Supplemental material

Support for environmental protection: An integration of ideological-consistency and information-deficit models

Data sets

Cooperative Election Study (CCES)

The primary data set was the 2012 CCES (Ansolabehere and Schaffner 2012), an online interview of a national sample of individuals (N = 54,535). The CCES is a nonprobability sample and uses a matched random sample technique that allowed for a stratified national sample of registered and unregistered adults with adequate sample sizes in all states. The sample was weighted to match the 2008 American Community survey conducted by the U.S. Census Bureau. Data were collected in October and November of 2012.

American National Election Study (ANES)

The second data set was the American National Election Survey 2012 Time Series (ANES, 2012). Data were collected via face–to–face interviews and online surveys between September 2012 and January 2013. The 2012 ANES is a probability sample of U.S. citizens of voting age on or before election day and uses address–based sampling and random–digit dialing sampling methods (N = 5,914; 2,054 face–to–face and 3,860 online).

Measures and group construction

CCES

We used two items from the 2012 CCES to construct the nine political groups. The first item was self-reported ideology. Those who self-identified as "strongly conservative" or "conservative" were labeled conservatives, and those who self-identified as "strongly liberal" or "liberal" were labeled liberals. Those who self-identified as "slightly liberal," "slightly conservative," or "middle of the road" were labeled moderates. The second item measured participants' preferences for environmental versus economic protections. Participants responded on a 5-point scale, from 1 (*Much more important to protect the environment even if it means losing jobs and a lower standard of living*) to 5 (*Much more important to protect jobs even if environment gets worse*). Those who identified the environment as "much more" or "somewhat more" important than jobs were labeled green, and those who identified the economy and jobs as "much more" or "somewhat more" important were labeled economic. Those who identified jobs and environment as "about the same" were labeled neutral. This resulted in nine political groups: green liberals, green conservatives, green moderates, economic liberals, economic conservatives, economic moderates, neutral liberals, neutral conservatives, and neutral moderates.

ANES

We also used two items from the 2012 ANES to construct the nine political groups. Again, we used self-reported ideology; those who self-identified as "extremely conservative" or "conservative" were labeled conservatives, and those who self-identified as "extremely liberal" or "liberal" were labeled liberals. Those who self-identified as "slightly liberal," "slightly

conservative," or "moderate; middle of the road" were labeled moderates. We measured environmental versus economic support with a single item asking if federal spending to protect the environment should be increased, decreased, or kept the same or about the same. Those who endorsed increased federal spending were labeled green, those who wanted federal spending decreased were labeled economic, and those who wanted it kept the same were labeled neutral.

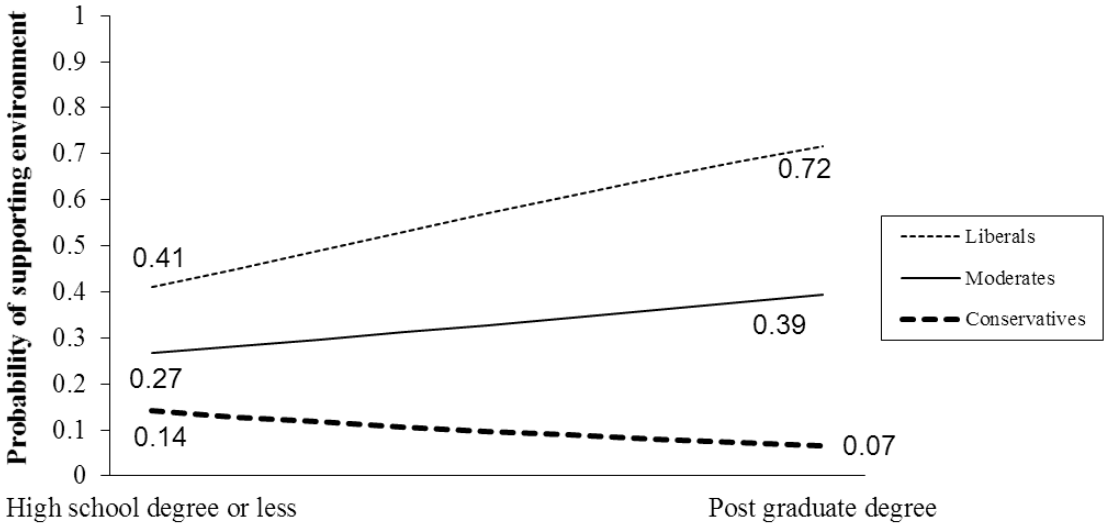
We intentionally picked the federal spending question to measure environmental support in the ANES to provide a different operationalization of environmental support given arguments that environmental protection does not always have to come at the cost of losing jobs, as the item from the CCES may imply to some (see also Krosnick & MacInnis, 2013).

