

# Motivation Science

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SPECIAL ISSUE ARTICLE

# Why Do I Act for the Environment? Socioeconomic Status Moderates the Relationship Between Climate Change Beliefs and Sustainable Actions

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Effectively responding to climate change requires the participation of all people across a diverse sociocultural spectrum who vary in their psychological processes. Previous research shows that socioeconomic status (SES) influences how strongly individuals' climate change beliefs are associated with their willingness to support pro-environmental actions. The present research examined the same phenomenon with people's actual engagement in pro-environmental actions. Two studies tested the hypothesis that the link between climate change beliefs and people's pro-environmental actions would be stronger among higher SES individuals than lower SES individuals. Study 1 ( $N = 414$ ) is an online study conducted in the United States where people had to decide whether and how much they would play a game to raise funds for a pro-environmental organization. Study 2 ( $N = 783$ ) is a field study where consumers' actual grocery purchases in the United Kingdom were analyzed. In both studies, participants indicated their beliefs about climate change and their income and education level. In both studies, participants' education level, but not income, moderated the belief and action associations as predicted. This research underscores the importance of considering sociocultural diversity in psychology in making consequential progress in pro-environmental efforts.

**Keywords:** socioeconomic status, environmental behavior, climate change beliefs, attitude–behavior consistency

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Many of us (Americans, in particular) readily accept the fact that our way of life is destroying our environment—that one or the other will have to come to an end—but do little about it. Nor is there solace in admitting the disproportionate power of the fossil-fuel lobby and other corporate actors. Knowing these famously inconvenient truths isn't, it turns out, enough. (Wallace, 2021)

For a long time, social and political discussions about climate change have been centered to a large extent around the issue of belief—whether people believe or deny that climate change is happening due to human actions. Now, a strong majority of humans

believe in climate change (e.g., Fagan & Huang, 2019; J. Marlon et al., 2020; Poushter et al., 2022) perhaps due to decades of messaging scientific consensus about it (S. van der Linden, 2021) and the increasingly palpable temperature changes and climate disasters being experienced (e.g., Albright & Crow, 2019; Sugerman et al., 2021). Yet, the real key to reversing or slowing the crisis—concrete actions and the human will to execute them—seems to be harder to reach. That is, there is a notable gap between what people believe and what people are willing to do (Hornsey et al., 2016; Vermeir & Verbeke, 2006). Thus, understanding why and when beliefs motivate desired actions needs to accompany the effort to educate and convince people about climate change (cf. Brick et al., 2021).

Along with many structural, situational, and personal reasons, existing research suggests that individuals' sociocultural experiences, such as religiosity and socioeconomic status (SES), influence how strongly their climate change beliefs predict their support for pro-environmental actions (e.g., Eom et al., 2016, 2018, 2019 for a review). For example, people with higher SES tend to show greater consistency between what they believe about the climate change crisis and how much they support pro-environmental efforts (Eom et al., 2018; Sherman et al., 2022). In this prior research, support for pro-environmental actions has been primarily assessed via self-report, and thus, consistent with a great deal of environmental psychology research, there has been limited evidence on individuals'

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actual behaviors (Lange et al., 2023). In this present research, we aim to fill this gap by examining how individuals at different levels of SES choose to use their resources (e.g., time or money) for pro-environmental causes.

Focusing on individuals' use of resources in relation to their SES leads to another important question. SES is a multifaceted concept including several factors that all influence one's social standing, such as a person's education, occupation, and income (Dutton & Levine, 1989). Whereas these factors tend to cohere, we reason that each of them has distinct contributions in shaping human behaviors, particularly when the behaviors involve the allocation of resources. Thus, we aim to investigate the specific roles of two of the most commonly used metrics of SES, income and education, in the process. In sum, the present research examines whether the association between climate change beliefs and engaging in pro-environmental actions differs for people with different levels of education and income, focusing on actual behaviors.

### Sociocultural Differences in the Importance of Environmental Beliefs

Among many considerations that are involved in pro-environmental decision making, the primary factor that has received public and scientific attention is belief in climate change (e.g., Brownlee et al., 2013; Mase et al., 2017; see Eom et al., 2016 for coding of prominent environmental psychology outlets). Believing in climate change certainly is an important precursor of acting in a pro-environmental manner, and much research supports this assumption (e.g., Stern, 2000). Nevertheless, it is also true that the link between climate change beliefs and individuals' pro-environmental actions is not as strong as might be expected given its prominence in the media and scientific literature (Fransson & Gärling, 1999; Gifford, 2011; Van Boven et al., 2018), and is not equally strong across all individuals and social groups due to personal, structural, and cultural reasons (Eom et al., 2016, 2018; Eom, Saad, & Kim, 2021; Pisano & Lubell, 2017; Tam & Chan, 2017; see Eom et al., 2019; Schmitt et al., 2020 for review). For example, belief in climate change is a stronger predictor of supporting pro-environmental actions in individualistic countries than in collectivistic countries (Eom et al., 2016; Tam & Chan, 2017) and among less collectivistic people relative to more collectivistic people (Sherman et al., 2022). Similarly, climate change beliefs predict pro-environmental support (e.g., policy support) more strongly among less religious individuals than more religious individuals (Eom, Saad, & Kim, 2021).

