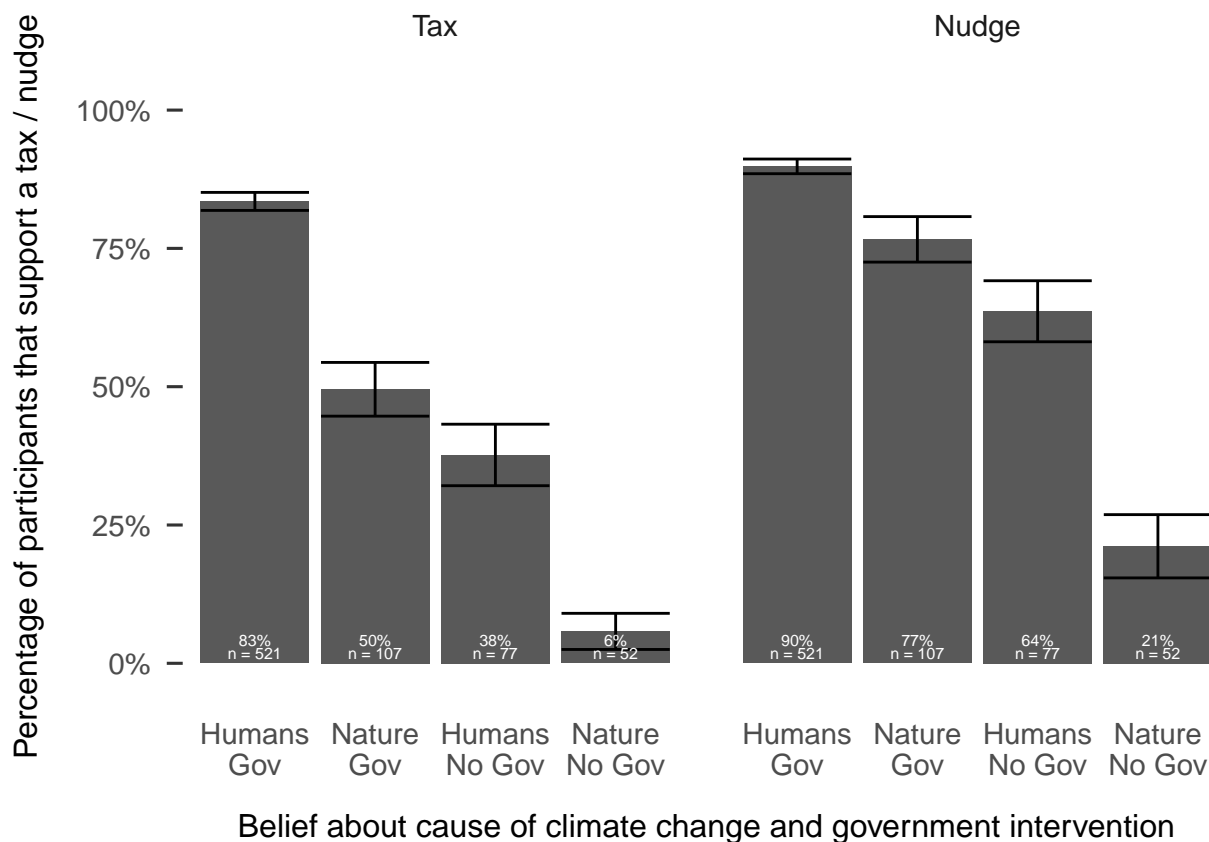
53.76% of respondents thought their emissions were about average and 43.99% thought they were less than average. Surprisingly, only 17 participants (2.25%) thought they polluted more than average. Support for implementing the tax did not differ by one’s own emissions ($F(2, 754) = 0.43$, $MSE = 0.22$, $p = .650$, $\hat{\eta}_G^2 = .001$). We have no reason to believe our sample to be more environmentally conscious than the population on average. This suggests that per-capita refunds of carbon taxes might be perceived by most people as having either a neutral impact on their household budget or even as generating income for them. Future work may want to examine whether highlighting the redistributive impact of a carbon tax might enhance its acceptance.

Participants who favored government intervention to reduce carbon emissions were, not surprisingly, more supportive of the carbon tax (see left panel of Supplementary Figure 4).

	Model 1	Model 2	Model 3
Tax First	0.402 (0.217)	0.775** (0.292)	0.680* (0.302)
Nudge Ineffective	0.496* (0.220)	0.811** (0.309)	0.804* (0.321)
Tax Attractive	0.569* (0.224)	0.098 (0.307)	0.064 (0.315)
Tax Effectiveness		1.270*** (0.125)	1.213*** (0.128)
Tax Painfulness		-1.204*** (0.117)	-1.208*** (0.122)
Nudge Effectiveness		-0.061 (0.116)	-0.110 (0.120)
Nudge Painfulness		-0.118 (0.119)	-0.054 (0.125)
Conservative			-1.233*** (0.224)
(Intercept)	0.424** (0.152)	-0.082 (0.510)	0.828 (0.555)
Log Likelihood	-466.537	-286.125	-270.174
Num. obs.	757	757	757

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$. Coefficients are expected log-odds.

Supplementary Table 11: **Providing additional information about the tax and the nudge eliminates crowding-out of support for the carbon tax in Study 4.** The table shows results of logistic regressions for the decision to implement the carbon tax. Highlighting the small effect size of the nudge increases support for the tax, as does making the tax appear more attractive and less painful (Model 1). Including controls for effectiveness and painfulness of the policies also replicates the finding that merely asking first about the nudge can reduce support for the tax.



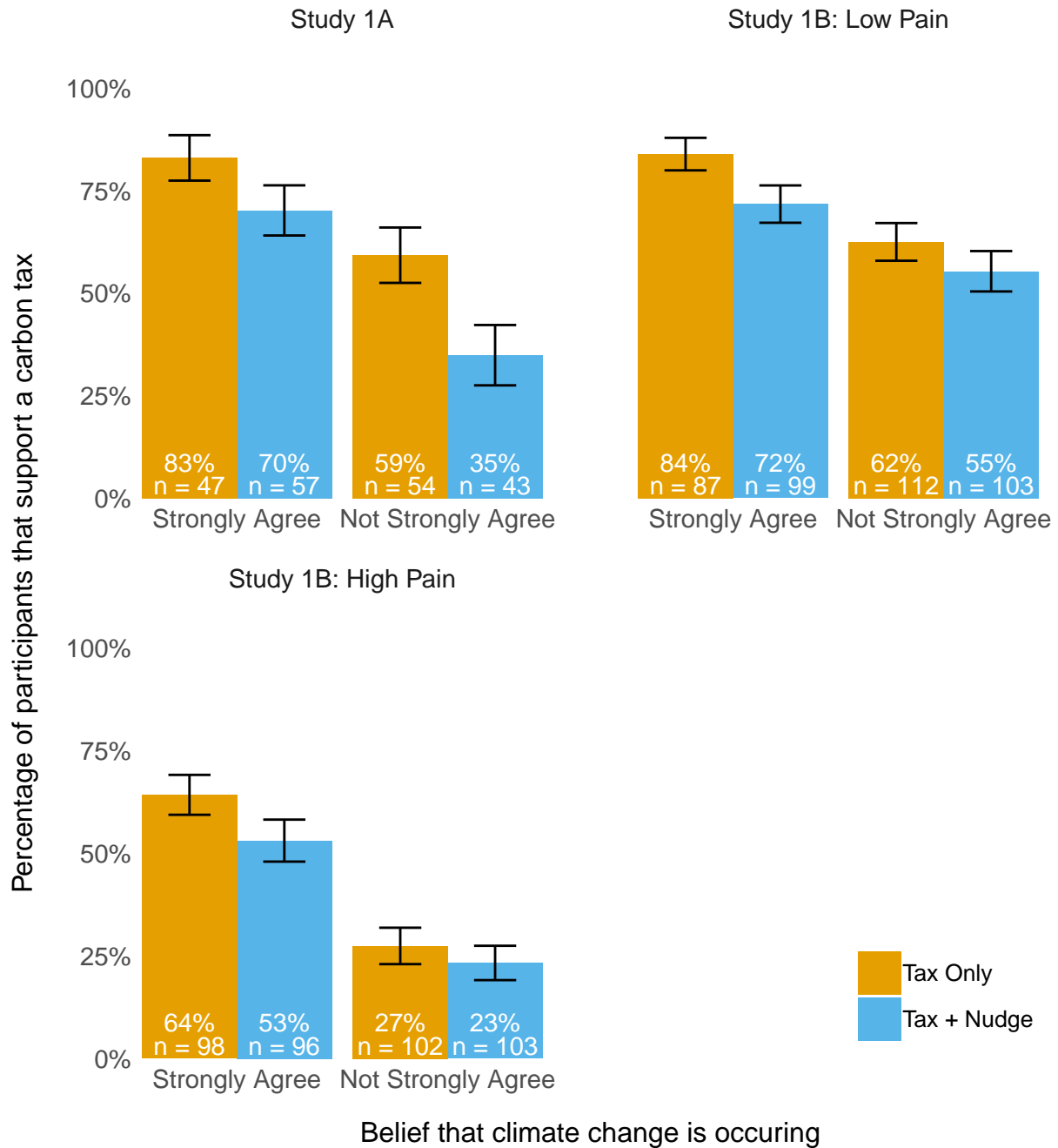
Supplementary Figure 4: **Support for the carbon tax and green energy nudge in Study 4 based on belief in human contribution to climate change and appropriateness of government intervention.** Notably, participants who are favorable toward government action but do not believe human activity is a primary cause of climate change (Bar 2) are more supportive of a tax or a nudge than those who see human activity as a primary driver, but oppose government action (Bar 3). Error bars show \pm one standard error.