The CCES and the ANES measured educational attainment slightly differently, but we used consistent categories to aid in cross-data set comparisons.

Additional regression models from CCES data

Supplementary model 1, exclusion of slightly liberal and slightly conservative participants

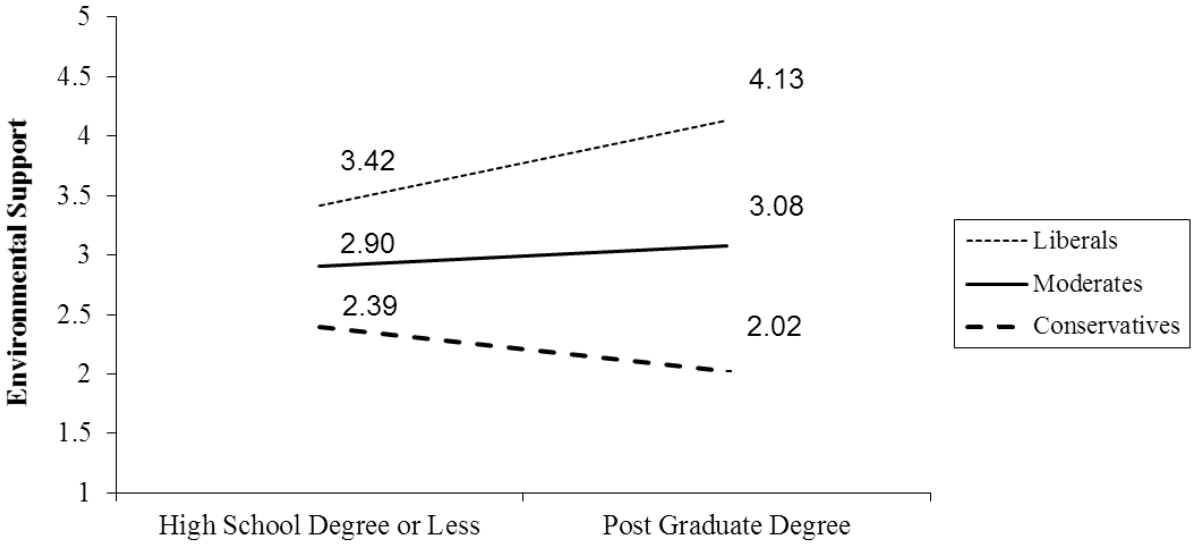
In model 1, we mirrored the first set of models presented in the main manuscript, except that we excluded those identifying as slightly liberal or slightly conservative (*n* for model 1 = 39,610). Although this reduced the sample size, it also allowed for a more conservative test of "true" moderates. The exclusion of moderates who leaned liberal or conservative did not have much effect on the model, with moderates still showing a positive relationship between education and environmental support.