SES is another such factor shown to influence the strength with which beliefs predict actions. Previous research (Eom et al., 2018; Sherman et al., 2022) found that belief in climate change is more strongly predictive of supporting pro-environmental actions among higher SES individuals than lower SES individuals (for an example of analogous relationships in health domain, see Schütz et al., 2020). Furthermore, these studies show that the difference occurs because higher and lower SES individuals differ in their sense of control, that is, the extent to which they perceive themselves to be in control of important aspects of their lives. Lower SES individuals with fewer social, informational, and material resources are more likely to feel that they do not have a sense of control over events and outcomes compared to higher SES individuals. That is, they are less likely to support (or to not support) pro-environmental actions based on their own individual beliefs and convictions than higher SES individuals because

lower SES individuals often do not hold a worldview that they can expect to actualize their wishes and desires (Eom et al., 2018).

Although these studies show a theoretically based and consistent set of findings, empirical and conceptual questions remain. First, these studies have relied, for the most part, on self-report of pro-environmental support. Second, SES was conceptualized and operationalized as an index of income and educational attainment. This way of measuring SES is common across different research areas looking at SES (e.g., Eom et al., 2018; Kraus & Keltner, 2009; Kraus et al., 2009) as education and income are positively correlated. Nevertheless, conceptually, they are distinct factors with potentially independent influences on psychology (Manstead, 2018) and other important outcomes (Braveman et al., 2005). Thus, it is important to understand whether it is material resources or educational resources that are impacting one's decision-making processes.

### Different Types of Pro-Environmental Actions

In these prior studies, support for pro-environmental action has been operationalized in a varied manner, as self-reported daily behavior and behavioral intentions (e.g., Eom et al., 2018; Tam & Chan, 2017), hypothetical consumer decision making (e.g., Eom et al., 2016), and policy support (e.g., Eom et al., 2016, 2018; Sherman et al., 2022). This research, taken as a whole, has demonstrated a great deal of consistency across different measures of support for pro-environmental action. Nevertheless, this primary reliance on self-report presents uncertainty about how these demonstrated phenomena may be translated to actual consequential behaviors. Self-reported pro-environmental behaviors or behavioral intentions are only weakly predictive of actual behaviors due to many psychological factors, such as social desirability, limited memory, and biased self-perception (Kormos & Gifford, 2014). Thus, people's pro-environmental behavioral intentions could show inflated consistency with their climate change beliefs and values without people necessarily engaging in actual behaviors that help the environment or combat climate change (e.g., Moser & Kleinhüchelkotten, 2018). Accurate assessment of behaviors is paramount in behavioral science, and in the study of pro-environmental actions in particular, given their societal importance. Thus, there have been calls for more behavioral research in psychology research on the environment (Lange et al., 2023; Steg & Vlek, 2009). Given that, one of the two main goals of the present research is conceptual replication of the previously found SES differences with actual behaviors.

### Income, Educational Attainment, and Psychology

Social class or SES is typically measured by individual income, educational attainment or occupation, or their combinations (Oakes & Rossi, 2003). Even when studies use one of those attributes (e.g., educational attainment), they use it as a proxy for social class, which refers to the inherently multidimensional social context (Oakes & Rossi, 2003). Thus, researchers (e.g., Snibbe & Markus, 2005; Stephens et al., 2007) generally do not examine the independent contribution of multiple SES proxies. However, each dimension of social class, such as education and income, has its own specific precursors and outcomes. For example, although education may increase income to some extent (Carnevale et al., 2021; Tolley & Olson, 1971), this is an indirect outcome. More directly, level of education is correlated with social capital, such as increased knowledge, and social trust (Huang et al., 2009), which is a key component

in economic and occupational outcomes, whereas income determines individuals' access to valued material goods (Kraus & Stephens, 2012). Thus, we reason that income and education, when examined independently may predict behaviors differently. There is some evidence pointing to distinct psychological outcomes of education and income. Generally speaking, education seems to have the effect of solidifying and strengthening people's ideological thinking. Educational attainment, controlling for income, predicts stronger ideological consistency (Ehret et al., 2017) and polarization regarding people's views on environmental issues more strongly than income, controlling for education (Ballew et al., 2020; see also Pröpper et al., 2022). Income, compared to education, seems to have stronger impacts on consumption, such that higher income predicts greater carbon footprint (Moser & Kleinhüchelkotten, 2018). These findings suggest that there may be notable differences between the two factors in predicting actual behaviors. Thus, in the present research, we examine income and education as independent factors. Also, given the unique connection between income and consumption (due to access to products), we examine the question in both a behavioral context that requires money (i.e., daily shopping) and in a context that does not require money (i.e., donation of time).