Support was greatest among the 68.82% who also believed human activity to be the primary driver of global climate change: of those, 83.49% supported the carbon tax. Of the 10.17% of participants who thought the government should not take any action even as humans were primarily responsible, only 37.66% supported the carbon tax. Fewer participants believed nature to be the primary driver of warming. Notably, even among this group, about twice as many participants favored the government taking action to limit human contribution (Bar 2 in Supplementary Figure 4) than did not want government to be involved (Bar 4). All pairwise Chi-square tests were significant ($ps < 0.01$) except for the comparison between Humans + No Gov and Nature + Gov ($p = 0.07$). The pattern holds similarly for the nudge (see right panel of Supplementary Figure 4). Chi-squared tests of all pair-wise comparisons are significant (for Humans + No Gov vs. Nature + Gov, $p = 0.03$, all other $ps < 0.01$).

Supplementary Note 7

We now examine possible heterogeneous treatment effects. Across our studies, we collected information about participants' political orientation, as well as how effective they believed the green energy nudge and the carbon tax to be. Moreover, in Studies 1A and 1B, we also asked participants about their belief in climate change. Although these analyses were not planned, we can pool responses from our Amazon Mechanical Turk participants and explore whether effects differ consistently for some group of participants.

In Studies 1A and 1B, we elicited belief in the existence of climate change on a scale from 1 (strongly disagree) to 5 (strongly agree). Combining across these studies, we had 1001 participants. Of those, nearly half ($n = 484$) strongly agreed that global average temperatures had been increasing over the past 50 years. Nearly as many participants somewhat agreed with that statement ($n = 386$), while the remaining 131 participants were either uncertain or somewhat or strongly disagreed.



Supplementary Figure 5: **Crowding-out of support for a carbon tax also occurs among those who strongly agree that climate change is taking place in Studies 1A and 1B.** The figure shows support for implementing the carbon tax for those who strongly agree that climate change is occurring vs. the remaining participants. Error bars show \pm one standard error.

In Supplementary Figure 5, we show support for implementing the carbon tax in our two experimental conditions for those who strongly agreed with the statement that temperatures have been increasing and the remaining participants. Note that the experimental design of “Study 1A” and “Study 1B: Low Pain” were identical and “Study 1B: High Pain” explicitly highlighted some of the costs of a carbon tax for consumers. We observe a clear main effect, with those who are in strong agreement that climate change is occurring also more supportive of implementing a carbon tax.

To test for an interaction, we rely on a logistic regression and a new method for assessing nonlinear interaction effects.³⁵ If crowding-out differs by agreement with the existence of climate change, then we should observe a significant interaction effect between our experimental assignment and the belief in climate change. The first column of Supplementary Table 12 shows a logistic regression on the decision to support implementing the carbon tax. As predictors, we include dummy variables controlling for each of the studies as well as the different framings in Study 1B. Notably, the interaction between our experimental condition and belief in climate change is not significant, suggesting that crowding-out is not less pronounced among those who strongly agree that climate change is occurring. Moreover, the statistical result is robust to using a cutoff of “somewhat agree” instead and for treating the scale response as a continuous variable.

We also test for nonlinear interaction effects using a new approach, which bins the moderator variable (in this specification, belief in climate change occurring) into more granular cutoffs to assess for nonlinear marginal effects.³⁵ We choose a four-fold partition (of those who (1) either disagreed or strongly disagreed, (2) neither agreed nor disagreed, (3) agreed, and (4) strongly agreed, respectively), which yielded a non-significant result for the test of nonlinear marginal effects using a Wald test ($p = 0.21$, see Supplementary Figure 6).

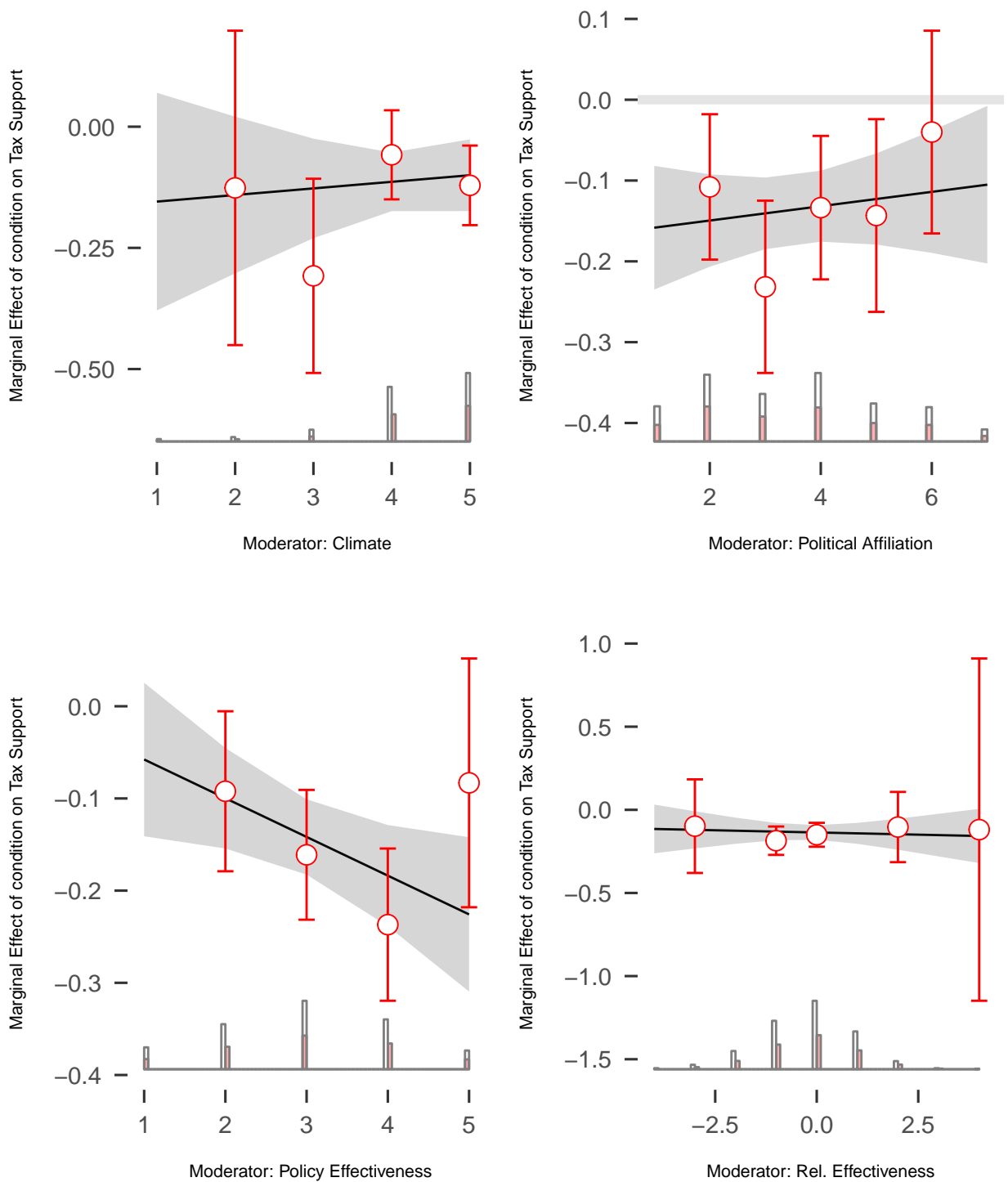
In all our studies, we asked participants ($n = 1806$) about their ideological orientation, ranging from extremely liberal to extremely conservative. We perform a median split on political

