Climate change and the shadow of the future

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Abstract

Young people are expected to bear the most severe consequences of climate change and play a central role in climate activism. Yet political science has paid limited theoretical attention to age as a variable of interest in climate change opinion. This paper revisits the role of age in shaping climate attitudes and shows that it is a stronger and more consistent predictor than the existing literature suggests. Using historical time-series data from the General Social Survey (1973–2024), cross-sections from the Climate Change in the American Mind survey (2008–2024), and panel data from the ANES (1992–1996 and 2016–2024), we find that climate concern declines as individuals age, independent of cohort and period effects. Age remains predictive even after accounting for partisanship and ideology, and is more strongly associated with climate change attitudes than with other polarized political issues. These descriptive patterns are consistent with a rational discounting framework, the "shadow of the future", in which the future costs of climate change become less salient as individuals age.

Keywords: Climate change, public opinion, generational politics
Word Count: 6882

Introduction

Young people have become central figures in contemporary climate politics. Politicians, journalists, and commentators often portray younger generations as especially concerned about climate change, given that they are expected to bear its health, economic, and social consequences disproportionately (e.g., Tyson et al., 2021). Youth activists echo this narrative, describing themselves as "agents of change" (Han and Ahn, 2020) and framing climate inaction as a generational betrayal. Nowhere is this more visible than in the rhetoric of figures like Greta Thunberg, who shamed world leaders that "the eyes of all future generations are upon you. And if you choose to fail us... We will never forgive you." In these accounts, the fate of the planet is directly linked to the engagement and actions of the youth.

Despite this prominence in public discourse, political scientists have devoted relatively little attention to age as a substantive predictor of climate attitudes. In most studies, age appears only as a control variable, included to strengthen a conditional independence claim or improve estimate precision, and is rarely engaged with as a theoretically meaningful construct.[1] More precisely, none of the articles examining climate attitudes published in the top three political science journals (APSR, AJPS, and JOP) over the past decade engage in a substantive theoretical discussion of age, even though approximately 70 percent include it as a control variable.[2]

[1]This pattern is not unique to political science (e.g., Whitmarsh, 2011; McCright et al., 2014; Beiser-McGrath and Huber, 2018). In a review of the determinants of climate concern in environmental psychology, (Van der Linden, 2017, p.19) argues that socio-demographic variables are often included in models of risk perception without "much theorizing as to their conceptual relevance".

[2]We conducted a literature review by searching the terms "environment," "climate," and "global warming" in the top three political science journals – APSR, AJPS, and JOP. This search yielded ten articles focused on climate change public opinion that rely on individual-level data or aggregated measures derived from individual-level data (Bergquist and Warshaw, 2019; Friedman, 2019; Hazlett and Mildenberger, 2020; Arias and Blair, 2022; Gaikwad et al., 2022; Bush and Clayton, 2023; Arias and Blair, 2024; Hsiao and Kuipers, 2025; Pereira et al., 2025).

This omission is no doubt partly the result of the dominant influence of partisanship and political ideology in shaping Americans' climate beliefs (e.g., Egan and Mullin, 2017, p.215)[3]. If climate change is a politicized issue (at least in western democracies), then why bother identifying second-order predictors that only explain a fraction of the variation in attitudes that are explained by partisanship?

In this Research Note, we revisit the role of age and show that it is a far more powerful predictor of climate concern than the existing literature suggests. In fact, age exhibits greater predictive importance than other commonly emphasized demographics, such as gender (e.g., Bush and Clayton, 2023; Egan and Mullin, 2017), and remains strongly associated with climate concern even after accounting for partisanship, and geographic exposure to climate and weather events (e.g., Howe et al., 2019; Gazmararian and Milner, 2025). Although the influence of age has declined relative to partisanship over time, it continues to rank as the second most important predictor of climate beliefs. Furthermore, we show that older Americans are less worried about climate change regardless of when they were born or when they were surveyed. The evidence points to a life-cycle pattern in which climate concern declines as individuals age. This matters descriptively because it means age predicts attitude change, unlike partisanship which merely structures group-level compositional differences.

We reach these conclusions using a combination of historical time-series cross-sectional survey data dating back to 1973, and recent panel surveys that track multiple cohorts over time, covering more than 64,000 citizens. After documenting the empirical pattern, we discuss and synthesize several extant theories connecting age with attitudes from across the fields of psychology, economics, and political science. The intuitive interpretation, consistent with popular narratives and psychological mechanisms, is that age shapes individuals' perceived "shadow of the future." But this intuition ignores a range of competing explanations and confounders, such as an individual's media consumption, the over-time shift in polit-

[3]For a similar conclusion cross-nationally, see (Hornsey et al., 2016)

ical ideology, and cohort effects that might create a spurious association between age and attitudes. Furthermore, theories of life-cycle variation in risk appetites found in psychology and economics research (Trostel and Taylor, 2001; Block et al., 1998), as well as sociological theories of intergenerational "loyalty" (Vallée-Dubois, 2023; Berkman and Plutzer, 2004), complicate the expectation that age and concern should be negatively correlated. Nevertheless, our conclusion is that the descriptive evidence is most consistent with a shadow of the future model of individual utility in which, as we age, the future costs of climate change grow less relevant.

Our results underscore the importance of taking age seriously in the study of climate change attitudes, especially as the youngest generations of Americans will live to see the worst of the projected consequences. Our descriptive approach aims to bring age back into the conversation of climate attitudes, and lay the groundwork for future research.

Descriptive Evidence

We rely on two observational datasets, each of which offsets the limitations of the other. The first, the General Social Survey (GSS) (N = 38,741), dates back to 1973. Fielded by the National Opinion Research Center (NORC) at the University of Chicago, the GSS uses a multistage area-probability cluster design to yield nationwide representative probability samples. Responses were historically collected via face-to-face interviews, although more recent waves have shifted to computer-assisted personal interviewing (2002) and to online and telephone interviews (2021).

Our second individual-level dataset (N = 30,136) comes from the Climate Change in the American Mind survey (CCAM), a nationally representative survey of American adults conducted twice a year by the Yale Program on Climate Change Communication and the Center for Climate Change Communication at George Mason University, dating back to 2008.

Samples were collected from the online Ipsos KnowledgePanel, which uses a probability-proportional-to-size sampling method. Respondents completed the questionnaires using a web-based platform.

The primary advantage of the GSS relative to CCAM is its long time span, which allows us to estimate the relationship between age and climate attitudes, generational cohorts and attitudes, and secular trends in attitudes. Its main limitation, however, is that it includes a single question about the environment asked consistently over time: whether "we" are spending too much, too little, or about the right amount on improving and protecting the environment.[4]

In contrast, the CCAM survey includes a rich battery of questions designed to capture public opinion on climate change, but it covers a substantially shorter time period.[5] In particular, we use the question *'How worried are you about global warming?*, measured on a 4-point scale, to assess climate change concern. We dichotomized this variable, so our concern outcome variable is 1 for options 4 ("Very worried") and 3 ("Somewhat worried"), and 0 otherwise ("Not at all worried" and "Not very worried").[6] We also use the following risk perception questions as dependent variables: *How much do you think global warming will harm: you personally/people in the US/people in developing countries/plant and animal species/future generations?"*, measured on a 4-point scale, and *When do you think global warming will start to harm people in the United States?"*, measured on a 6-point scale.

Our main explanatory variable is age, treated as a continuous variable. We supplement the analysis using a categorical variable of generations (or birth cohorts), which includes the Lost Generation (born before 1901), the Greatest Generation (1902-1927), the Silent Generation (1928-1945), Boomers (1946-1964), Gen X (1965-1980), Millennials (1981-1996), and

[4]The question asked: "Are we spending too much, too little, or about the right amount on improving and protecting the environment."

[5]We aggregate these waves to the year for expositional simplicity.

[6]The results that follow replicate if we use the original four-point scale.

Gen Z (1997-2011). We visualize the distribution of generation by year, and the distribution of generation by age, in Figure 1.