		Regression 1 (Liberals as reference group)				Regression 2 (Conservatives as reference group)				Nagelkerke
		B (SE)	Odds ratio	*p* value	95% CI	B (SE)	Odds ratio	*p* value	95% CI	R^2
Step 1										.19
	Constant	-0.27 (0.03)	0.76	<.001		-1.19 (0.03)	0.30	<.001		
	Education	0.19 (0.01)	1.21	<.001	1.18 - 1.24	0.19 (0.01)	1.21	<.001	1.18 - 1.24	
	Ideology									
	Moderates compared to liberals	-0.92 (0.03)	0.40	<.001	0.38 -0.42					
	Conservatives compared to liberals	-2.15 (0.03)	0.12	<.001	0.11 - 0.13					
	Moderates compared to conservatives					0.92 (0.03)	2.52	<.001	2.39 - 2.67	
	Liberals compared to conservatives					1.22 (0.03)	0.29	<.001	0.28 - 0.31	
Step 2										.21
	Constant	-0.80 (0.05)	0.45	<.001		-1.20 (0.04)	0.30	<.001		
	Education	0.43 (0.02)	1.54	<.001	1.48 - 1.60	0.19 (0.02)	1.21	<.001	1.18 - 1.26	
	Ideology									
	Moderates compared to liberals	-0.41 (0.06)	0.67	<.001	0.59 - 0.76					
	Conservatives compared to liberals	-0.73 (0.08)	0.48	<.001	0.41 - 0.56					
	Moderates compared to conservatives					0.41 (0.07)	1.49	<.001	1.32 - 1.70	
	Liberals compared to conservatives					0.33 (0.07)	0.72	<.001	0.63 - 0.83	
	Education x Ideology									
	Moderates compared to liberals	-0.24 (0.03)	0.79	<.001	0.76 - 0.83					
	Conservatives compared to liberals	-0.71 (0.04)	0.49	<.001	0.46 - 0.53					
	Moderates compared to conservatives					0.24 (0.03)	1.27	<.001	1.20 - 1.34	
	Liberals compared to conservatives					0.47 (0.04)	0.62	<.001	0.58 - 0.67	

Supplementary model 2, continuous ideology and environmental support

In model 2, we mirrored the regression approach in the main manuscript, but treated ideology (seven point scale) and environmental support (five point scale) as continuous variables. As such, we used a linear regression model instead of a logistic regression model.



Note. Ideology measured on a seven-point continuous scale. Slopes plotted for liberals at a value of 1.5, moderates at a value of 4, and conservatives at a value of 6.5.

		b (SE)	*β*	*p* value	R^2
					.17
Step 1	Constant	3.99 (0.02)		<.001	
	Education	0.05 (0.01)	.04	<.001	
	Ideology	-0.28 (0.01)	-.40	<.001	
					.18
Step 2	Constant	3.38 (0.03)		<.001	
	Education	0.35 (0.02)	.28	<.001	
	Ideology	-0.13 (0.01)	-.19	<.001	
	Education x Ideology	-0.07 (0.01)	-.32	<.001	

Additionally, we have also run slight variations on the supplementary models presented above, such as including participants reporting slightly liberal or slightly conservative ideology with the rest of the liberals and conservatives instead of dropping their data, as well as a the different combinations of continuous and categorical treatments of the ideology and environmental support variables. Finally, all models were also run with the covariates used in the main manuscript (i.e., family income, age, gender). Across these models, no meaningful differences were found by the different treatment of variables or inclusion of covariates. For the sake of parsimony, we only included the two most informative supplementary models above.

Full coefficients from linear regression predicting beliefs in climate change

Linear regression coefficients predicting beliefs in climate change with covariates.