	CC Belief	Politics	Tax Effectiveness	Relative Effectiveness
Study 1B: Low Pain	0.30 (0.19)	0.39* (0.19)	0.23 (0.19)	0.05 (0.04)
Study 1B: High Pain	-0.91*** (0.19)	-0.82*** (0.19)	-0.93*** (0.19)	-0.20*** (0.04)
Study 2: Related Nudge		-1.06*** (0.19)	-1.12*** (0.19)	-0.24*** (0.04)
Study 3A: Environment		-0.31 (0.19)	-0.33 (0.19)	-0.07 (0.04)
Tax + Nudge	-0.41* (0.19)	-0.76*** (0.15)	-1.06*** (0.20)	-0.15*** (0.04)
Strongly Agree with CC	1.32*** (0.20)			
Conservative		-1.36*** (0.15)		
Tax Ineffective			-1.74*** (0.18)	
Nudge More Effective				-0.12** (0.04)
Tax More Effective				0.15*** (0.04)
Tax + Nudge x Strongly Agree with CC	-0.21 (0.28)			
Tax + Nudge x Conservative		0.24 (0.21)		
Tax + Nudge x Tax Ineffective			0.57* (0.23)	
Tax + Nudge x Nudge More Effective				0.02 (0.05)
Tax + Nudge x Tax More Effective				0.03 (0.06)
(Intercept)	0.15 (0.18)	1.46*** (0.18)	2.05*** (0.22)	0.69*** (0.04)
Log Likelihood	-611.75	-1104.64	-1092.63	-1192.46
Num. obs.	1001	1806	1806	1806

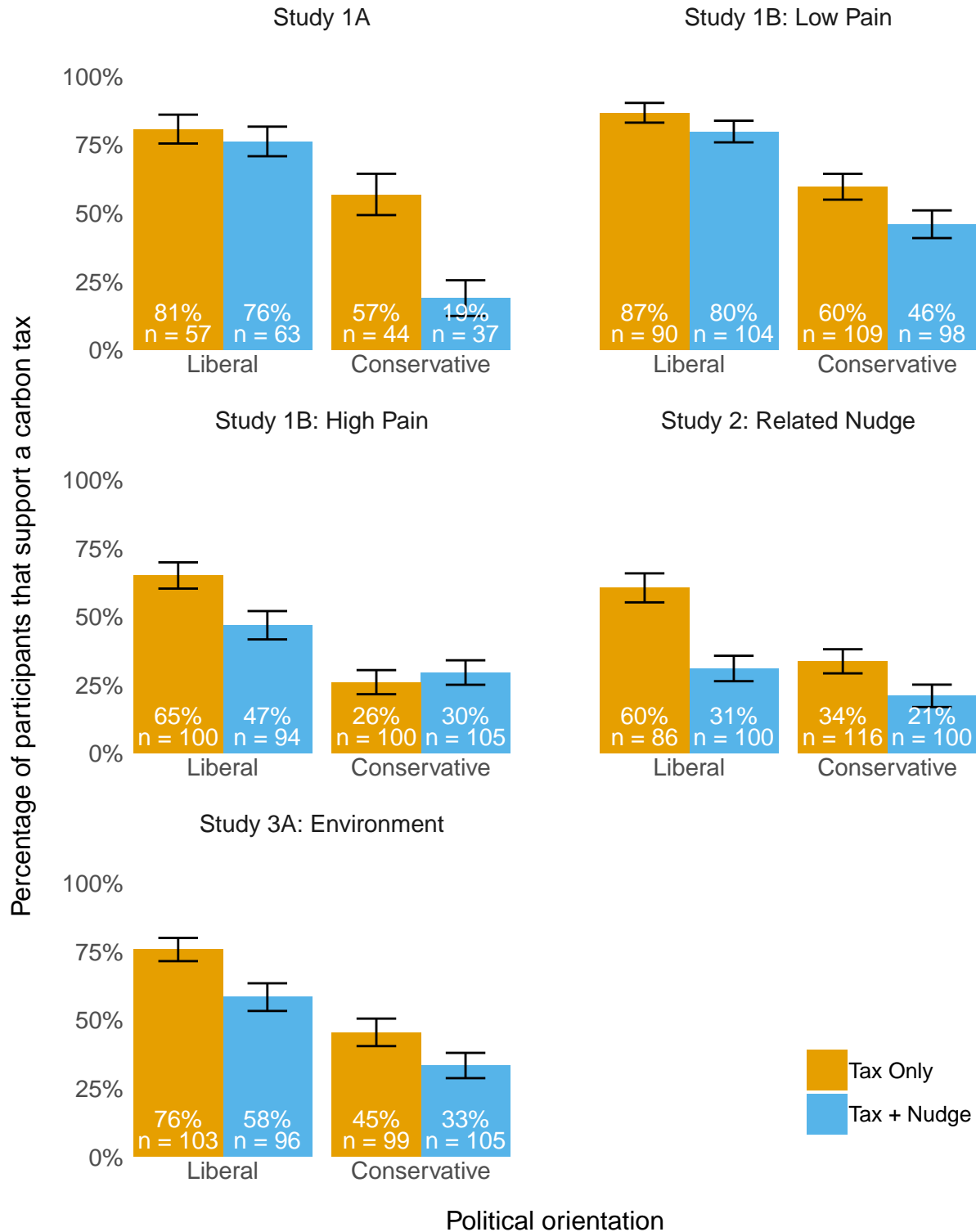
*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$. Coefficients are expected log-odds.

Supplementary Table 12: Analysis of heterogeneous treatment effects across studies.

The first column looks at belief in climate change, combining data from Studies 1A and 1B. Columns 2-4 combine data from Studies 1A, 1B, 2, and 3A (all experiments performed on Amazon Mechanical Turk) and look at differential effects by political orientation (column 3), perceived effectiveness of the carbon tax (column 4), and effectiveness of the carbon tax relative to the green energy nudge (column 5). We observe that there is less crowding-out among those who perceive the tax to be ineffective, where there is little support for implementing the tax in the baseline condition.



Supplementary Figure 6: **No evidence for nonlinear heterogeneous treatment effects.** Although political orientation, perceived efficacy of the carbon tax (either absolute or relative), or belief in the existence of climate change could reasonably moderate crowding-out, we find no evidence for such interactions. Error bars show \pm one standard error.



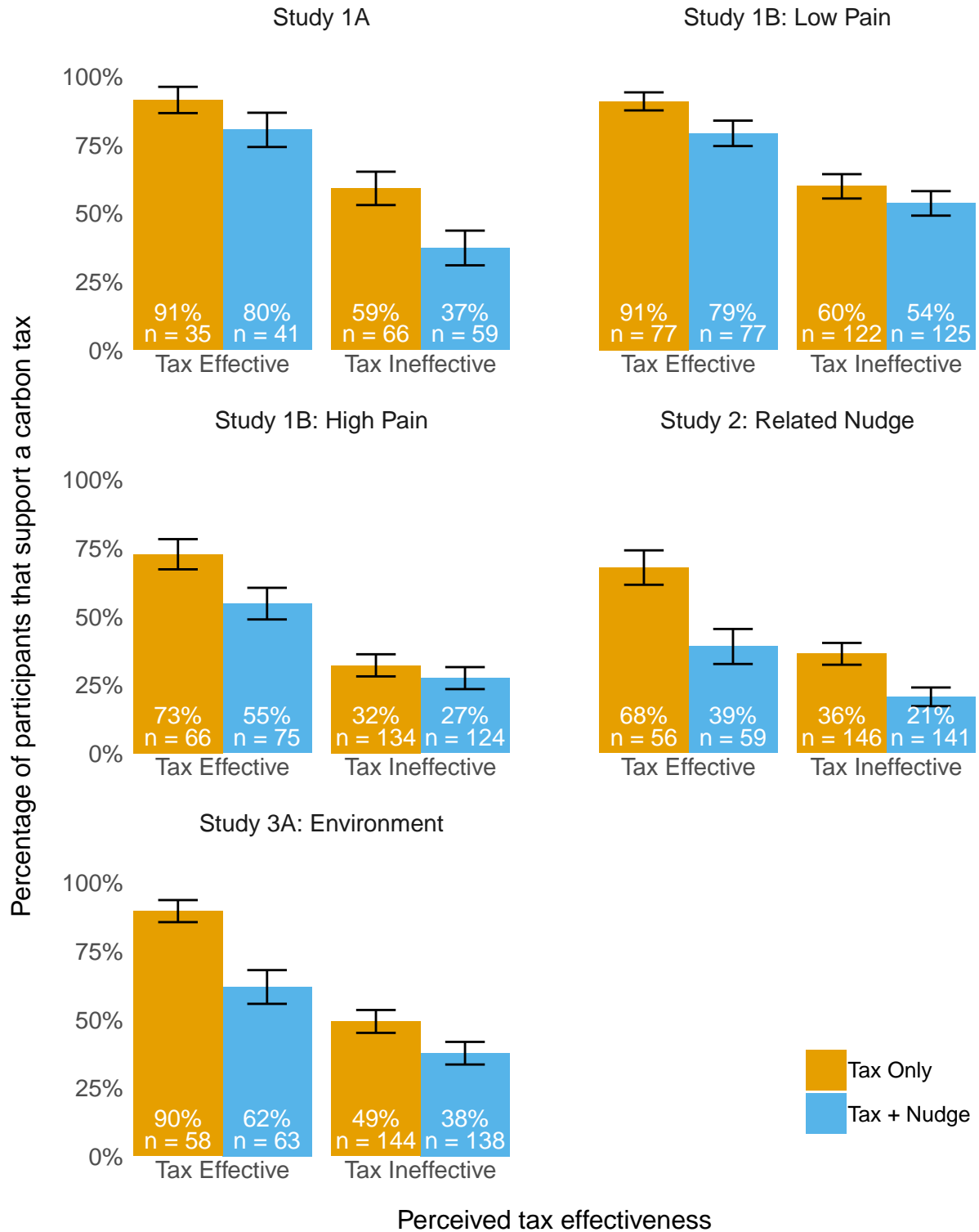
Supplementary Figure 7: **Support for carbon tax by condition and by political affiliation for all studies with a joint implementation condition.** Although conservatives are overall less likely to support implementing the tax, the extent of crowding-out by introducing the nudge does not differ by political affiliation. Error bars show \pm one standard error.

orientation (extremely conservative to extremely liberal) and show support for the carbon tax across all studies with a joint implementation decision for the two groups in Supplementary Figure 7. The corresponding regression analysis is in column 2 of Supplementary Table 12.