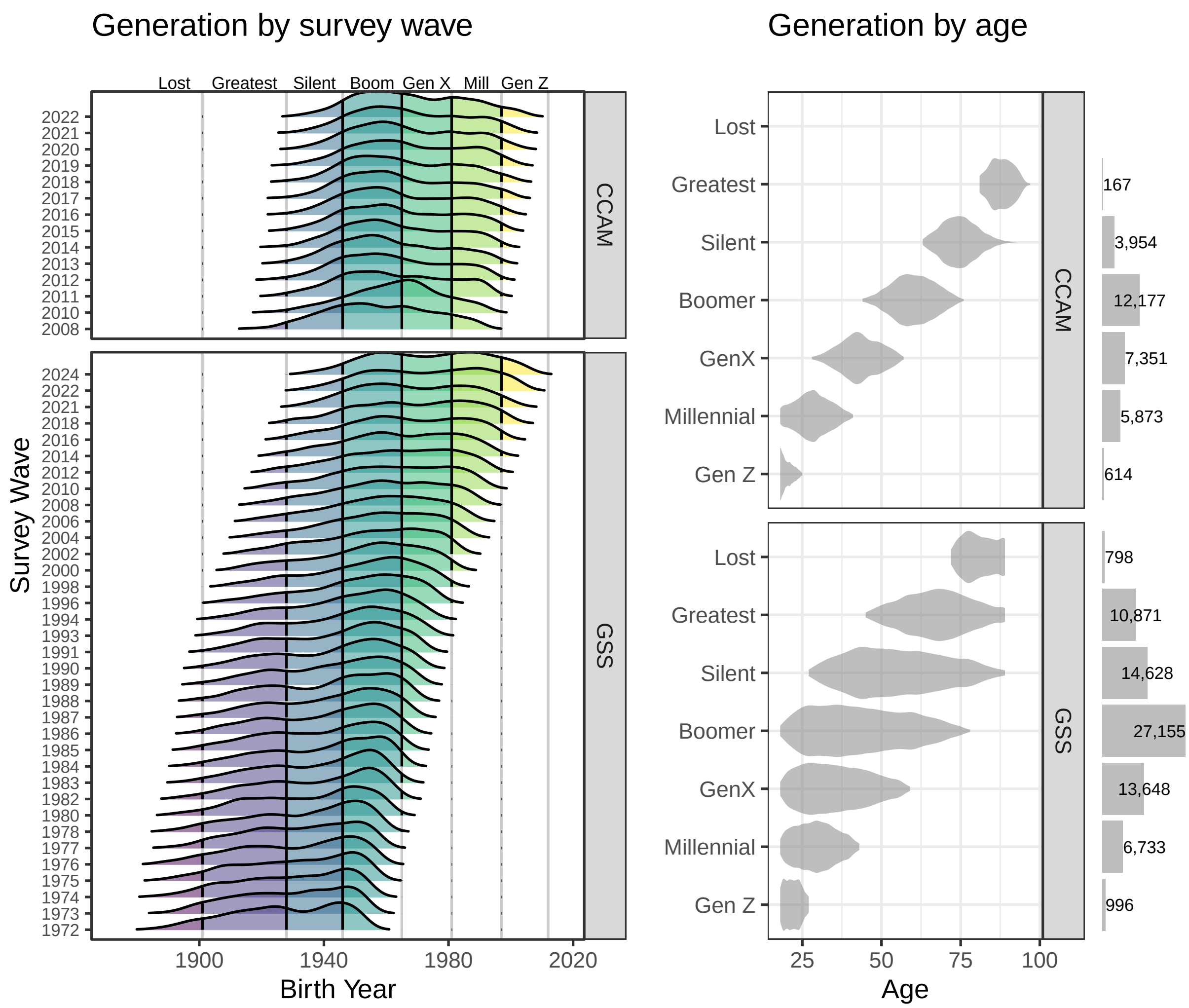

Figure 1: Left panel: Distribution of respondents by birth year (x-axis), generation (color) and survey wave (y-axis). Right panel: Distribution of respondents by age (x-axis) and generation (y-axis).

How do these three related measures of time (age, generation, and year) predict variation in the public's concern about the environment? We begin our analysis with purely descriptive visualizations of our data, exploring the relationship between concern (y-axes) and either year (left columns) or age (right columns), disaggregating by generation (colors and shapes). We further measure concern either in raw proportions (top rows) and demeaned by year (bottom rows). While the patterns are more mixed in the CCAM data (top group of plots), the GSS highlights a simple story about the relationship between concern, generation, age, and time: older individuals are less concerned about climate change. This conclusion is consistent across generations, excepting Gen Z for which we have relatively sparse evidence, and explains the generational gaps in concern we observe within years.

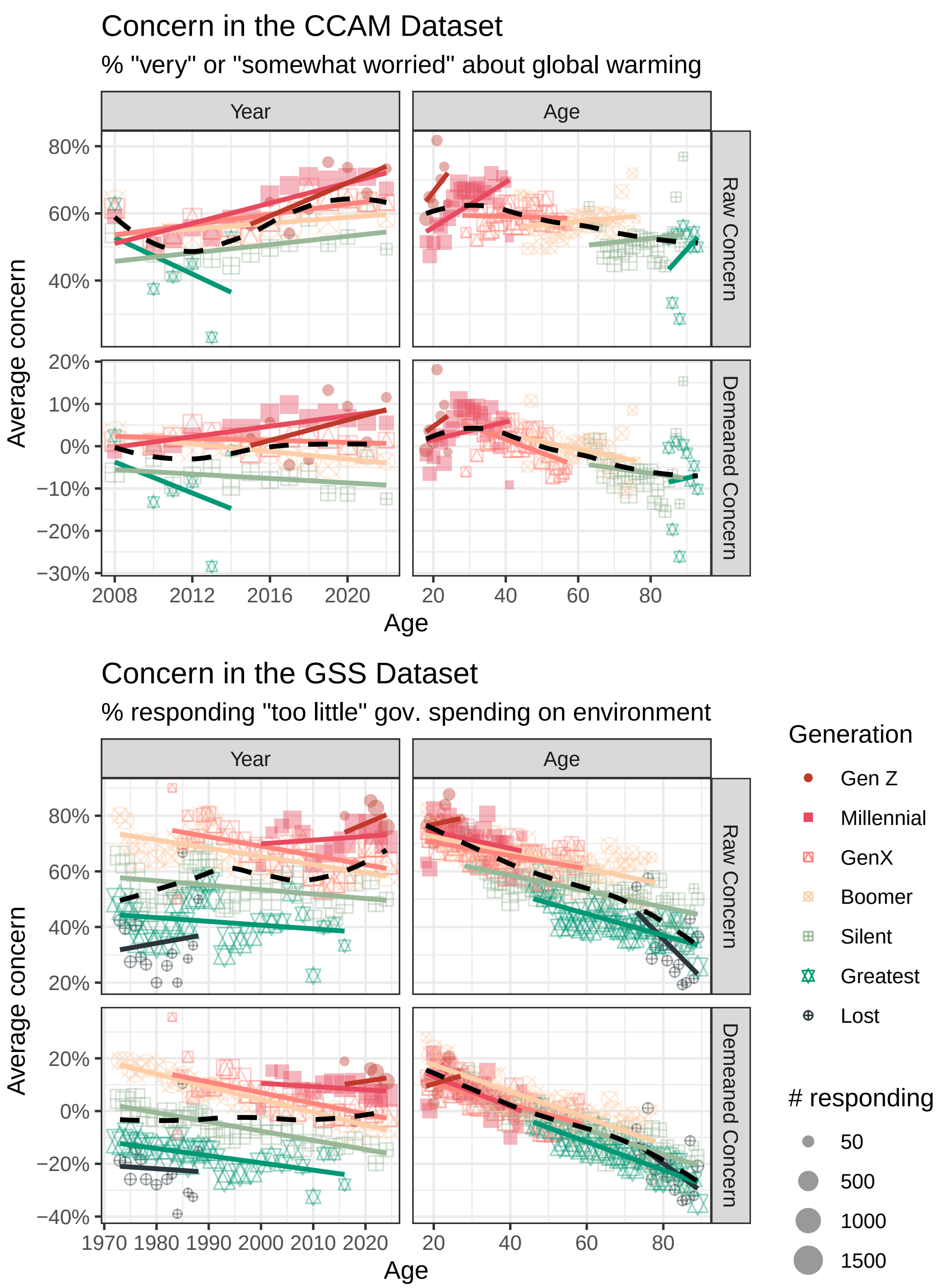

Figure 2: Descriptive visualizations of the relationship between generation (colors & shapes) and concern (y-axes) by year (left column, x-axes) and age (right column, x-axes). Top rows display raw data, bottom rows demean concern by year. Top facet uses data from the Climate Change in the American Mind (CCAM) survey. Bottom facet uses data from the General Social Survey (GSS).

Robustness of the Age–Concern Relationship

The previous section suggested an association between age and concern about climate change. However, this relationship may be sensitive to model specification and measurement choices. We therefore examine its robustness through a series of additional analyses. While these analyses do not aim to resolve questions of causality, they provide stronger evidence for the reliability of this descriptive pattern.

Spurious and Alternative Explanations

First, age may be correlated with some true causal factor of the public's concern about climate change, a criticism known as "omitted variable bias" in statistics. For example, it might not be age per se, but rather that age is capturing systematic differences in informational environments. In other words, younger and older people are exposed to distinct forms of political communication, social networks, and calls for climate activism. This explanation is especially relevant for more recent data, as climate activism has taken on a decidedly youthful profile, with the expansion of youth-led climate organizations and the prominence of international figures such as Greta Thunberg. Alternatively, age is correlated with partisanship and ideology, and as conventional wisdom in the climate public opinion literature in the U.S. holds. Or perhaps the omitted variables are other demographic factors such as education, marital status, or income.

We start by running a battery of ordinary least squares regressions in which we control for these possible omitted variables, denoted:

$$\text{worry}_{i,r,t} = \alpha_r + \delta_t + \beta_1 \text{age}_{i,t} + \gamma \mathbf{X}_{i,t} + \varepsilon_{i,t,r} \tag{1}$$

where $\mathbf{X}$ is a matrix of individual covariates, including gender, race, marital status, educational attainment, employment status, income, any children in the household (both datasets); partisanship and ideology (GSS) or party-by-ideology (CCAM); α_r are fixed effects for Census region of residence (both datasets), and δ_t are fixed effects for year (both datasets).