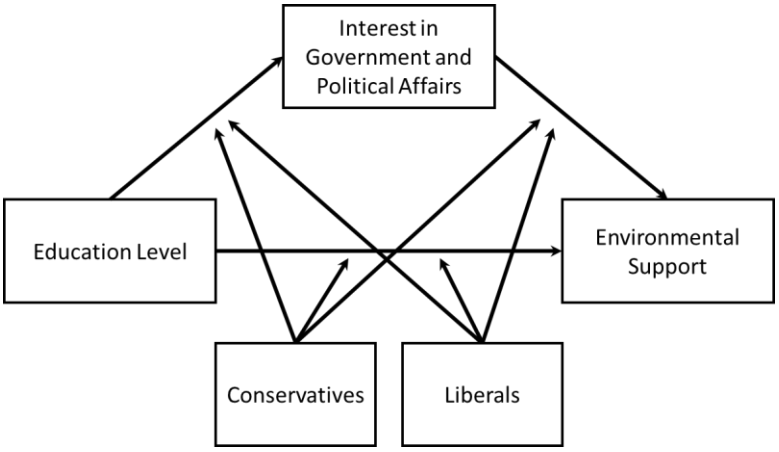
	B (SE)	*t* value	*p* value
Constant	3.80 (0.03)	113.46	<.001
Gender (males = 1, females = 2)	0.10 (0.01)	9.79	<.001
Age	0.00 (0.00)	0.37	.711
Family income	0.00 (0.00)	-1.25	.211
Race (below groups compared to Whites)			
Black	0.17 (0.03)	10.90	<.001
Hispanic	0.21 (0.02)	11.34	<.001
Asian	0.17 (0.03)	5.39	<.001
Native American	0.02 (0.06)	0.39	.697
Mixed	0.02 (0.04)	0.63	.529
Other	-0.07 (0.04)	-1.53	.126
Middle Eastern	-0.40 (0.11)	-3.66	<.001
Education	0.18 (0.01)	16.36	<.001
Ideology			
Moderates compared to liberals	-0.34 (0.03)	-11.38	<.001
Conservatives compared to liberals	-0.89 (0.03)	-26.81	<.001
Education x Ideology			
Moderates compared to liberals	-0.08 (0.01)	-6.36	<.001
Conservatives compared to liberals	-0.30 (0.01)	20.61	<.001

Note. Data from CCES, *n* = 44,315.

Mediated-moderation model for environmental support

The PROCESS procedure calculated two models, the first predicting the mediator (i.e., news interest), and a second model predicting the outcome of interest (i.e., environmental support or not). The graphical representation of the model and coefficients for both models are reported below, as well as the conditional direct and indirect effects of the moderators along with bootstrapped confidence intervals.

Mediated-moderation model



Note. Model 76 (Hayes, 2013). Ideology is represented by the two dummy coded variables of "conservatives" and "liberals." Moderates are the comparison group (i.e., "conservatives" and "liberals" are coded as 0). *n* = 50582.

Model 1: Linear regression with education, ideology, and their interactions predicting news interest

Model summary: $R^2 = .11$, F (5, 50576) = 1190.60, $p < .001$

	B (SE)	*t*	*p* value	95% CI
Intercept	2.34 (0.01)	181.53	< .001	2.32 – 2.37
Education	-0.24 (0.01)	-44.68	< .001	-0.25 – -0.23
Liberals	-0.20 (0.03)	-8.17	< .001	-0.25 – -0.15
Conservatives	-0.56 (0.02)	-27.11	< .001	-0.60 – -0.52
Education x Liberals	0.00 (0.01)	0.31	.758	-0.02 – 0.02
Education x Conservatives	0.08 (0.01)	8.88	< .001	0.06 – 0.09

Note. Liberals and conservatives each represent dummy coded variables with the reference group (i.e., 0) being moderates. *n* = 50582

Model 2: Logistic regression with education, ideology, news interest, and their interactions predicting environmental support

	B (SE)	*z*	*p* value	95% CI
Intercept	-0.91 (0.05)	-17.86	< .001	-1.01 – -0.81
Education	0.18 (0.02)	12.27	< .001	0.15 – 0.21
Liberals	1.11 (0.09)	12.33	< .001	0.93 – 1.29
News interest	-0.14 (0.02)	-8.37	< .001	-0.17 – -0.11
Conservatives	-1.75 (0.10)	-17.14	< .001	-1.95 – -1.55
Education x Liberals	0.15 (0.03)	5.66	< .001	0.09 – 1.29
Education x Conservatives	-0.32 (0.03)	-9.66	< .001	-0.38 – -0.25
News interest x Liberals	-0.31 (0.03)	-10.34	< .001	-0.37 – -0.25
News interest x Conservatives	0.62 (0.03)	18.63	< .001	0.55 – 0.68

Note. Liberals and conservatives each represent dummy coded variables with the reference group (i.e., 0) being moderates. n = 50582

Conditional effects

Conditional direct effects of education on environmental support at the different values of ideology. Note all mediation effects are reported (in the main text and supplemental materials) to three decimals given their small values and biased results from rounding to two decimal places