Although we observe a main effect of political affiliation, with conservatives less supportive of a carbon tax, we do not observe a difference in our experimental treatment. That is, both liberals and conservatives appear equally discouraged from implementing a carbon tax by the presence of a green energy nudge. This result is robust to using different cutoff points to split conservatives and liberals and to treating political orientation as a continuous variable, and is confirmed by a Wald test ($p = 0.80$) indicating the four-bin model and the linear interaction model are not statistically different from each other.

It might also be that participants who believe the tax to be highly effective would be less affected by the introduction of a green energy nudge. Participants rated the perceived effectiveness on a five-point Likert scale from “not effective at all” to “extremely effective.” The most common response was the midpoint of the scale, “moderately effective” ($n = 606$), with 593 participants believing the tax to be less effective than that and 607 believing it to be more effective. We split participants according to whether they thought the tax was very or extremely effective (“Tax Effective”) or whether they gave a lower response on the scale (“Tax Ineffective”).

In Supplementary Figure 8 and in column 3 of Supplementary Table 12, we show support for implementing the carbon tax based on the perceived effectiveness of the tax. Not surprisingly, those who believe the tax to be ineffective are less supportive of implementing it. However, we also observe an interaction with our treatment – but in the opposite direction that might have been expected. Participants who believe the tax to be ineffective are affected less by the presence of a nudge. The coefficient on the interaction remains significant if we treat perceived effectiveness of the carbon tax as a continuous variable or if we choose a lower cutoff point (below “moderately effective”) instead. A possible explanation for this finding is

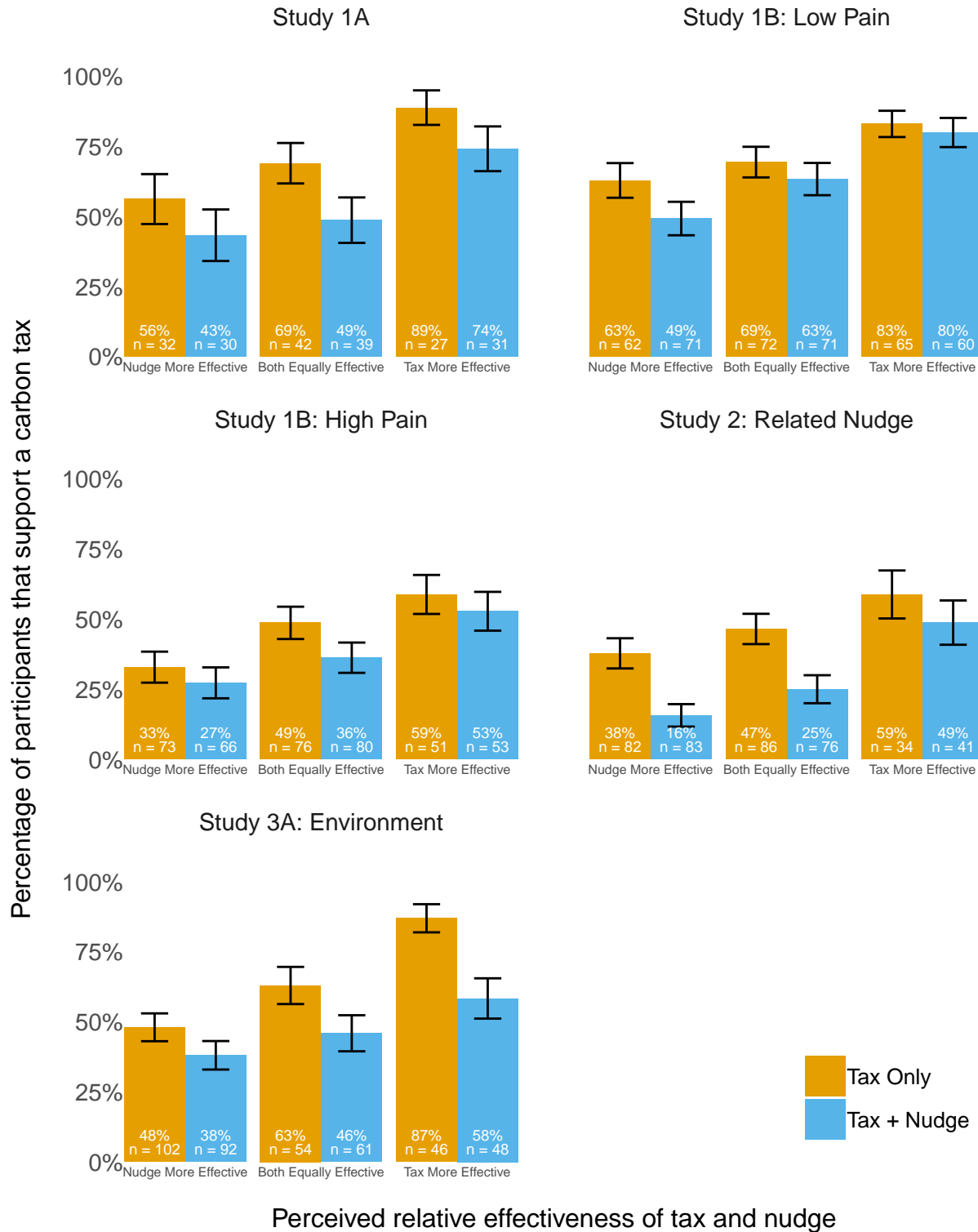


Supplementary Figure 8: **Support for carbon tax by condition and by perceived effectiveness of the tax for all studies with a joint implementation condition.** Crowding-out of support for the tax also occurs among those who believe the tax to be effective. Error bars show \pm one standard error.

that support for the carbon tax is already low in the absence of a nudge and consequently we may observe a floor effect. A more nuanced interaction model that separates the tax's perceived effectiveness into four bins shows a non-significant effect ($p = 0.38$).

Finally, we can look at support for implementing the carbon tax as a function of whether participants thought the tax to be less effective than the nudge, equally effective, or more effective. We show this in Supplementary Figure 9 and column 4 of Supplementary Table 12. We again observe a main effect across studies, with those who believe the tax to be relatively less effective also less supportive of implementing it. However, we again observe no interaction with our experimental treatment. Testing a four-bin multiplicative interaction model, where the moderating variable is the perceived tax effectiveness subtracted from the perceived nudge effectiveness, we find no statistically significant difference between a linear interaction model and a nonlinear one ($p = 0.38$). In all the cases, more granular binnings also did not yield significant results.

It appears that the introduction of a green energy nudge crowds-out support for a carbon tax even among those who might otherwise be favorable to the tax. Crowd-out is no smaller for those who identify themselves as more liberal, who may generally favor government intervention, or for those who strongly agree that global climate change is occurring. The effect of the experimental treatment is also no smaller for those who think the tax is more effective than the nudge. If anything, those more supportive of implementing a carbon tax see their support diminished the most: those who believe a tax to be ineffective are unlikely to favor its implementation even in the absence of other policies.



Supplementary Figure 9: **Relative perceived effectiveness does not moderate crowding-out of support for the carbon tax in all studies with a joint implementation decision.** Even participants who recognize the tax to be more effective than the nudge become less supportive when they have the option to implement the green energy nudge. Error bars show \pm one standard error.

References

34. Hess, S., Fowler, M., Adler, T. & Bahreinian, A. A joint model for vehicle type and fuel type choice: Evidence from a cross-nested logit study. *Transportation* **39**, 593–625 (2012).
35. Hainmueller, J., Mummolo, J. & Xu, Y. How Much Should We Trust Estimates from Multiplicative Interaction Models? Simple Tools to Improve Empirical Practice. *Political Analysis*

Supplementary Methods

Study 1



Center for
Behavioral and Decision
Research

Instructions

In this survey, we will ask for your opinion about climate change and about policies aimed at reducing pollution and carbon (CO₂) emissions.