We augment the specification by also controlling for self-reported media exposure to coverage of global warming which was asked in the CCAM data [7]. We caution that several of these covariates are potentially themselves endogenous to age (i.e., growing older *causes* individuals to consume less media covering global warming, or *causes* individuals to adopt more conservative ideology), which can introduce post-treatment bias. For comparison, we plot the $\hat{\beta}$ coefficients with and without these controls in Figure 3, in which the x-axes represent the relationship between a standard deviation difference in age (approximately 17 in both datasets) and the responses to questions about concern about global warming (CCAM data, left column) and government spending on the environment (GSS data, right column). We display these relationships in terms of the raw responses recorded ("Categorical" row on the bottom); a dichotomized version of the same responses ("Binary" row at the top); or a continuous version of the same responses ("Continuous" row in the middle). As illustrated, the association between an individual's age and their climate attitudes is robust to the inclusion of an exhaustive set of controls, suggesting that growing older reduces one's concern about, and prioritization of, the environment independently of the links between one's age and their partisanship, education, family structure, or self-reported media environments.

A second, related critique is that younger people are more liberal, and that concern about climate change is itself a liberal political position. From this perspective, media environments are structured along a liberal–conservative spectrum, with climate change coverage concentrated in outlets more commonly consumed by younger, liberal audiences. Put differently, it is not climate change *per se*, but rather a bundle of liberal issues that

[7]The question asked: "About how often do you hear about global warming in the media (TV, movies, radio, newspapers/news websites, magazines, etc.)?" Response options are: 1) Never 2) Once a year or less often 3) Several times a year 4) At least once a month 5) At least once a week

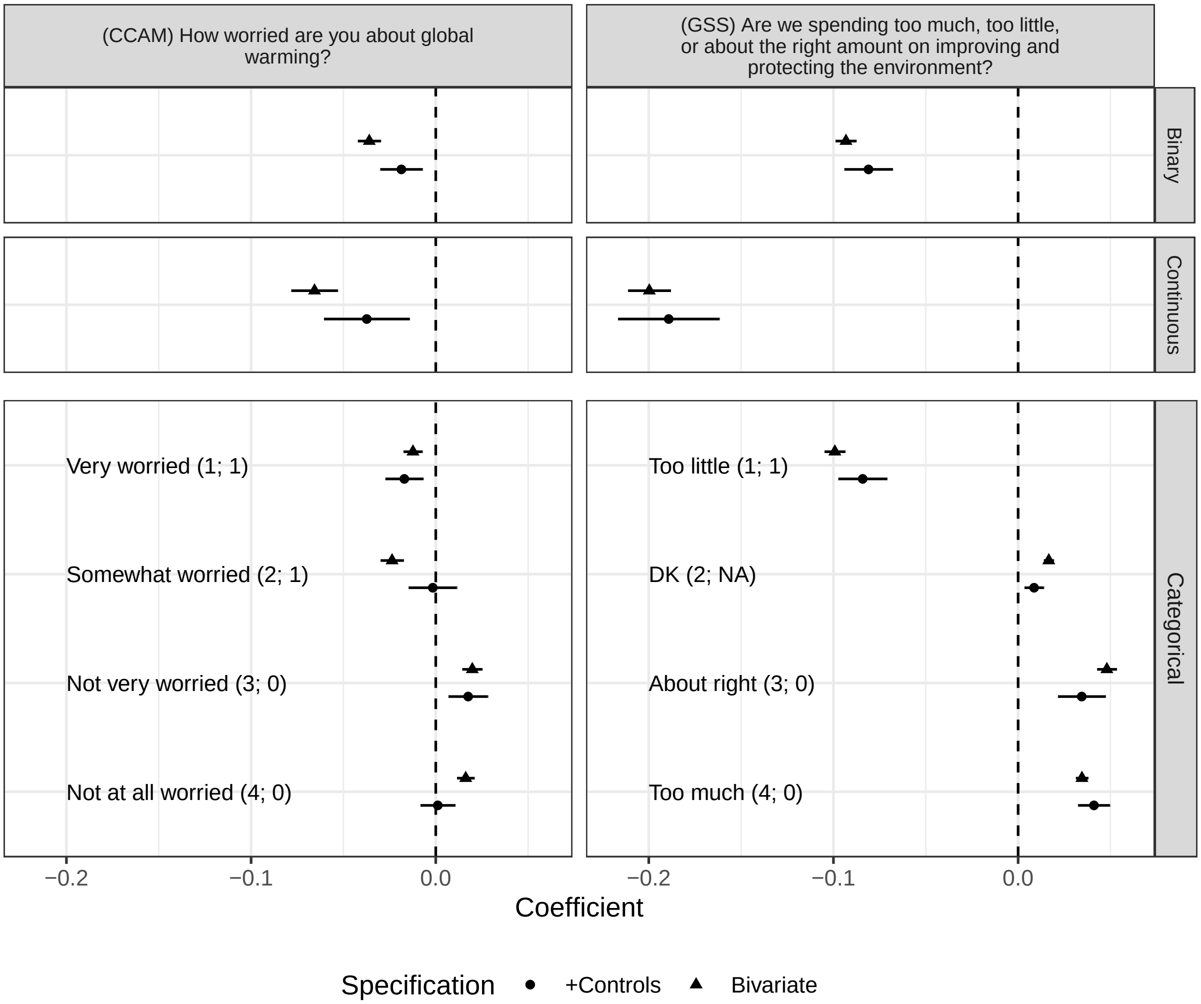

Figure 3: Descriptive regressions of age on responses to questions capturing concern about global warming (CCAM, left column) or priorities on government spending on the environment (GSS, right column). Top row binarizes responses such that 1 indicates more concern about the environment (see second number in bottom row's labels for coding decisions). Middle row uses continuous versions of the Likert scale responses (see first number in bottom row's labels for values). See Tables B.5 (CCAM data) and B.6 (GSS data) in the Supplementary Appendix for the corresponding regressions. Bottom row displays results for raw responses. Triangles indicate coefficients estimated from bivariate regression of concern on age. Circles indicate coefficients estimated from specification including all available controls (gender, martial status, race, educational attainment, employment, income, whether respondent has any children in household, year, census region, partisanship and ideology (GSS), party-by-ideology (CCAM), and media coverage of global warming (CCAM). See Tables B.7 (CCAM data) and B.8 (GSS data) in the Supplementary Appendix for these regressions.

change over the course of individuals' life as they grow more conservative with age. [8]

We reuse the linear probability model described above to estimate the correlation between age and a battery of questions on spending priorities that are consistently asked in the GSS data, finding that the relationship between attitudes about the environment and age is the largest out of 15 total topics when estimated one-by-one (left panel of Figure 4). We further confirm that these coefficients are themselves significantly different by stacking the data in long format, such that each row is a respondent-by-question, allowing us to estimate an interacted specification with respondent-year fixed effects, obviating the need for controls. Formally,

$$y_{it} = \alpha_{it} + \beta_1 \text{age}_{it} + \beta_2 \text{issue} + \beta_3 \text{age}_{it} * \text{issue} + \varepsilon_{it} \tag{2}$$

We plot the $\hat{\beta}_3$ estimates from this stacked regression in the right panel of Figure 4, confirming that the relationship between an individual's age and their concerns about the environment are significantly stronger than the relationship between age and all of the other outcomes, suggesting that attitudes on the environment are not merely part of a broader liberal bundle of issues that are correlated with age.

Third, it may be that age matters, but it is so marginal that it needn't be the focus of research on the determinants of climate attitudes. We calculate the "variable importance" for each individual-level predictor via a permutation test using a random forest (Nicodemus et al., 2010). The variable importance statistic measures how much worse a random forest algorithm performs at predicting an individual's attitude when the observed relationship between the attitude and a given predictor is randomly reshuffled (permuted), breaking the relationship. As illustrated in the left column of Figure 5, not knowing an individual's partisanship or ideology severely diminishes the model's performance when it comes to predicting

[8] However, the notion that individuals become more conservative as they age is more a matter of folk wisdom than a core empirical insight in the field, receiving only partial support; see Peterson et al. (2020).