	Direct effect (SE)	*z*	*p* value	95% CI
Moderates	.179 (.014)	12.27	< .001	0.151 – 0.208
Liberals	.324 (.021)	15.48	< .001	0.283 – 0.365
Conservatives	-.134 (.029)	-4.64	< .001	-0.191 – -0.079

Conditional indirect effects of education on environmental support at the different values of ideology when including news interest (i.e., how much of the effect between education and environmental support is carried through the mediator, news interest, for each ideology)

	Indirect effect (SE)	95% CI
Moderates	.033 (.004)	0.026 – 0.042
Liberals	.108 (.007)	0.095 – 0.123
Conservatives	-.080 (.005)	-0.091 – -0.070

Note. Bias corrected confidence interval calculated with 20,000 bootstrap samples. PROCESS does not calculate *z* values for conditional indirect effects.

In the main text, percent of variance explained in the relationship was calculated by dividing the indirect effect by the total effect (indirect plus direct effect) for each ideology.

Mediated-moderation model for beliefs in climate change

The procedure was used for the second set of PROCESS models except that the dependent variable was beliefs in climate change, a continuous variable.

Model 1: Linear regression with education, ideology, and their interactions predicting news interest

Model summary: $R^2 = .11$, F (5, 50623) = 1190.01, $p < .001$

	B (SE)	*t*	*p* value	95% CI
Intercept	2.34 (0.01)	181.48	< .001	2.32 – 2.37
Education	-0.24 (0.01)	-44.62	< .001	-0.25 – -0.23
Liberals	-0.20 (0.03)	-8.07	< .001	-0.25 – -0.15
Conservatives	-0.55 (0.02)	-27.02	< .001	-0.59 – -0.51
Education x Liberals	0.00 (0.01)	0.25	.806	-0.02 – 0.02
Education x Conservatives	0.08 (0.01)	8.77	< .001	0.06 – 0.09

Note. Liberals and conservatives each represent dummy coded variables with the reference group (i.e., 0) being moderates. $n = 50629$

Model 2: Linear regression with education, ideology, news interest, and their interactions predicting belief in climate change

Model summary: $R^2 = .36$, F (8, 50620) = 3614.50, $p < .001$

	B (SE)	*t*	*p* value	95% CI
Intercept	3.67 (0.02)	162.11	< .001	-1.01 – -0.81
Education	0.08 (0.01)	12.04	< .001	0.15 – 0.21
Liberals	0.86 (0.04)	20.75	< .001	0.93 – 1.29
News interest	-0.03 (0.01)	-3.49	< .001	-0.17 – -0.11
Conservatives	-1.46 (0.03)	-42.04	< .001	-1.95 – -1.55
Education x Liberals	0.03 (0.01)	2.63	0.009	0.09 – 1.29
Education x Conservatives	-0.14 (0.01)	-13.50	< .001	-0.38 – -0.25
News interest x Liberals	-0.19 (0.01)	-14.37	< .001	-0.37 – -0.25
News interest x Conservatives	0.41 (0.01)	32.78	< .001	0.55 – 0.68

Note. Liberals and conservatives each represent dummy coded variables with the reference group (i.e., 0) being moderates. $n = 50629$

Conditional effects

Conditional direct effects of education on belief in climate change at the different values of ideology.

	Direct effect (SE)	*t*	*p* value	95% CI
Moderates	.079 (.007)	12.04	< .001	0.067 – 0.093
Liberals	.11 (.010)	11.53	< .001	0.092 – 0.129
Conservatives	-.060 (.008)	-7.56	< .001	-0.076 – -0.045

Conditional indirect effects of education on belief in climate change at the different values of ideology when including news interest (i.e., how much of the effect between education and belief in climate change is carried through the mediator, news interest, for each ideology)

	Indirect effect (SE)	95% CI
Moderates	.006 (.002)	0.002 – 0.010
Liberals	.053 (.003)	0.047 – 0.059
Conservatives	-.064 (.003)	-0.070 – -0.059

Note. Bias corrected confidence interval calculated with 20,000 bootstrap samples. PROCESS does not calculate *t* values for conditional indirect effects.

Exact survey items

2012 ANES time series items

Ideology (libpre_self)
"Where would you place YOURSELF on this scale, or haven't you thought much about this?"