We will introduce you to policies aimed at reducing pollution and carbon (CO₂) emissions and are interested in whether you believe the policies to be effective and would support their implementation.

The questions about your support do not try to measure whether you believe humans are (partially or substantially) responsible for increasing temperature or global climate change. For example, though you may believe humans are responsible for climate change, you might still oppose a policy: e.g., if you believe the policy might not be effective. Similarly, even if you believe humans are not responsible for climate change, you may favor the policy: e.g., because you believe it is effective at reducing otherwise harmful pollution. Please only consider the policies proposed and think about whether you would support them.

>>

Experimental Material 10: Study 1A and 1B (Screen 1)



Center for
Behavioral and Decision
Research

Before we will ask you about specific policies, we would like to ask you about climate change in general. Please tell us whether you agree or disagree with the statement below.

Global average temperatures have been increasing over the past 50 years (independent of the cause of such warming).

Strongly
disagree

Somewhat
disagree

Neither
agree nor
disagree

Somewhat
agree

Strongly
agree



Experimental Material 11: Study 1A and 1B (Screen 2)



Center for
Behavioral and Decision
Research

To the extent that global average temperatures have been increasing over the past 50 years, human activity has been the primary cause.

Strongly
disagree

Somewhat
disagree

Neither
agree nor
disagree

Somewhat
agree

Strongly
agree



Experimental Material 12: Study 1A and 1B (Screen 3)



Center for
Behavioral and Decision
Research

Options that are selected by default have been shown to be chosen more frequently. Policymakers can "nudge" people by mandating what the default option should be, without prohibiting people from choosing another option if they so desire.

Consider the following policy:

The federal government requires large electricity providers (serving at least 500,000 people) to adopt a system in which consumers would be automatically enrolled in a "green" (environmentally friendly) energy supplier, but could opt out if they wished.

Irrespective of whether you approve or disapprove of this policy, how effective do you think this policy would be at reducing pollution and carbon emissions if implemented?

Not effective
at all

Slightly
effective

Moderately
effective

Very
effective

Extremely
effective

If this policy were implemented, how painful do you think it would be for someone like you?

Not painful
at all

Slightly
painful

Moderately
painful

Very painful

Extremely
painful

>>

Experimental Material 13: Study 1A and 1B (Screen 4)



Center for
Behavioral and Decision
Research

Consider the following policy:

The federal government imposes a carbon tax on companies and products based on how much emissions they create. Companies and individuals pay approximately \$40 per ton of carbon emitted, which is the estimated economic cost of such pollution.

This policy will raise the price on transportation (e.g. gasoline, air travel) and other activities in proportion to how much carbon emissions they produce.

Irrespective of whether you approve or disapprove of this policy, how effective do you think this policy would be at reducing pollution and carbon emissions if implemented?

Not effective
at all

Slightly
effective

Moderately
effective

Very
effective

Extremely
effective

If this policy were implemented, how painful do you think it would be for someone like you?

Not painful
at all

Slightly
painful

Moderately
painful

Very painful

Extremely
painful

>>

Experimental Material 14: Study 1A + 1B Low Pain Condition (Screen 5)



Center for
Behavioral and Decision
Research

Consider the following policy:

The federal government imposes a carbon tax on companies and products based on how much emissions they create. Companies and individuals pay approximately \$40 per ton of carbon emitted, which is the estimated economic cost of such pollution.

This policy will substantially raise the price on transportation (e.g. gasoline, air travel), on heating and air conditioning, on electricity, and on other goods and activities in proportion to how much carbon emissions they produce.

Irrespective of whether you approve or disapprove of this policy, how effective do you think this policy would be at reducing pollution and carbon emissions if implemented?

Not effective
at all

Slightly
effective

Moderately
effective

Very
effective

Extremely
effective

If this policy were implemented, how painful do you think it would be for someone like you?

Not painful
at all

Slightly
painful

Moderately
painful

Very painful

Extremely
painful

>>

Experimental Material 15: Study 1B High Pain Condition (Screen 5)



Center for
Behavioral and Decision
Research

Imagine now that you are a policymaker and you can choose to implement the carbon tax policy from before. As a reminder, here is the policy again:

Tax

The federal government imposes a carbon tax on companies and products based on how much emissions they create. Companies and individuals pay approximately \$40 per ton of carbon emitted, which is the estimated economic cost of such pollution.

This policy will raise the price on transportation (e.g. gasoline, air travel) and other activities in proportion to how much carbon emissions they produce.

The alternative, if this policy is not implemented, is that no other policy will be implemented.

Would you like to implement the tax?

Implement the carbon tax

Do not implement the carbon tax



Experimental Material 16: Study 1A + 1B (Screen 6: Tax Only Condition). In the “High Pain” condition, participants saw the more painful framing of the carbon tax.



Imagine now that you are a policymaker and you can choose to implement the carbon tax policy and the green energy nudge from before. As a reminder, here are the policy and the nudge again:

Tax

The federal government imposes a carbon tax on companies and products based on how much emissions they create. Companies and individuals pay approximately \$40 per ton of carbon emitted, which is the estimated economic cost of such pollution.

This policy will raise the price on transportation (e.g. gasoline, air travel) and other activities in proportion to how much carbon emissions they produce.

Nudge

The federal government requires large electricity providers (serving at least 500,000 people) to adopt a system in which consumers would be automatically enrolled in a "green" (environmentally friendly) energy supplier, but could opt out if they wished.

You can choose to (1) implement only the tax but not the nudge, (2) implement only the nudge but not the tax, (3) implement both the tax and the nudge, and (4) implement neither the tax nor the nudge.

The alternative, if neither the tax nor the nudge is implemented, is that no other policy will be implemented.

Would you like to implement the tax and/or the nudge?

Implement the carbon tax only

Implement the nudge only

Implement both the carbon tax and the nudge

Do not implement either the carbon tax or the nudge



Experimental Material 17: Study 1A + 1B (Screen 6: Tax and Nudge Condition). In the “High Pain” condition, participants saw the more painful framing of the carbon tax.



Finally, we would like to ask you some demographic questions.

Gender

Male

Female

Age

Ethnicity

White

Black or African American

American Indian or Alaska Native

Asian

Native Hawaiian or Pacific Islander

Other

What is the highest level of education you have completed?

Less than high school

High school graduate

Some college

2 year degree

4 year degree

Professional or Masters degree

Doctoral degree

When it comes to politics, do you usually think of yourself as...

Very Liberal

Liberal

Slightly Liberal

Moderate, Middle of Road

Slightly Conservative

Conservative

Very Conservative



Experimental Material 18: Study 1A + 1B (Screen 7)

Study 2



Instructions

In this survey, we will ask for your opinion about two measures the government could implement to address longstanding policy problems. We are interested in whether you would support implementing either of two hypothetical policies and whether you believe they could be effective at achieving the stated goal.

>>

Experimental Material 19: Study 2 (Screen 1)



Center for
Behavioral and Decision
Research

Options that are selected by default have been shown to be chosen more frequently. Policymakers can "nudge" people by mandating what the default option should be, without prohibiting people from choosing another option if they so desire.

Consider the following policy:

The federal government requires large electricity providers (serving at least 500,000 people) to adopt a system in which consumers would be automatically enrolled in a "green" (environmentally friendly) energy supplier, but could opt out if they wished.

Irrespective of whether you approve or disapprove of this policy, how effective do you think this policy would be at reducing pollution and carbon emissions if implemented?

Not effective
at all

Slightly
effective

Moderately
effective

Very
effective

Extremely
effective

If this policy were implemented, how painful do you think it would be for someone like you?

Not painful
at all

Slightly
painful

Moderately
painful

Very
painful

Extremely
painful

>>

Experimental Material 20: Study 2 (Screen 2: Related Nudge)



Center for
Behavioral and Decision
Research

Options that are selected by default have been shown to be chosen more frequently. Policymakers can "nudge" people by mandating what the default option should be, without prohibiting people from choosing another option if they so desire.

Consider the following policy:

The federal government requires large employers (more than 200 employees) to adopt a system in which employees would be automatically enrolled in a pension plan, but could opt out if they wish.

Irrespective of whether you approve or disapprove of this policy, how effective do you think this policy would be at increasing retirement savings if implemented?

Not effective
at all

Slightly
effective

Moderately
effective

Very
effective

Extremely
effective

If this policy were implemented, how painful do you think it would be for someone like you?

Not painful
at all

Slightly
painful

Moderately
painful

Very painful

Extremely
painful

>>

Experimental Material 21: Study 2 (Screen 2: Unrelated Nudge)



Center for
Behavioral and Decision
Research

Consider the following policy:

The federal government imposes a carbon tax on companies and products based on how much emissions they create. Companies and individuals pay approximately \$40 per ton of carbon emitted, which is the estimated economic cost of such pollution.