## Overview

Two studies were conducted to address the main research questions. Both studies examined the same conceptual question as to whether SES moderates the link between climate change beliefs and pro-environmental behaviors. We focused on behavior in experimentally arranged situations (Study 1) and naturally occurring behavior in a field context (Study 2), two important types of pro-environmental behaviors (Lange et al., 2023). Study 1 examines behavior with a relatively simple and explicit pro-environmental purpose. It is an online study conducted in the United States where people had an opportunity to volunteer to play a word game to raise funds for a pro-environmental organization. Study 2 examines behavior that is less explicitly connected to pro-environmental purpose and is more constrained by extrinsic factors, such as finance and lifestyle. It is a study where consumers' grocery shopping records at a national chain in the United Kingdom over 1 year period of time were obtained and analyzed to measure their pro-environmental consumption behaviors. Across studies, participants indicated their beliefs about climate change and their education and income level. Our hypothesis, based on previous research, was that the link between climate change beliefs and people's pro-environmental actions would be stronger among higher SES individuals than lower SES individuals.

The two decisional contexts were explored given different external constraints that are present. Volunteering, essentially donating one's time, does not require financial resources and should constrain both high- and low-income groups similarly. Shopping, by contrast, is inherently stratified by financial resources. This difference presents an interesting opportunity to test the moderating role of education with its relevance to these contexts being comparable, and of income with its relevance to these contexts being different. Thus, we explored whether the moderation by SES will be differentially carried by education or income or both comparably.

The data, codes, and materials for Study 1, including additional scales for other research purposes not used in the present analyses, are available on the Open Science Framework at <https://osf.io/rxg3q/>.

## Study 1

In this study, we created an online behavioral measure where participants have an opportunity to play a simple game to raise money for financial donation to an environmental organization. In short, the measure assesses participants' volunteering of their time and effort for a pro-environmental cause and how this actual behavior is predicted by their climate change beliefs. We predicted that climate change beliefs would predict their volunteering among higher education and/or income groups compared to their counterparts. The analyses were conducted to examine the independent contribution of income and education, two operationalizations of SES.

## Participants

Using G\*Power, we conducted an a priori power analysis. It showed that approximately 400 participants were sufficient to achieve 80% power in detecting the interaction between climate change beliefs and income or education using a multiple regression with our control variables when the effect size is small ( $f^2 = 0.02$ ;  $\alpha = .05$ ). A survey requesting 400 U.S. participants was posted on Amazon's Mechanical Turk, and 414 adults in the United States (56% male and 44% female,  $M_{\text{age}} = 33.96$ ,  $SD = 10.69$ ) were recruited. The largest ethnic group was European Americans (74.5%), followed by African Americans (9.1%), Asian Americans (7.9%), Latino Americans (5.3%), other (2.2%), Native Americans (0.7%), and Native Pacific Islander (0.2%). This study was conducted under the approval of the University of California, Santa Barbara Institutional Review Board (140-18-0328, titled "Social Class and Environmental Behavior").

## Measures and Materials

### Climate Change Beliefs

To measure climate change beliefs (i.e., beliefs in the existence and human causation of climate change), we used 11 items adapted from the Global Climate Change scale (Heath & Gifford, 2006). Example items include "I am quite sure that global warming is occurring now," "I have already noticed some signs of global warming," and "The main causes of global warming are human activities." The items about climate change beliefs were presented with filler items unrelated to climate change (e.g., "In general, people are happier these days than 20 years ago"). Participants reported their agreement/disagreement with the items on a 5-point Likert-type scale (1 = *strongly disagree* to 5 = *strongly agree*). The scores of the 11 items were averaged into a composite ( $M = 3.90$ ,  $SD = 0.89$ ,  $\alpha = .94$ ). Higher scores indicated stronger climate change beliefs.