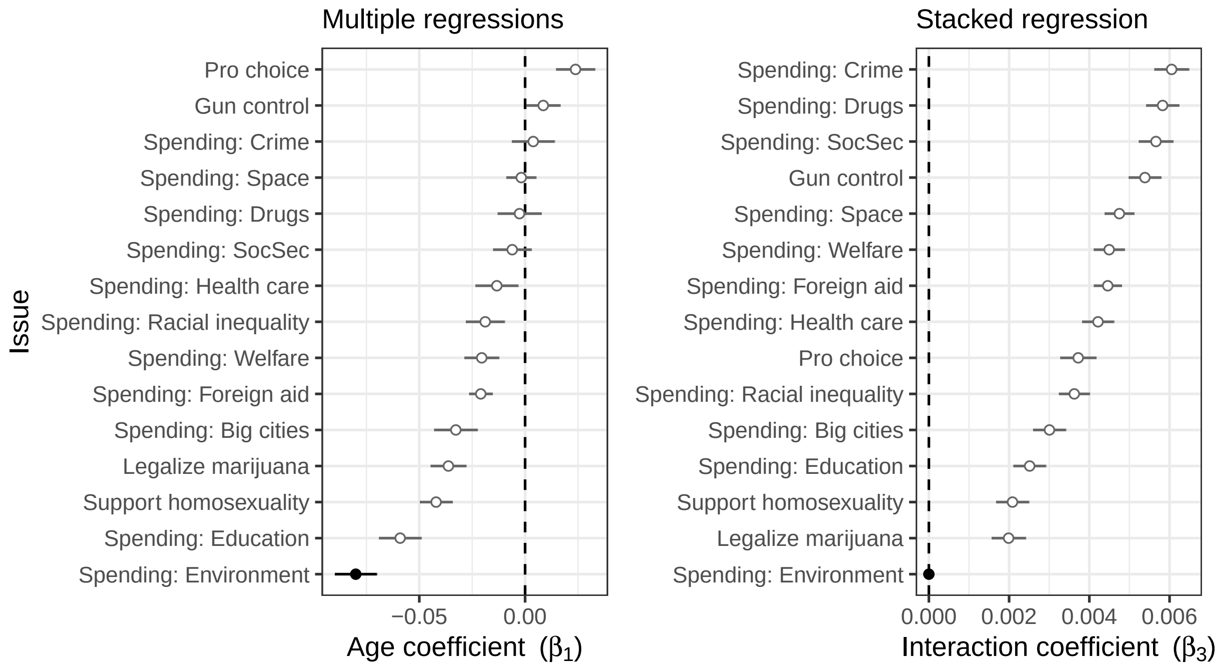

Figure 4: *Left panel:* $\hat{\beta}_1$ coefficient estimates (x-axis) connecting age with liberal position on 15 political issues (y-axis), including the environment, highlighted in black. Negative values indicate older respondents adopt less liberal positions. Full regression results are reported in Tables C.9 and C.10 in the Supplementary Appendix. *Right panel:* $\hat{\beta}_3$ interaction term estimates (x-axis) comparing marginal effect of age on liberal position across 15 political issues (y-axis). Positive values indicate that the negative relationship between age and liberal position taking is attenuated compared to relationship between age and liberal position on the environment. Full regression results are reported in Table C.11 in the Supplementary Appendix.

their concern about the environment. But second in the list of predictors, and surpassing all other covariates, is their age. In contrast, across other liberal topics age is substantially less prognostic, reinforcing the conclusion that it is more than just a proxy for a broader bundle of liberal positions taken by young people. The right column of Figure 5 comes to broadly similar conclusions when using the CCAM data, although here the predictive power of partisanship dominates climate change attitudes.

The contrast in variable importance between the two datasets suggests two (potentially complementary) explanations. First, the CCAM data is more recent, with collection spanning 2008 to 2024, in contrast to the GSS data which dates back to 1973. If the cli-

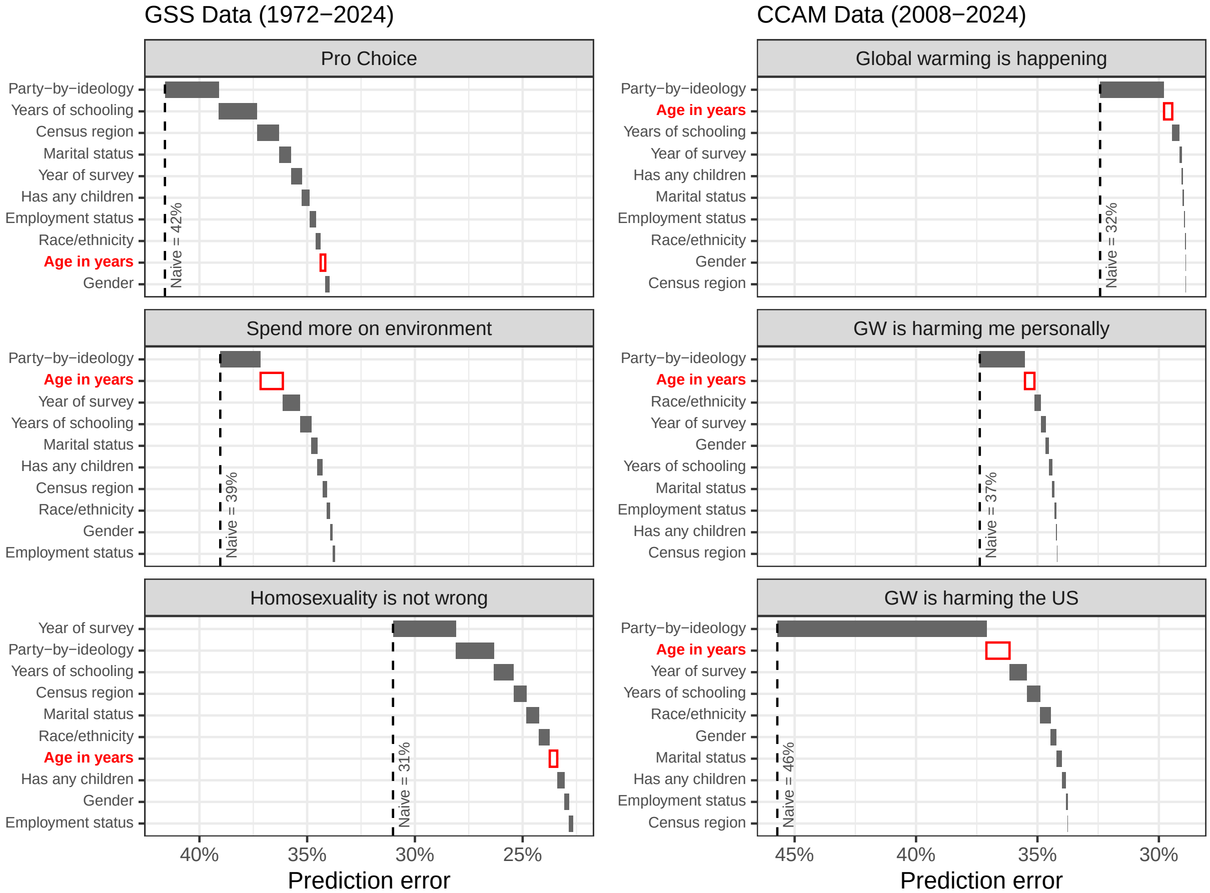

Figure 5: Reductions in prediction error (x-axes) from a random forest predicting individual responses to four liberal-coded survey questions (panels) associated with covariates (y-axes).

mate is only recently politicized, this might explain the dramatically larger importance for partisanship and ideology in the CCAM data. Second, the CCAM data is explicitly about the politics of climate change, whereas the GSS is – as its name suggests – a general social survey. As discussed in Zilinsky and Bisbee (2025) (see also Schiff et al. (2022); Blackwell et al. (2025)), issues can appear more politicized if asked on a survey that is more explicitly political in nature. We explore the overtime patterns in the GSS data in Figure 6, revealing that 1) national concern with the environment has ebbed and flowed, ranging between 50% and more than 70% of respondents indicating that the government was spending “too little” on the environment (top panel); 2) the relationship between concern and age has always remained negative, meaning that younger people have always expressed more concern (middle panel); and 3) the relative importance of age (red) and partisanship (blue) swapped positions in 2000 (bottom panel). While age remains the second-most important predictor of attitudes post-2000, it is increasingly dwarfed by political affiliations, especially since 2020. In sum then, while the preponderant explanatory power of partisanship in the CCAM data might be partially due to survey design effects, the overtime evidence in the GSS confirms that there is also a growing politicization of the topic.

Finally, we supplement our analyses with three additional panel datasets, in which the same individuals are surveyed over a period of time. Specifically we rely on two ANES panels from 1992 to 1996 (surveyed every two years), and 2016 to 2024 (surveyed every four years), in which a question similar to our GSS question was asked, namely: "Should federal spending on [1992-1996: improving and protecting the environment; 2016-2024: protecting the environment] be increased, decreased, or stay the same?" with options "Decreased", "Kept the same", or "Increased". The challenge with these data is that it is difficult to separate the effect of growing older from time trends, especially given the relatively short duration of the panels. Put differently, a straightforward regression of attitude on age with respondent fixed effects will conflate the association between attitude and age with the association between attitude and time.