This policy will substantially raise the price on transportation (e.g. gasoline, air travel), on heating and air conditioning, on electricity, and on other goods and activities in proportion to how much carbon emissions they produce.

Irrespective of whether you approve or disapprove of this policy, how effective do you think this policy would be at reducing pollution and carbon emissions if implemented?

Not effective
at all

Slightly
effective

Moderately
effective

Very
effective

Extremely
effective

If this policy were implemented, how painful do you think it would be for someone like you?

Not painful
at all

Slightly
painful

Moderately
painful

Very painful

Extremely
painful

>>

Experimental Material 22: Study 2 (Screen 3)



Center for
Behavioral and Decision
Research

Imagine now that you are a policymaker and you can choose to implement the carbon tax policy from before. As a reminder, here is the policy again:

Tax

The federal government imposes a carbon tax on companies and products based on how much emissions they create. Companies and individuals pay approximately \$40 per ton of carbon emitted, which is the estimated economic cost of such pollution.

This policy will substantially raise the price on transportation (e.g. gasoline, air travel), on heating and air conditioning, on electricity, and on other goods and activities in proportion to how much carbon emissions they produce.

The alternative, if this policy is not implemented, is that no other policy will be implemented.

Would you like to implement the tax?

Implement the carbon tax

Do not implement the carbon tax

>>

Experimental Material 23: Study 2 (Screen 4: Tax Only Condition)



Imagine now that you are a policymaker and you can choose to implement the carbon tax policy and the green energy nudge from before. As a reminder, here are the policy and the nudge again:

Tax

The federal government imposes a carbon tax on companies and products based on how much emissions they create. Companies and individuals pay approximately \$40 per ton of carbon emitted, which is the estimated economic cost of such pollution.

This policy will substantially raise the price on transportation (e.g. gasoline, air travel), on heating and air conditioning, on electricity, and on other goods and activities in proportion to how much carbon emissions they produce.

Nudge

The federal government requires large electricity providers (serving at least 500,000 people) to adopt a system in which consumers would be automatically enrolled in a "green" (environmentally friendly) energy supplier, but could opt out if they wished.

You can choose to (1) implement only the tax but not the nudge, (2) implement only the nudge but not the tax, (3) implement both the tax and the nudge, and (4) implement neither the tax nor the nudge.

The alternative, if neither the tax nor the nudge is implemented, is that no other policy will be implemented.

Would you like to implement the tax and/or the nudge?

Implement the carbon tax only

Implement the nudge only

Implement both the carbon tax and the nudge

Do not implement either the carbon tax or the nudge



Experimental Material 24: Study 2 (Screen 4: Tax and Nudge Condition). Participants in the “Unrelated Nudge” condition instead saw the pension savings nudge.

Finally, we would like to ask you some demographic questions.

Gender

Male

Female

Age

Ethnicity

White

Black or African American

American Indian or Alaska Native

Asian

Native Hawaiian or Pacific Islander

Other

What is the highest level of education you have completed?

Less than high school

High school graduate

Some college

2 year degree

4 year degree

Professional or Masters degree

Doctoral degree

When it comes to politics, do you usually think of yourself as...

Very Liberal

Liberal

Slightly Liberal

Moderate, Middle of Road

Slightly Conservative

Conservative

Very Conservative



Experimental Material 25: Study 2 (Screen 5)

Study 3A



Center for
Behavioral and Decision
Research

Instructions

Climate scientists have raised alarm that an increase in average global temperature will lead to rising sea levels, more extreme weather events (like tornadoes and snowstorms), and cause significant economic damage and loss of human life. According to the best available evidence, CO₂ pollution from human activity is one of the major contributors to this warming trend. Moreover, a new study further estimates that air pollution itself is directly responsible for approximately 200,000 premature deaths in the United States per year.

In this study, we would like to introduce you to two policies the government might consider to combat pollution and global climate change. For each policy, we would like to know how effective you believe it to be and how painful you think it might be for someone like you, if implemented.

>>

Experimental Material 26: Study 3A (Screen 1: Environment Domain)



Center for
Behavioral and Decision
Research

The first policy is called a "nudge" and is intended to affect behavior of individuals in a way that does not limit the choices they can make.

Options that are selected by default have been shown to be chosen more frequently. Policymakers can "nudge" people by mandating what the default option should be, without prohibiting people from choosing another option if they so desire.

Consider the following policy:

The federal government requires large electricity providers (serving at least 500,000 people) to adopt a system in which consumers would be automatically enrolled in a "green" (environmentally friendly) energy supplier, but could opt out if they wished.

Irrespective of whether you approve or disapprove of this policy, how effective do you think this policy would be, if implemented?

Not effective at all	Slightly effective	Moderately effective	Very effective	Extremely effective
----------------------	--------------------	----------------------	----------------	---------------------

If this policy were implemented, how painful do you think it would be for someone like you?

Not painful at all	Slightly painful	Moderately painful	Very painful	Extremely painful
--------------------	------------------	--------------------	--------------	-------------------



Experimental Material 27: Study 3A (Environment Nudge, Screen Order Varies)



Center for
Behavioral and Decision
Research

Imagine now that you are a policymaker and you can choose to implement the green energy nudge from before. As a reminder, here is the nudge again:

Nudge

The federal government requires large electricity providers (serving at least 500,000 people) to adopt a system in which consumers would be automatically enrolled in a "green" (environmentally friendly) energy supplier, but could opt out if they wished.

The alternative, if this nudge is not implemented, is that no other policy will be implemented.

Would you like to implement the nudge?

Implement the nudge

Do not implement the nudge

>>

Experimental Material 28: Study 3A (Environment Nudge Implementation, Screen Order Varies)



Center for
Behavioral and Decision
Research

The second policy is a tax, which governments have traditionally used to affect behavior of individuals.

Consider the following policy:

The federal government imposes a carbon tax on companies and products based on how much emissions they create. Companies and individuals pay approximately \$40 per ton of carbon emitted, which is the estimated economic cost of such pollution.

This policy will raise the price on transportation (e.g. gasoline, air travel) and other activities in proportion to how much carbon emissions they produce.

Irrespective of whether you approve or disapprove of this policy, how effective do you think this policy would be, if implemented?

Not effective at all	Slightly effective	Moderately effective	Very effective	Extremely effective
----------------------	--------------------	----------------------	----------------	---------------------

If this policy were implemented, how painful do you think it would be for someone like you?

Not painful at all	Slightly painful	Moderately painful	Very painful	Extremely painful
--------------------	------------------	--------------------	--------------	-------------------

>>

Experimental Material 29: Study 3A (Carbon Tax, Screen Order Varies)



Center for
Behavioral and Decision
Research

Instructions

Most Americans today have insufficient savings for retirement. In the past, most workers could rely on their company to provide them with a pension. Today, however, individuals have to supplement their social security benefits with private retirement savings, most commonly in 401(k) and IRA savings plans. According to a survey by Bankrate.com, not saving enough for retirement is the biggest financial regret among Americans.

In this study, we would like to introduce you to two policies the government might consider to increase the income people have available when they retire. For each policy, we would like to know how effective you believe it to be and how painful you think it might be for someone like you, if implemented.

>>

Experimental Material 30: Study 3A (Screen 1: Retirement Domain)



Center for
Behavioral and Decision
Research

The first policy is a tax, which governments have traditionally used to affect behavior of individuals.

Consider the following policy:

The federal government increases social security taxes on wages and also increases the employer match. Social security benefits are raised commensurately, and uncertainties about future benefit delivery are eliminated.

Irrespective of whether you approve or disapprove of this policy, how effective do you think this policy would be, if implemented?

Not effective at all	Slightly effective	Moderately effective	Very effective	Extremely effective
-------------------------	-----------------------	-------------------------	-------------------	------------------------

If this policy were implemented, how painful do you think it would be for someone like you?

Not painful at all	Slightly painful	Moderately painful	Very painful	Extremely painful
-----------------------	---------------------	-----------------------	--------------	----------------------

>>

Experimental Material 31: Study 3A (Social Security Tax, Screen Order Varies)



Center for
Behavioral and Decision
Research

Imagine now that you are a policymaker and you can choose to implement the social security tax increase from before. As a reminder, here is the policy again:

Tax

The federal government increases social security taxes on wages and also increases the employer match. Social security benefits are raised commensurately, and uncertainties about future benefit delivery are eliminated.

The alternative, if this policy is not implemented, is that no other policy will be implemented.

Would you like to implement the tax?

Implement the tax

Do not implement the tax



Experimental Material 32: Study 3A (Social Security Tax Implementation, Screen Order Varies)



Center for
Behavioral and Decision
Research

The second policy is called a "nudge" and is intended to affect behavior of individuals in a way that does not limit the choices they can make.

Options that are selected by default have been shown to be chosen more frequently. Policymakers can "nudge" people by mandating what the default option should be, without prohibiting people from choosing another option if they so desire.

Consider the following policy:

The federal government requires employers to enroll workers into 401(k) retirement plans and contribute 8% of their income by default. Employees have the option to opt-out of this plan and choose to save less than 8% (or nothing at all).