1. Extremely liberal; 2. Liberal; 3. Slightly liberal; 4. Moderate; middle of the road; 5. Slightly conservative; 6. Conservative; 7. Extremely conservative; –2. haven't thought much about this; –8. don't know; –9. Refused

Education (dem_edu)
"What is the highest level of school you have completed of the highest degree you have received?"

1. Less than 1st grade; 2. 1st, 2nd, 3rd, or 4th grade; 3. 5th or 6th grade; 4. 7th or 8th grade; 5. 9th grade; 6. 10th grade; 7. 11th grade; 8. 12th grade no diploma; 9. High school gradute– high school diploma or equivalent (for example: GED); 10. Some college but no degree; 11. Associate degree in college – Occupational/vocational program; 12. Associate degree in college – Academic program; 13. Bachelor's degree (For example: BA, AB, BS); 14. Master's degree (For example: MA, MS, MEng, Med, MSW, MBA); 15. Professional School Degree (For example: MD, DDS, DVM, LLB, JD); 16. Doctorate degree (For example: PhD, EdD); 95. Other {SPECIFY}

Environmental spending (envjob_self)

"What about protecting the environment. Should federal spending on the environment be INCREASE, DECREASED, or kept ABOUT THE SAME/SAME?"

1. increased; 2. decreased; 3. kept about the same/same; –8. don't know; –9. refused

2012 CCES items

Ideology (CC334A)
"Thinking about politics these days, how would you describe your own political viewpoint?"

1. Very liberal; 2. Liberal; 3. Somewhat liberal; 4. Middle of the road; 5. Somewhat conservative; 6. Conservative; 7. Very conservative; 8. Not sure;

Education (educ)
"What is the highest level of education you have completed?"

1. No high school; 2. High school graduate; 3. Some college; 4. 2–year college degree; 5. 4–year college degree; 6. Post–graduate degree

Environmental–jobs tradeoff (CC325)
"Some people think it is important to protect the environment even if it costs some jobs or otherwise reduces our standard of living. Other people think that protecting the environment is not as important as maintaining jobs and our standard of living. Which is closer to the way you feel, or haven't you thought much about this?"

1. Much more important to protect environment even if lose jobs and lower standard of living; 2. Environment somewhat more important; 3. About the same; 4. Economy somewhat more important; 5. Much more important to protect jobs even if environment worse

Belief in climate change (CC321)
"From what you know about global climate change or global warming, which one of the following statements comes closest to your opinion?"

1. Global climate change has been established as a serious problem, and immediate action is necessary; 2 There is enough evidence that climate change is taking place and some action should be taken.; 3. We don't know enough about global climate change, and more research is necessary before we take any actions; 4. Concern about global climate change is exaggerated. No action is neccesary; 5. Global climate change is not occurring; this is not a real issue.

Interest in government and public affairs (newsint)

"Some people seem to follow what's going on in government and public affairs most of the time, whether there's an election going on or not. Others aren't that interested. Would you say you follow what's going on in government and public affairs…?"

1. "Hardly at all; 2. Only now and then; 3. Some of the time; 4. Most of the time; 5. Don't know

Age (birthyr)

Age was calculated from birth year.

"In what year were you born?"

Gender (gender)

"Are you male or female?"

1. Male; 2. Female

Race

"What racial or ethnic group best describes you?"

1. White; 2. Black; 3. Hispanic; 4. Asian; 5. Native American; 6. Mixed; 7. Other; 8. Middle Eastern

Family income (faminc)

"Thinking back over the last year, what was your family's annual income?"

1. Less than $10,000; 2. $10,000 – $19,999; 3. $20,000 – $ 29, 999; 4. $30,000 – $39, 999; 5. $40,000 – $49, 999; 6. $50,000 – $59, 999; 7. $60,000 – $69, 999; 8. $70,000 – $79, 999; 9. $80,000 – $99,999; 10. $100,000 – $119,999; 11. $120,000 – $149,999; 12. $150,000 – $199,999; 13. $200,000 – $249,999; 14. $250,000 – $349,999; 15. $350,000 – $499,999; 16. $500,000 or more; 97. Prefer not to say