With this limitation in mind, we present the results of three related specifications. First, we predict concern as a function of the respondent's age and their lagged response (i.e., their concern in the previous wave) along with respondent fixed effects. Second, we demean concern by year and predict these values as a function of respondents' age and their fixed effects. Third, we predict the demeaned concern by its lagged value, the respondent's age, and respondent fixed effects. As illustrated in Table 1, there is some evidence of individuals expressing less concern about the environment as they grow older, especially in the 1992-1996 panel data, although these results are not robust to the year-demeaned transformation of the outcome. Nevertheless, the negative coefficients are consistent with all preceding evidence

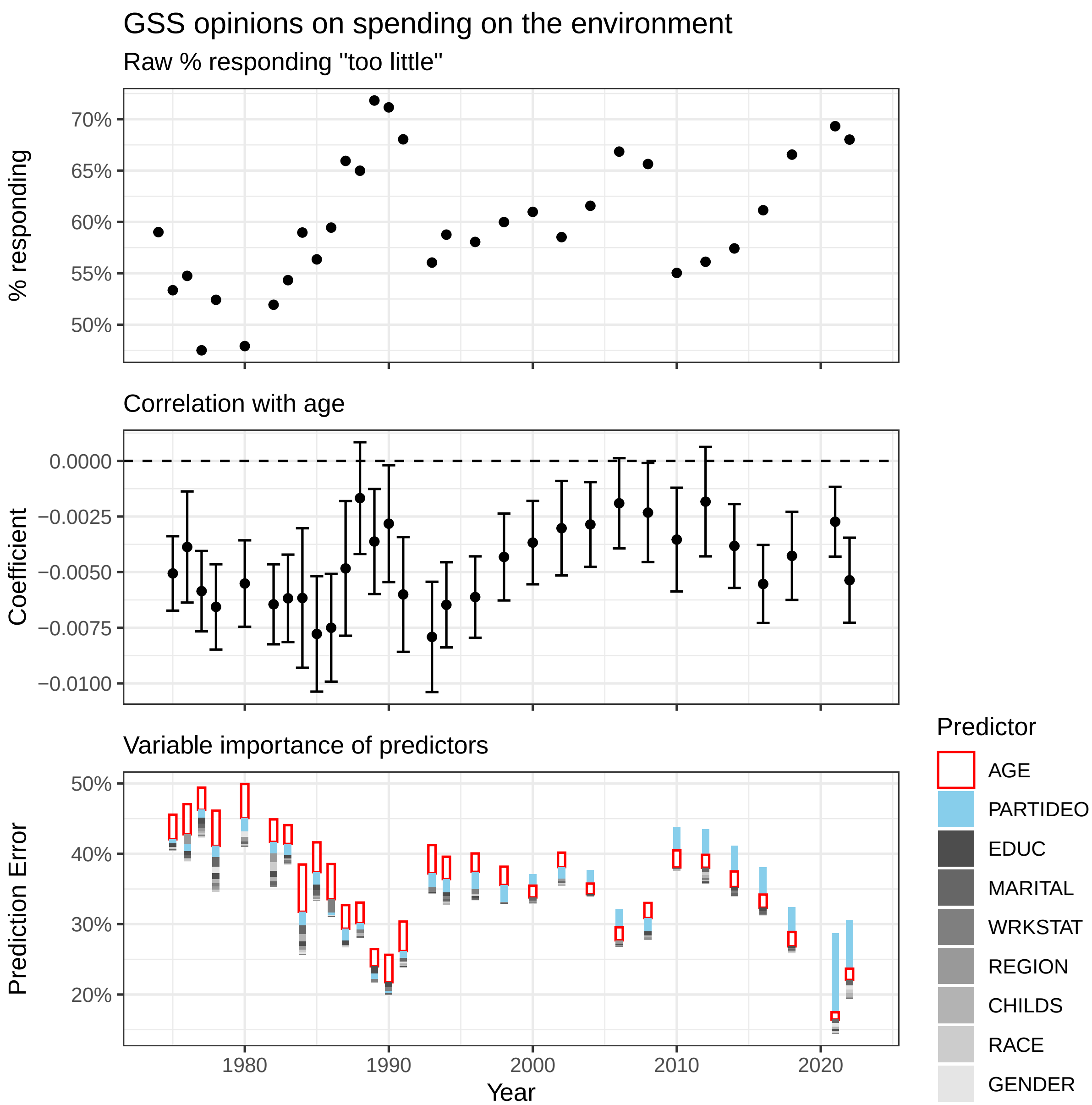

Figure 6: Overtime variation in attitudes on the environment in the GSS data, broken out by raw proportion indicating that the government was spending “too little” on improving and protecting the environment (top panel); the correlation between this measure and the respondent’s age, controlling for the full set of covariates (middle panel); and the improvement in random forest classification error associated with each covariate (bottom panel). Predictors in bottom panel’s are ordered by importance from most important at the top to least important at the bottom, aggregating over all years. Full regression results for the middle panel are reported in Table D.12 in the Supplementary Appendix.

suggesting that growing older is associated with less concern about the environment.

Panel	1992-1996			2016-2024		
Measure	Raw concern	Year-demeaned		Raw concern	Year-demeaned	
Model:	(1)	(2)	(3)	(4)	(5)	(6)
Variables						
Age	-0.062***	-0.012**	-0.011	-0.009***	-3.62×10^{-5}	-0.0002
	(0.010)	(0.005)	(0.009)	(0.002)	(0.001)	(0.002)
Lagged concern	-0.462***			-0.439***		
	(0.036)			(0.022)		
ylag			-0.462***			-0.439***
			(0.036)			(0.022)
Fixed-effects						
Respondent	Yes	Yes	Yes	Yes	Yes	Yes
Fit statistics						
Observations	1,861	3,566	1,861	4,846	7,605	4,846
R^2	0.870	0.696	0.870	0.846	0.672	0.846
Within R^2	0.243	0.003	0.244	0.226	1.53×10^{-7}	0.215

Clustered (Respondent) standard-errors in parentheses
*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

Table 1: Panel data regression results. Positive values indicate increase in concern (increasing federal spending on protecting the environment) associated with each year increase in age. Models (1) and (4) predict raw concern as a function of lagged values of the outcome, respondent age at time of survey, and respondent fixed effects. Models (2) and (5) predict year-demeaned concern as a function of age and respondent fixed effects. Models (3) and (6) predicted year-demeaned concern as a function of lagged values of year-demeaned concern, respondent age at time of survey, and respondent fixed effects.

Theoretical Expectations

The empirical evidence indicates that 1) growing older is associated with diminished concern about the environment, 2) this association is not merely a function of other individual-level characteristics associated with age, and 3) this association is not merely a reflection of a broader shift in political ideology associated with growing older. Why then might we observe such a relationship?

The simplest story is that young people are more worried because they are more exposed to climate change's negative consequences. Indeed, the logic of this explanation is espoused by climate activists themselves, who motivate activism on the basis of unequal distribution of the costs by geography, socioeconomic status, and – crucially – age.[9] To formalize this intuition we build on a standard formal model of a utility function with discounting.

$$u(\mathbf{x}) = \sum_{t}^{T} \delta^{t-1} u(x_t) \tag{3}$$

where x_t is pollution (or some other climate-related cost) and $u(x_t)$ captures the disutility associated with consuming this cost. The discount factor δ is between zero and one, reflecting the assumption that individuals are more sensitive to more temporally proximate costs. For a given δ, it is straightforward to see that the disutility is increasing in T, or the total number of periods into the future we aggregate. For two individuals i and j, we can treat all elements of the above function as constant with the exception of T. $T_i < T_j$ is equivalent to saying that the number of periods over which we aggregate for i is less than that for j or, substantively, that i's remaining years are less than j. Thus the simple discounting model generates the prediction that i will experience less disutility from climate change than j solely as a function of their life expectancy, as long as $\delta > 0$.

Nevertheless, this straightforward intuition can be complicated in three ways, potentially even reversing the empirical expectation that younger individuals should rationally be more concerned about climate change than older individuals. First, the endogeneity of one's discount factor to their age (denoted with δ_i) is a well-studied question in psychology and behavioral economics (see Trostel and Taylor (2001); Carstensen (2006); Sozou and Seymour (2003); Block et al. (1998); Verhaeghen and Cerella (2002), and Seaman et al. (2022) for a meta-analysis). Theoretically, there are a few justifications for why younger people might

[9] `https://web.archive.org/web/20240613055205; https://www.climatecentral.org/climate-matters/warming-across-generations`

discount more heavily (i.e., have lower values of δ). For example, less experience may render the world more uncertain and risky, leading younger individuals to discount future benefits more strongly because they are less confident that their long-term investments will be realized (Read and Read, 2004). Relatedly, some scholars attribute higher discounting among younger individuals to greater impulsivity, such that immediate rewards are weighted more heavily than long-term outcomes (Green et al., 1996).

Second, if we also endogenize the utility function itself to age – i.e., to capture the notion that our ability to enjoy things declines as we age, due to waning physical ability, denoted with $u_i(\cdot)$ – then the discount factor should also be greater for younger than for older people (Trostel and Taylor, 2001). Alternatively, one might imagine that the cost x is higher for older people, meaning that the costs of climate change carry greater disutility. This expectation is supported by ample medical evidence suggesting that older individuals are currently at greater risk of adverse climate events, such as pollution, heatwaves, and cold snaps (Tham and Schikowski, 2021; Figueiredo et al., 2024). Although these adjustments work in opposite directions at the level of the utility function, they both yield the same prediction: older individuals should be more threatened, or perceive climate change as more threatening, than younger individuals.

We explore this possibility in Figure 7, which predicts the association between age and responses to the amount of *harm* an individual expects global warming to carry for different populations. As illustrated, there is little support for either of these alternative theoretical accounts. Although perceptions of harm to future generations and to people in the United States exhibit U-shaped relationships with age, perceptions of personal harm decline steadily with age. If either the discount factors or the utility functions in the above model are endogenous to age, the U-shaped relationship should be most apparent for the personal harm variable.