Irrespective of whether you approve or disapprove of this policy, how effective do you think this policy would be, if implemented?

Not effective at all	Slightly effective	Moderately effective	Very effective	Extremely effective
----------------------	--------------------	----------------------	----------------	---------------------

If this policy were implemented, how painful do you think it would be for someone like you?

Not painful at all	Slightly painful	Moderately painful	Very painful	Extremely painful
--------------------	------------------	--------------------	--------------	-------------------



Experimental Material 33: Study 3A (401(k) Nudge, Screen Order Varies)



Imagine now that you are a policymaker and you can choose to implement the social security tax increase and the retirement savings nudge from before. As a reminder, here are the policy and the nudge again:

Tax

The federal government increases social security taxes on wages and also increases the employer match. Social security benefits are raised commensurately, and uncertainties about future benefit delivery are eliminated.

Nudge

The federal government requires employers to enroll workers into 401(k) retirement plans and contribute 8% of their income by default. Employees have the option to opt-out of this plan and choose to save less than 8% (or nothing at all).

You can choose to (1) implement only the tax but not the nudge, (2) implement only the nudge but not the tax, (3) implement both the tax and the nudge, and (4) implement neither the tax nor the nudge.

The alternative, if neither the tax nor the nudge is implemented, is that no other policy will be implemented.

Would you like to implement the tax and/or the nudge?

Implement the tax only

Implement the nudge only

Implement both the tax and the nudge

Do not implement either the tax or the nudge





Center for
Behavioral and Decision
Research

Imagine now that you are a policymaker and you can choose to implement the carbon tax policy from before. As a reminder, here is the policy again:

Tax

The federal government imposes a carbon tax on companies and products based on how much emissions they create. Companies and individuals pay approximately \$40 per ton of carbon emitted, which is the estimated economic cost of such pollution.

This policy will raise the price on transportation (e.g. gasoline, air travel) and other activities in proportion to how much carbon emissions they produce.

The alternative, if this policy is not implemented, is that no other policy will be implemented.

Would you like to implement the tax?

Implement the tax

Do not implement the tax

>>

Experimental Material 35: Study 3A (Tax Implementation Decision)



Center for
Behavioral and Decision
Research

Imagine now that you are a policymaker and you can choose to implement the retirement savings nudge from before. As a reminder, here is the nudge again:

Nudge

The federal government requires employers to enroll workers into 401(k) retirement plans and contribute 8% of their income by default. Employees have the option to opt-out of this plan and choose to save less than 8% (or nothing at all).

The alternative, if this nudge is not implemented, is that no other policy will be implemented.

Would you like to implement the nudge?

Implement the nudge

Do not implement the nudge



Experimental Material 36: Study 3A (Screen 5: Nudge Implementation Decision)



Center for Behavioral and Decision Research

Finally, we would like to ask you some demographic questions.

Gender

Male

Female

Age

Ethnicity

White

Black or African American

American Indian or Alaska Native

Asian

Native Hawaiian or Pacific Islander

Other

What is the highest level of education you have completed?

Less than high school

High school graduate

Some college

2 year degree

4 year degree

Professional or Masters degree

Doctoral degree

When it comes to politics, do you usually think of yourself as...

Very Liberal

Liberal

Slightly Liberal

Moderate, Middle of Road

Slightly Conservative

Conservative

Very Conservative



Experimental Material 37: Study 3A (Screen 6)

Study 3B



Center for
Behavioral and Decision
Research

Environmental Policies

Climate scientists have raised concerns that an increase in average global temperature will lead to rising sea levels, more extreme weather events (like tornadoes and snowstorms), cause significant economic damage, and lead to the loss of human lives. According to the best available evidence, CO₂ pollution from human activity is one of the major contributors to this warming trend. Moreover, a new study estimates that air pollution itself is directly responsible for approximately 200,000 premature deaths in the United States per year.

As part of this study, we would like to introduce you to two policies the government might consider to combat pollution and global climate change. For each policy, we would like to know how effective you believe it to be and how painful you think it might be for someone like you, if implemented.

>>

Experimental Material 38: Study 3B (Screen 1)



Center for
Behavioral and Decision
Research

The first policy is called a "nudge" and is intended to influence the behavior of individuals in a way that does not limit the choices they can make.

Options that are presented as defaults have been shown to be chosen more frequently. Policymakers can "nudge" people by mandating what the default option should be, without prohibiting people from choosing another option if they so desire.

Consider the following policy:

The federal government requires large electricity providers (serving at least 500,000 people) to adopt a system in which consumers would be automatically enrolled in a "green" (environmentally friendly) energy supplier, but could opt out if they wished.

Irrespective of whether you approve or disapprove of this policy, how effective do you think this policy would be at reducing carbon emissions in the United States, if implemented?

Not effective at all	Slightly effective	Moderately effective	Very effective	Extremely effective
----------------------	--------------------	----------------------	----------------	---------------------

If this policy were implemented, how painful do you think it would be for someone like you?

Not painful at all	Slightly painful	Moderately painful	Very painful	Extremely painful
--------------------	------------------	--------------------	--------------	-------------------



Experimental Material 39: Study 3B (Screen 2)



Center for
Behavioral and Decision
Research

Imagine now that you are a policymaker and you can choose to implement the green energy nudge from before. As a reminder, here is the nudge again:

Nudge

The federal government requires large electricity providers (serving at least 500,000 people) to adopt a system in which consumers would be automatically enrolled in a "green" (environmentally friendly) energy supplier, but could opt out if they wished.

The alternative, if this nudge is not implemented, is that no other policy will be implemented.

Would you like to implement the nudge?

Implement the nudge

Do not implement the nudge



Experimental Material 40: Study 3B (Screen 3)



Center for
Behavioral and Decision
Research

The second policy is a tax, which governments have traditionally used to influence the behavior of individuals.

Consider the following policy:

The federal government imposes a carbon tax on companies and products based on the amount of emissions they create. Companies and individuals pay approximately \$40 per ton of carbon emitted, which is the estimated economic cost of such pollution.

This policy will raise the price of transportation (e.g. gasoline, air travel) and other activities in proportion to how much carbon emissions they produce.

Regardless of whether you approve or disapprove of this policy, how effective do you think this policy would be at reducing carbon emissions in the United States, if implemented?

Not effective
at all

Slightly
effective

Moderately
effective

Very
effective

Extremely
effective

If this policy were implemented, how painful do you think it would be for someone like you?

Not painful
at all

Slightly
painful

Moderately
painful

Very painful

Extremely
painful

>>

Experimental Material 41: Study 3B (Screen 4)



Center for
Behavioral and Decision
Research

Imagine now that you are a policymaker and you can choose to implement the carbon tax policy from before. As a reminder, here is the policy again:

Tax

The federal government imposes a carbon tax on companies and products based on how much emissions they create. Companies and individuals pay approximately \$40 per ton of carbon emitted, which is the estimated economic cost of such pollution.

This policy will raise the price on transportation (e.g. gasoline, air travel) and other activities in proportion to how much carbon emissions they produce.

The alternative, if this policy is not implemented, is that no other policy will be implemented.

Would you like to implement the tax?

Implement the tax

Do not implement the tax



Experimental Material 42: Study 3B (Screen 5)



Center for
Behavioral and Decision
Research

Retirement Savings Policies

Most Americans today have insufficient savings for retirement. In the past, most workers could rely on their company to provide them with a pension. Today, however, individuals have to supplement their social security benefits with private retirement savings, most commonly in 401(k) and IRA savings plans. According to a survey by Bankrate.com, not saving enough for retirement is the biggest financial regret among Americans.

As part of this study, we would like to introduce you to two policies the government might consider to increase the income people have available when they retire. For each policy, we would like to know how effective you believe it to be and how painful you think it might be for someone like you, if implemented.



Experimental Material 43: Study 3B (Screen 6)



Center for
Behavioral and Decision
Research

The first policy is a tax, which governments have traditionally used to influence the behavior of individuals.

Consider the following policy:

The federal government increases social security taxes on both employees and employers. Social security benefits are raised commensurately, and uncertainties about future benefit delivery are eliminated.

Regardless of whether you approve or disapprove of this policy, how effective do you think this policy would be at increasing average retirement savings rates in the United States, if implemented?

Not effective at all	Slightly effective	Moderately effective	Very effective	Extremely effective
----------------------	--------------------	----------------------	----------------	---------------------

If this policy were implemented, how painful do you think it would be for someone like you?

Not painful at all	Slightly painful	Moderately painful	Very painful	Extremely painful
--------------------	------------------	--------------------	--------------	-------------------



Experimental Material 44: Study 3B (Screen 7)



Center for
Behavioral and Decision
Research

Imagine now that you are a policymaker and you can choose to implement the social security tax increase from before. As a reminder, here is the policy again:

Tax

The federal government increases social security taxes on both employees and employers. Social security benefits are raised commensurately, and uncertainties about future benefit delivery are eliminated.