What then might explain the higher perception of global warming threat to Ameri-

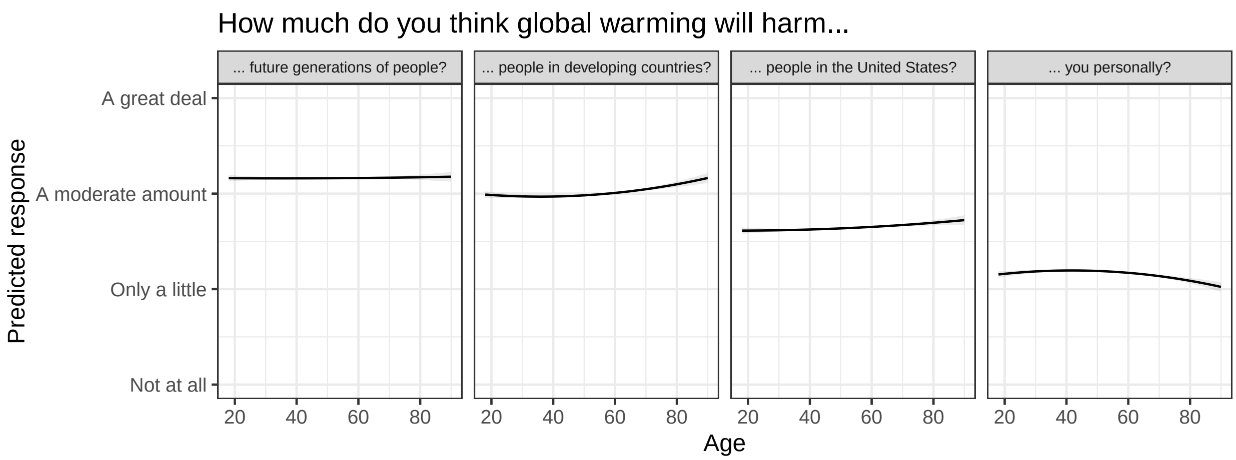

Figure 7: Predicted perceived harm (y-axes) toward different groups (panels) by age (x-axis, quadratic), controlling for full battery of individual and contextual covariates, using the CCAM data. Full regression results are reported in Table E.13 in the Supplementary Appendix.

cans or future generations, specifically, among older respondents? The preceding extensions allow the three parameters in the parsimonious model to be endogenous to an individual's age: $u_i(\cdot)$, δ_i, and T_i. However, this model misses a relevant discussion of sociotropic utility. More specifically, work on preferences on government spending suggests that cohorts become increasingly supportive of certain government spending areas, such as publicly funded education, as they grow older (Vallée-Dubois, 2023; Berkman and Plutzer, 2004; Plutzer and Berkman, 2005), directly contradicting the rational self-interest expectation. This set of studies refers to this behavior as "loyalty" to one's community, which we incorporate into our formal model as an additive term λ, multiplied by the net utility of all other individuals. Formally, this recasts our framework as a weighted sum:

$$\lambda * u_i(\mathbf{x}) + (1 - \lambda) * \sum_{j \in \neg i} u_j(\mathbf{x}) \tag{4}$$

where $\lambda \in [0, 1]$. A purely altruistic individual would have $\lambda = 0$, meaning that they only care about the utility of others. A myopically self-interested individual's λ would be 1, reflecting that their net utility is a function only of their personal experiences. If we allow λ

to be increasing in age, this might explain the U-shaped associations we observe for global warming's harm toward other groups.

One potential mechanism by which older individuals might place greater weight on others' utility functions is the experience of having children, which has been shown to affect climate attitudes (Gazmararian, 2025). We thus examine whether having a first child is correlated with concern about the environment, again using the ANES panel datasets from 1992-1996 and 2016-2024 introduced above. Here we are less concerned with collinearity, since not everyone in our panel has a first or new child at the same time, allowing us to estimate:

$$concern_{it} = \alpha_i + \delta_t + child_{it} + \varepsilon_{it} \tag{5}$$

where $child_{it}$ is a dummy variable indicating whether the respondent had their first child or a new child between the preceding and current survey. α_i and δ_t are fixed effects for respondent and year respectively.

We combine the 1992-1996 and 2016-2024 panels and re-estimate this specification on each subset panel, with the results summarized in Table 2. As illustrated, having a new child *per se* is not associated with a significant change in an individual's concern about the environment, but having a first child is. Interestingly, these associations are only statistically significant at conventional thresholds in the 2016-2024 panel dataset, perhaps suggesting that the intertemporal link between a parent and the negative consequences of climate change faced by their children was still sufficiently remote in the early 1990s, when 2050 was truly a human lifetime away.

Panel	Combined		1992-1996		2016-2024	
Model:	(1)	(2)	(3)	(4)	(5)	(6)
Variables						
First child	0.071**		0.049		0.075**	
	(0.031)		(0.095)		(0.033)	
New child		0.022		0.032		0.021
		(0.024)		(0.061)		(0.026)
Fixed-effects						
Respondent	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes
Fit statistics						
Observations	11,633	7,085	4,199	2,075	7,434	5,010
R^2	0.711	0.818	0.743	0.837	0.688	0.804
Within R^2	0.0008	0.0003	0.0002	0.0003	0.001	0.0003

Clustered (Respondent) standard-errors in parentheses
*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

Table 2: Panel data regression results. Positive values indicate increase in concern (increasing federal spending on protecting the environment) associated with having a first child (columns 1, 3, and 5) or having a new child (columns 2, 4, and 6). Columns 1 and 2 combine both the 1992-1996 and 2016-2024 panel datasets, while columns 3-4 and 5-6 subset each respectively.

Discussion

Across multiple datasets, we find consistent evidence of age as an important predictor of climate change attitudes. We show that this pattern is not a spurious byproduct of other correlates of age; that this pattern is uniquely strong for the topic of the environment; and that this pattern has been waning over recent decades, although age remains among the top two most important predictors of climate attitudes. In addition, we provide some suggestive evidence of a curvelinear association in which individuals grow less concerned as they age, but among the extremely old, the pattern reverses somewhat. We posit that these patterns are consistent with a linked fate explanation in which older individuals are more likely to be concerned about the future they are leaving behind for their children, echoing work by Gazmararian (2025). Nevertheless, the most robust finding is that, on average, Americans grow less concerned about climate change as they grow older, consistent with a rational discounting model of utility.

Our core contribution is to bring age back in as a predictor of theoretical and substantive interest in understanding Americans' (and, presumably, humanity's) concerns about environmental change. Retrospectively, its importance seems obvious, especially given the primacy of age in academic and social domains outside of political science. Nevertheless, we struggled to find any recent political science research that demonstrates this fact.

Prospectively, our discussion gives shape to how we might expect age to vary in the coming decades. On the one hand, the passage of time makes once-distant future dates appear more salient to our material well-being. On the other hand, as these dates grow closer, age no longer separates us between those who will be lesser or worser affected. In theory, age should not matter at all when the worst costs of climate change are upon us, or if it does, it does so through immediate vulnerability, putting the oldest individuals at most risk.

We leave this question and related research to future work, and contribute a thorough and timely reminder that age is not merely a covariate to be controlled in the study of climate attitudes, but a major predictor of theoretical and substantive interest.

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Supplementary Appendix for Climate change and the shadow of the future

Contents

A Summary Statistics

Table A.1: Summary statistics. CCAM sample.

Variable	Type	Mean	SD	Min	Max	N
Age	Continuous	51.17	17.06	18.00	98.00	35309
Concern (Continuous)	Continuous	2.62	0.98	1.00	4.00	35225
Concern (Binary)	Binary	0.59	0.49	0.00	1.00	35225
Party $\times$ ideology	Categorical	2.98	1.56	1.00	5.00	31395
Gender	Categorical	1.50	0.50	1.00	2.00	35309
Race	Categorical	1.55	1.01	1.00	4.00	35309
Marital status	Categorical	2.33	1.78	1.00	6.00	35309
Education	Categorical	2.89	1.05	1.00	4.00	35309
Income	Categorical	1.98	0.82	1.00	3.00	35309
Employment	Categorical	1.51	0.66	1.00	3.00	35309
Media exposure	Continuous	3.75	1.20	1.00	5.00	19302
Children in household	Binary	0.22	0.41	0.00	1.00	35309
Region	Categorical	5.13	2.51	1.00	9.00	35308
Year	Categorical	8.52	4.48	1.00	16.00	35309

Table A.2: Summary statistics. GSS sample.

Variable	Type	Mean	SD	Min	Max	N
Age	Continuous	46.00	17.51	18.00	89.00	40345
Concern (Continuous)	Continuous	1.47	0.66	1.00	3.00	40790
Concern (Binary)	Binary	0.62	0.49	0.00	1.00	40790
Party ID	Categorical	3.74	2.04	1.00	8.00	40534
Ideology	Categorical	5.29	2.17	1.00	8.00	36990
Gender	Categorical	1.35	0.48	1.00	3.00	35466
Race	Categorical	1.25	0.55	1.00	3.00	40710
Marital status	Categorical	2.35	1.71	1.00	5.00	37148
Education	Continuous	13.02	3.15	0.00	20.00	40645
Employment	Categorical	3.07	2.44	1.00	8.00	40765
Children in household	Continuous	1.90	1.76	0.00	8.00	40642
Income	Categorical	9.16	3.42	1.00	12.00	24163
Region	Categorical	2.56	1.01	1.00	4.00	40790
Year	Categorical	1996.27	16.45	1973.00	2024.00	40790

Table A.3: Summary statistics. ANES panel 1992–1996 sample.

Variable	Type	Mean	SD	Min	Max	N
Age	Continuous	50.58	17.30	21.00	103.00	3566
Environmental concern (3-category)	Categorical	1.84	0.84	1.00	3.00	3566
Environmental concern (binary)	Binary	0.44	0.50	0.00	1.00	3566
Lagged concern	Binary	0.48	0.50	0.00	1.00	1861
Year	Categorical	94.62	1.47	92.00	96.00	3566
Year of birth	Continuous	1944.04	17.26	1893.00	1974.00	3566
Generation	Categorical	2.46	0.93	1.00	4.00	3566

Table A.4: Summary statistics. ANES panel 2016–2024 sample.

Variable	Type	Mean	SD	Min	Max	N
Age	Continuous	53.00	17.11	18.00	98.00	7605
Environmental concern (3-category)	Categorical	1.57	0.70	1.00	3.00	7605
Environmental concern (binary)	Binary	0.55	0.50	0.00	1.00	7605
Lagged concern	Binary	0.56	0.50	0.00	1.00	4846
Year	Categorical	2019.66	3.18	2016.00	2024.00	7605
Year of birth	Continuous	1966.66	16.83	1926.00	1998.00	7605
Generation	Categorical	3.70	1.00	1.00	6.00	7605

B Regression Results: Figure 3

Table B.5: Regression results corresponding to the left column (CCAM data), top and middle panels of Figure 3.

	Binary concern		Continuous concern	
Model:	(1)	(2)	(3)	(4)
Variables				
Constant	0.596***		0.018***	
	(0.003)		(0.006)	
Age	-0.036***	-0.019***	-0.066***	-0.037***
	(0.003)	(0.006)	(0.006)	(0.012)
Fixed-effects				
PID × ideology	No	Yes	No	Yes
Gender	No	Yes	No	Yes
Race	No	Yes	No	Yes
Marital	No	Yes	No	Yes
Education	No	Yes	No	Yes
Income	No	Yes	No	Yes
Employment	No	Yes	No	Yes
Media exposure	No	Yes	No	Yes
Children in household	No	Yes	No	Yes
Region	No	Yes	No	Yes
Year	No	Yes	No	Yes
Fit statistics				
Observations	33,236	13,416	33,236	13,416
R^2	0.006	0.259	0.005	0.309
Within R^2		0.001		0.001

Standard errors (in parentheses) are clustered at the individual level.
*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

Descriptive regressions of age on responses capturing concern about global warming using CCAM data. Coefficients represent the change in concern associated with a one-year increase in age. Models (1) and (2) predict binary concern (1 = more concern: very worried or somewhat worried) as a function of respondent age. Models (3) and (4) predict continuous concern based on Likert-scale responses ranging from 1 (very worried) to 4 (not at all worried). Models (1) and (3) are bivariate regressions. Models (2) and (4) additionally include fixed effects for party-by-ideology, gender, race, marital status, education, income category, employment status, media exposure to global warming, presence of children in the household, census region, and survey year. Coefficients are omitted for brevity.

Table B.6: Regression results corresponding to the right column (GSS data), top and middle panels of Figure 3.

	Binary concern		Continuous concern	
Model:	(1)	(2)	(3)	(4)
Variables				
Constant	0.614***		-0.015**	
	(0.003)		(0.006)	
Age	-0.093***	-0.081***	-0.200***	-0.189***
	(0.003)	(0.007)	(0.006)	(0.014)
Fixed-effects				
Party ID	No	Yes	No	Yes
Ideology	No	Yes	No	Yes
Gender	No	Yes	No	Yes
Race	No	Yes	No	Yes
Marital	No	Yes	No	Yes
Education	No	Yes	No	Yes
Employment	No	Yes	No	Yes
Children in household	No	Yes	No	Yes
Income	No	Yes	No	Yes
Region	No	Yes	No	Yes
Year	No	Yes	No	Yes
Fit statistics				
Observations	40,345	19,584	40,345	19,584
R^2	0.037	0.121	0.040	0.140
Within R^2		0.011		0.015

Standard errors (in parentheses) are clustered at the individual level.
*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

Descriptive regressions of age on responses to questions capturing environmental concern using GSS data. Coefficients represent the change in concern associated with a one-year increase in age. Models (1) and (2) predict binary concern, operationalized using a question about spending on protecting the environment (1 = more concern; respondent believes spending is too little), as a function of respondent age. Models (3) and (4) predict continuous concern based on responses ranging from 1 (too little spending) to 3 (too much spending). Models (1) and (3) are bivariate regressions. Models (2) and (4) additionally include fixed effects for party identification, ideology, gender, race, marital status, education, income category, employment status, number of children in the household, census region, and survey year. Coefficients are omitted for brevity.

Table B.7: Regression results corresponding to the left column (CCAM data), bottom panel of Figure 3.

	Very worried		Somewhat worried		Not very worried		Not at all worried	
Model:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Variables								
Constant	0.204***		0.392***		0.240***		0.164***	
	(0.002)		(0.003)		(0.003)		(0.002)	
Age	-0.012***	-0.017***	-0.024***	-0.002	0.020***	0.018***	0.016***	0.001
	(0.003)	(0.005)	(0.003)	(0.007)	(0.003)	(0.005)	(0.002)	(0.005)
Fixed-effects								
PID × ideology	No	Yes	No	Yes	No	Yes	No	Yes
Gender	No	Yes	No	Yes	No	Yes	No	Yes
Race	No	Yes	No	Yes	No	Yes	No	Yes
Marital	No	Yes	No	Yes	No	Yes	No	Yes
Education	No	Yes	No	Yes	No	Yes	No	Yes
Income	No	Yes	No	Yes	No	Yes	No	Yes
Employment	No	Yes	No	Yes	No	Yes	No	Yes
Media exposure	No	Yes	No	Yes	No	Yes	No	Yes
Children in household	No	Yes	No	Yes	No	Yes	No	Yes
Region	No	Yes	No	Yes	No	Yes	No	Yes
Year	No	Yes	No	Yes	No	Yes	No	Yes
Fit statistics								
Observations	33,236	13,416	33,236	13,416	33,236	13,416	33,236	13,416
R^2	0.0010	0.193	0.002	0.064	0.002	0.087	0.002	0.155
Within R^2		0.001		5.85×10^{-6}		0.0010		5.53×10^{-6}

Standard errors (in parentheses) are clustered at the individual level.
*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

Descriptive regressions of age on responses to questions capturing concern about global warming using raw responses from the CCAM data. Coefficients represent the change in the probability of selecting each response category associated with a one-year increase in age. Each pair of models predicts a binary indicator for a specific response category of the global warming concern question (very worried, somewhat worried, not very worried, and not at all worried). For each category, the first model is a bivariate regression, and the second model additionally includes fixed effects for party-by-ideology, gender, race, marital status, education, income category, employment status, media exposure to global warming, presence of children in the household, census region, and survey year. Coefficients are omitted for brevity.

Table B.8: Regression results corresponding to the right column (GSS data), bottom panel of Figure 3.

Panel	Too little		DK		About right		Too much	
Model:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Variables								
Constant	0.589***		0.041***		0.280***		0.090***	
	(0.003)		(0.001)		(0.003)		(0.002)	
Age	-0.099***	-0.084***	0.017***	0.009***	0.048***	0.034***	0.035***	0.041***
	(0.003)	(0.007)	(0.001)	(0.003)	(0.003)	(0.006)	(0.002)	(0.004)
Fixed-effects								
Party ID	No	Yes	No	Yes	No	Yes	No	Yes
Ideology	No	Yes	No	Yes	No	Yes	No	Yes
Gender	No	Yes	No	Yes	No	Yes	No	Yes
Race	No	Yes	No	Yes	No	Yes	No	Yes
Marital	No	Yes	No	Yes	No	Yes	No	Yes
Education	No	Yes	No	Yes	No	Yes	No	Yes
Employment	No	Yes	No	Yes	No	Yes	No	Yes
Children in household	No	Yes	No	Yes	No	Yes	No	Yes
Income	No	Yes	No	Yes	No	Yes	No	Yes
Region	No	Yes	No	Yes	No	Yes	No	Yes
Year	No	Yes	No	Yes	No	Yes	No	Yes
Fit statistics								
Observations	42,021	20,055	42,021	20,055	42,021	20,055	42,021	20,055
R^2	0.041	0.120	0.007	0.034	0.012	0.048	0.015	0.080
Within R^2		0.011		0.001		0.002		0.008

Standard errors (in parentheses) are clustered at the individual level.
*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

Descriptive regressions of age on responses to questions capturing environmental concern using raw responses from the GSS data. Coefficients represent the change in the probability of selecting each response category associated with a one-year increase in age. Each pair of models predicts a binary indicator for a specific response category of spending on protecting the environment question (too little, about right, too much). For each category, the first model is a bivariate regression, and the second model additionally includes fixed effects for party identification, ideology, gender, race, marital status, education, income category, employment status, number of children in the household, census region, and survey year. Coefficients are omitted for brevity.