The alternative, if this policy is not implemented, is that no other policy will be implemented.

Would you like to implement the tax?

Implement the tax

Do not implement the tax



Experimental Material 45: Study 3B (Screen 8)



The second policy is called a "nudge" and is intended to influence the behavior of individuals in a way that does not limit the choices they can make.

Options that are presented as defaults have been shown to be chosen more frequently. Policymakers can "nudge" people by mandating what the default option should be, without prohibiting people from choosing another option if they so desire.

Consider the following policy:

The federal government requires employers to enroll workers in 401(k) retirement plans and to contribute 8% of their income to their 401(k) by default. Employees have the option to opt-out of this plan and choose to save less than 8% (or nothing at all).

Regardless of whether you approve or disapprove of this policy, how effective do you think this policy would be at increasing average retirement savings rates in the United States, if implemented?

Not effective
at all

Slightly
effective

Moderately
effective

Very
effective

Extremely
effective

If this policy were implemented, how painful do you think it would be for someone like you?

Not painful
at all

Slightly
painful

Moderately
painful

Very painful

Extremely
painful

>>



Center for
Behavioral and Decision
Research

Imagine now that you are a policymaker and you can choose to implement the retirement savings nudge from before. As a reminder, here is the nudge again:

Nudge

The federal government requires employers to enroll workers into 401(k) retirement plans and contribute 8% of their income by default. Employees have the option to opt-out of this plan and choose to save less than 8% (or nothing at all).

The alternative, if this nudge is not implemented, is that no other policy will be implemented.

Would you like to implement the nudge?

Implement the nudge

Do not implement the nudge

>>

Experimental Material 47: Study 3B (Screen 10)



Center for
Behavioral and Decision
Research

Finally, we would like to ask you some demographic questions.

Gender

Male

Female

Age

Ethnicity

White

Black or African American

American Indian or Alaska Native

Asian

Native Hawaiian or Pacific Islander

Other

What is the highest level of education you have completed?

Less than high school

High school graduate

Some college

2 year degree

4 year degree

Professional or Masters degree

Doctoral degree

When it comes to politics, do you usually think of yourself as...

Very Liberal

Liberal

Slightly Liberal

Moderate, Middle of Road

Slightly Conservative

Conservative

Very Conservative



Experimental Material 48: Study 3B (Screen 11)



Center for
Behavioral and Decision
Research

What degree did you obtain from Carnegie Mellon's Heinz College?

Education level

Degree

As a student at Heinz College, have you taken a class in behavioral economics and public policy?

Yes

No

Do not remember

What is your job title?

Does your position allow you to impact or contribute to public policy?

Yes

No

Are you involved in designing, implementing, evaluating, or informing public policy or government operations?

Yes

No



Experimental Material 49: Study 3B (Screen 12)

Study 4



Center for
Behavioral and Decision
Research

Instructions

Climate scientists have raised alarm that an increase in average global temperature will lead to rising sea levels, more extreme weather events (like tornadoes and snowstorms), and cause significant economic damage and loss of human life. According to the best available evidence, CO₂ pollution from human activity is one of the major contributors to this warming trend. Moreover, a new study further estimates that air pollution itself is directly responsible for approximately 200,000 premature deaths in the United States per year.

In this study, we would like to introduce you to two policies the government might consider to combat pollution and global climate change. For each policy, we would like to know how effective you believe it to be at reducing CO₂ emissions and how painful you think it might be for someone like you, if implemented.



Experimental Material 50: Study 4 (Screen 1)



The first policy is called a "nudge" and is intended to affect behavior of individuals in a way that does not limit the choices they can make.

Options that are selected by default have been shown to be chosen more frequently. Policymakers can "nudge" people by mandating what the default option should be, without prohibiting people from choosing another option if they so desire.

Consider the following policy:

The federal government requires large electricity providers (serving at least 500,000 people) to adopt a system in which consumers would be automatically enrolled in a "green" (environmentally friendly) energy supplier, but could opt out if they wished.

Research on green energy nudges have found that they only shift a fraction of the population toward using green energy, and that, in part because residential electricity use accounts for only a small fraction of overall carbon emissions, they have very little impact on overall energy use or carbon emissions.

Irrespective of whether you approve or disapprove of this policy, how effective do you think this policy would be at reducing carbon emissions in the United States, if implemented?

Not effective at all

Slightly effective

Moderately effective

Very effective

Extremely effective

If this policy were implemented, how painful do you think it would be for someone like you?

Not painful at all

Slightly painful

Moderately painful

Very painful

Extremely painful



Experimental Material 51: Study 4 (Screen 2). Text in the grey box is only shown to participants in the "Nudge Ineffective" condition.



Center for
Behavioral and Decision
Research

Imagine now that you could vote to implement the nudge from before.

Would you vote in favor of implementing this nudge?

Vote in favor of implementing the nudge

Vote against implementing the nudge



Experimental Material 52: Study 4 (Screen 3)



The second policy is a tax, which governments have traditionally used to affect behavior of individuals.

Consider the following policy:

The federal government imposes a carbon tax on companies and products based on how much emissions they create. Companies and individuals pay approximately \$40 per ton of carbon emitted, which is the estimated economic cost of such pollution.

British Columbia has a similar tax and uses much of the revenue to lower income taxes, reducing the cost of the tax to households. The revenue could also be used to lower the sales tax, invest in environmental projects, fund schools and colleges, or secure and expand social security benefits.

A carbon tax initiative in the state of Washington proposed returning the revenue to residents. This would lead energy efficient consumers to receive a greater rebate than what they paid in carbon taxes.

Irrespective of whether you approve or disapprove of this policy, how effective do you think this policy would be at reducing carbon emissions in the United States, if implemented?

Not effective at all

Slightly effective

Moderately effective

Very effective

Extremely effective

If this policy were implemented, how painful do you think it would be for someone like you?

Not painful at all

Slightly painful

Moderately painful

Very painful

Extremely painful



Experimental Material 53: Study 4 (Screen 4). Text in the grey box is only shown to participants in the "Tax Attractive" condition.



Center for
Behavioral and Decision
Research

Imagine now that you could vote to implement the carbon tax from before.

Would you vote in favor of implementing this carbon tax?

Vote in favor of implementing the carbon tax

Vote against implementing the carbon tax



Experimental Material 54: Study 4 (Screen 5)



Center for
Behavioral and Decision
Research

Finally, we would like to ask you some demographic questions.



Experimental Material 55: Study 4 (Screen 6)



Center for
Behavioral and Decision
Research

Gender

Male

Female

Age

Ethnicity

White

Black or African American

American Indian or Alaska Native

Asian

Native Hawaiian or Pacific Islander

Other



Experimental Material 56: Study 4 (Screen 7)



Center for
Behavioral and Decision
Research

How do you believe your household's carbon emissions (e.g. due to heating, transportation, and travel) compares to that of the average household in the United States?

We emit less CO2 than the average household

We emit about the same amount of CO2 as the average household

We emit more CO2 than the average household

>>

Experimental Material 57: Study 4 (Screen 8)



Center for
Behavioral and Decision
Research

Which of the statements below reflect most closely your views on climate change?

Climate change is primarily caused by human activity and governments should take measures to reduce carbon emissions

Climate change is primarily caused by human activity, but actions to reduce carbon emissions should be left to individuals

Climate change is primarily caused by natural factors, but governments should take measures to reduce carbon emissions caused by human activity

Climate change is primarily caused by natural factors and governments should not take any measures to reduce carbon emissions

>>

Experimental Material 58: Study 4 (Screen 9)



What is the highest level of education you have completed?

Less than high school

High school graduate

Some college

2 year degree

4 year degree

Professional or Masters degree

Doctoral degree



Experimental Material 59: Study 4 (Screen 10)



What is your political affiliation?

Republican

Independent

Democrat

Other

None

When it comes to politics, do you usually think of yourself as...

Very Liberal

Liberal

Slightly Liberal

Moderate, Middle of Road

Slightly Conservative

Conservative

Very Conservative

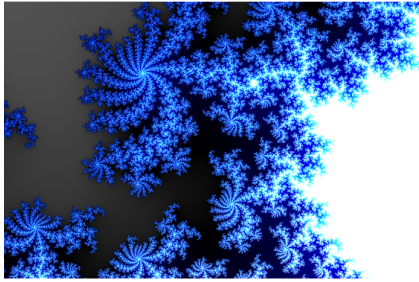


Experimental Material 60: Study 4 (Screen 11)



Center for
Behavioral and Decision
Research

What is shown in the image below?



Experimental Material 61: Study 4 (Screen 12). In the experiment, participants saw an image of a bell pepper, which cannot be reproduced here due to copyright restrictions.



Center for
Behavioral and Decision
Research

Please write the following date in words: 08/06/2018



Experimental Material 62: Study 4 (Screen 13)