C Regression Results: Figure 4

Table C.9: Regression results corresponding to the left panel of Figure 4.

Dependent Variables:	Pro choice	Gun control	Foreign aid	Big cities	Crime	Drugs	Education	Environment
Model:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Variables								
Age	0.0238***	0.0086**	-0.0209***	-0.0327***	0.0038	-0.0027	-0.0591***	-0.0800***
	(0.0046)	(0.0040)	(0.0027)	(0.0051)	(0.0050)	(0.0052)	(0.0050)	(0.0049)
Fixed-effects								
Party ID	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ideology	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Gender	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Race	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Marital	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Education	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Employment	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Children in household	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fit statistics								
Observations	34,197	37,339	30,596	30,556	30,572	30,564	30,608	30,619
R^2	0.12222	0.07253	0.04632	0.06130	0.03853	0.03163	0.09037	0.12088

Standard errors (in parentheses) are clustered at the individual level.
*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

Regressions of age on responses to questions capturing liberal policy positions across political issues using GSS data. Coefficients represent the change in the probability of adopting the liberal position associated with a one-year increase in age. Negative coefficients indicate that older respondents are less likely to hold liberal positions. Model (1) measures support for abortion (pro choice), coded as a binary indicator equal to one if respondents report that abortion should be allowed. Model (2) measures support for gun control, coded as a binary indicator for favoring stricter gun regulations. Models (3)–(8) correspond to government spending items; response options include too little, about right, too much, and don't know, and are recoded into a binary indicator equal to one if respondents report that the government spends too little. All models include fixed effects for party identification, ideology, gender, race, marital status, education, employment status, number of children in the household, census region, and survey year. Coefficients are omitted for brevity.

Table C.10: Regression results corresponding to the left panel of Figure 4.

Dependent Variables:	Welfare	Health care	Racial inequality	SocSec	Space	Homosexuality	Legalize marijuana
Model:	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Variables							
Age	-0.0205***	-0.0134***	-0.0188***	-0.0061	-0.0018	-0.0421***	-0.0362***
	(0.0041)	(0.0050)	(0.0046)	(0.0045)	(0.0035)	(0.0038)	(0.0042)
Fixed-effects							
Party ID	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ideology	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Gender	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Race	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Marital	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Education	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Employment	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Children in household	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fit statistics							
Observations	30,588	30,590	30,506	43,877	30,627	34,781	32,860
R^2	0.09683	0.07920	0.18983	0.06095	0.06050	0.26476	0.17128

Standard errors (in parentheses) are clustered at the individual level.
*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

Regressions of age on responses to questions capturing liberal policy positions across political issues using GSS data. Coefficients represent the change in the probability of adopting the liberal position associated with a one-year increase in age. Negative coefficients indicate that older respondents are less likely to hold liberal positions. Models (1)–(5) correspond to government spending items; response options include too little, about right, too much, and don't know, and are recoded into a binary indicator equal to one if respondents report that the government spends too little. Models (6) and (7) capture support for homosexuality and marijuana legalization, respectively, using binary indicators for liberal positions. All models include fixed effects for party identification, ideology, gender, race, marital status, education, employment status, number of children in the household, census region, and survey year. Coefficients are omitted for brevity.

Table C.11: Stacked Regression results corresponding to the right panel of Figure 4

Dependent Variable:	Liberal position (binary)
Model:	(1)
Variables	
Age × Pro choice	0.0656***
	(0.0040)
Age × Legalize marijuana	0.0350***
	(0.0038)
Age × Support homosexuality	0.0367***
	(0.0037)
Age × Spending: Education	0.0443***
	(0.0036)
Age × Spending: Big cities	0.0530***
	(0.0037)
Age × Spending: Racial inequality	0.0639***
	(0.0034)
Age × Spending: Health care	0.0743***
	(0.0036)
Age × Spending: Foreign aid	0.0786***
	(0.0031)
Age × Spending: Welfare	0.0792***
	(0.0034)
Age × Spending: Space	0.0837***
	(0.0033)
Age × Gun control	0.0949***
	(0.0036)
Age × Spending: SocSec	0.0998***
	(0.0038)
Age × Spending: Drugs	0.1027***
	(0.0037)
Age × Spending: Crime	0.1067***
	(0.0039)
Fixed-effects	
Respondent × Year	Yes
Fit statistics	
Observations	653,745
R^2	0.33852
Within R^2	0.19512

Standard errors (in parentheses) are clustered at the individual level.
*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

Stacked regressions of age on responses to questions capturing liberal policy positions across 15 political issues using GSS data. Coefficients correspond to interaction terms and represent differences in the marginal effect of age on the probability of adopting the liberal position across issues, relative to the omitted reference category (environment). Positive coefficients indicate that the negative relationship between age and liberal position taking is attenuated compared to the relationship between age and environmental attitudes. The dependent variable is a binary indicator equal to one if respondents adopt the liberal position on a given issue. Government spending items are based on responses of too little, about right, too much, and don't know, and are recoded into a binary indicator equal to one if respondents report that the government spends too little. The specification includes individual-by-year fixed effects. Fixed-effect coefficients are omitted for brevity.

D Regression Results: Figure 6

Table D.12: Regression results corresponding to middle panel of Figure 6

Model:	Concern (1)
Variables	
Age	-0.095***
	(0.017)
Democrat × Moderate	-0.113***
	(0.010)
Democrat × Don't know	-0.187***
	(0.033)
Democrat × NA	-0.101***
	(0.024)
Democrat × Conservative	-0.120***
	(0.012)
Independent/Other × Liberal	-0.099***
	(0.017)
Independent/Other × Moderate	-0.138***
	(0.013)
Independent/Other × Don't know	-0.322***
	(0.028)
Independent/Other × NA	-0.122***
	(0.029)
Independent/Other × Conservative	-0.205***
	(0.018)
Republican × Liberal	-0.143***
	(0.017)
Republican × Moderate	-0.169***
	(0.012)
Republican × Don't know	-0.334***
	(0.045)
Republican × NA	-0.259***
	(0.025)
Republican × Conservative	-0.326***
	(0.010)
Children in household	-0.010***
	(0.002)
Education	0.004***
	(0.0006)
Marital: Divorced	0.037***
	(0.010)
Marital: Separated	0.020
	(0.020)
Marital: Never married	0.013
	(0.009)
Gender: Female	0.018**
	(0.008)
Gender: Other	0.129
	(0.092)
Race: Black	-0.003
	(0.010)
Race: Other	-0.061***
	(0.015)
Employment: Part-time	-0.005
	(0.010)
Employment: On leave	0.010
	(0.021)
Employment: Unemployed	-0.010
	(0.016)
Employment: Retired	0.013
	(0.013)
Employment: Student	0.012
	(0.017)
Employment: Homemaker	-0.011
	(0.009)
Employment: Other	0.026
	(0.022)
Fixed-effects	
Region	Yes
Fit statistics	
Observations	32,931
R^2	0.110
Within R^2	0.108

Standard errors (in parentheses) are clustered at the individual level.
*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

The model includes a full set of survey year indicators and interactions between age and year, which are omitted for brevity. Region fixed effects are also included but not reported. These components are used to estimate the marginal effects shown in Figure 6.

E Regression Results: Figure 7

Table E.13: Regression results corresponding (CCAM data) corresponding to Figure 7.

Model:	Future generations (1)	Developing countries (2)	United States (3)	Personally (4)
Variables				
Age	-3.65***	3.92***	5.39***	0.476
	(1.36)	(1.32)	(1.36)	(1.31)
Age^2	-3.65***	0.987	3.25***	0.291
	(1.21)	(1.18)	(1.20)	(1.16)
Fixed-effects				
Education	Yes	Yes	Yes	Yes
Employment	Yes	Yes	Yes	Yes
Income	Yes	Yes	Yes	Yes
Marital status	Yes	Yes	Yes	Yes
Party × ideology	Yes	Yes	Yes	Yes
Race	Yes	Yes	Yes	Yes
Gender	Yes	Yes	Yes	Yes
Region	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes
Fit statistics				
Observations	28,512	28,501	27,912	28,196
R^2	0.241	0.294	0.295	0.291

Standard errors (in parentheses) are clustered at the individual level.
*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

Quadratic regressions of age on responses capturing concern about global warming harming future generations (Model 1), people in developing countries (Model 2), people in the United States (Model 3), and the respondent personally (Model 4). Responses are measured on a four-point Likert scale ranging from 1 (Not at all) to 4 (A great deal). All models include fixed effects for party identification by ideology, gender, race, marital status, education, income category, employment status, census region, and survey year. Coefficients are omitted for brevity.