### Education

Education level was measured with six categories adapted from the U.S. Census (<https://data.census.gov/table/ACSST1Y2022.S1501?q=education>) and consistent with our prior operationalization (Eom et al., 2018; Sherman et al., 2022): (a) less than high school (0.5%), (b) high school graduate (11.8%), (c) some college (26.4%), (d) associate's degree (13.9%), (e) bachelor's degree (37.0%), and (f) master's degree or higher (9.9%). The median education level was associate's degree.

## Income

Annual family income was measured with the following eight categories (Sherman et al., 2022): (a) <\$15,000 (7.2%), (b) \$15,001–\$25,000 (11.5%), (c) \$25,001–\$35,000 (15.4%), (d) \$35,001–\$50,000 (20.7%), (e) \$50,001–\$75,000 (21.2%), (f) \$75,001–\$100,000 (13.0%), (g) \$100,000–\$150,000 (8.4%), and (h) >\$150,000 (2.6%). The median income bracket was between \$35,001 and \$50,000.

## Sense of Control

Sense of control (i.e., the extent to which people perceive that they have a significant influence on their life outcomes) was measured by five items from Lachman and Weaver's (1998) scale (e.g., "I can do just about anything I really set my mind to"). Participants reported their agreement/disagreement on a 7-point Likert-type scale (1 = *strongly disagree* to 7 = *strongly agree*;  $M = 4.84$ ,  $SD = 1.18$ ,  $\alpha = .84$ ).

## Behavioral Measure: Time Donation for Environmental Causes

To create a behavioral measure of voluntarily donating time for a pro-environmental cause, participants played a word search game. At the seeming conclusion of the study, participants were informed that they have a voluntary option to play a word search game (Boggle) where they would view a grid of letters and attempt to make as many valid words as they could. For each word they made, participants were informed that the researchers would make a donation of 5 cents to an environmental advocacy organization. Participants were also informed that they could stop at any time they wanted. Participants' (a) decision to play (29.3% indicated yes, 70.7% indicated no) and (b) number of words generated ( $M = 4.73$ ,  $SD = 10.17$ ) were scored to assess pro-environmental behavior.

## Additional Measures

The study included several other measures for exploratory purposes: climate change belief certainty, climate change belief confidence, descriptive and injunctive norms about pro-environmental actions, sense of moral obligation to engage in pro-environmental actions, green identity, perceived knowledge about climate change, and environmental guilt. The data and codebook related to these additional variables are available on the Open Science Framework at <https://osf.io/rxg3q/>.

## Results

Descriptive statistics and bivariate correlations among the main and control variables in Study 1 are presented in Table 1. One notable finding is that sense of control, a previously documented psychological mediator of the influence of SES (Eom et al., 2018; Sherman et al., 2022), is positively correlated with income but not with education.

## Decision to Play the Game

First, using logistic regression (with robust standard errors), we examined whether education and/or income moderated the association

between climate change beliefs and the decision to play the game for donation for environmental causes. Gender, age, ethnicity, and political ideology were included as covariates in the analysis described below. Stata 18.0 was used for all analyses. See Table 2 for the full results with and without these covariates. The key results remain consistent regardless of the inclusion of covariates.

There was a significant main effect of climate change beliefs such that those with higher climate change beliefs were more likely to participate in the game ( $b = 0.707$ ,  $SE = 0.170$ ,  $z = 4.15$ ,  $p < .001$ , 95% confidence interval [CI] of  $b = [0.373, 1.040]$ ,  $\beta = .317$ ). The main effects of education ( $p = .817$ ) and income ( $p = .485$ ) were not significant.

The main effect of climate change beliefs was qualified by the significant interaction between climate change beliefs and education ( $b = 0.272$ ,  $SE = 0.130$ ,  $z = 2.10$ ,  $p = .036$ , 95% CI of  $b = [0.018, 0.527]$ ,  $\beta = .156$ ). Climate change beliefs were positively associated with the probability of participating in the game only among people with a high education level (+1  $SD$ ,  $b = 0.188$ ,  $SE = 0.041$ ,  $z = 4.63$ ,  $p < .001$ , 95% CI of  $b = [0.108, 0.267]$ ), but not among those with a low education level (−1  $SD$ ,  $b = 0.070$ ,  $SE = 0.038$ ,  $z = 1.84$ ,  $p = .066$ , 95% CI of  $b = [-0.005, 0.145]$ ; see Figure 1). However, there was no significant interaction between climate change beliefs and income ( $b = 0.006$ ,  $SE = 0.079$ ,  $z = 0.07$ ,  $p = .943$ , 95% CI of  $b = [-0.149, 0.160]$ ,  $\beta = .005$ ).

## Number of Words Generated

Next, we examined the number of words that participants generated as an outcome variable. Multiple regression with robust standard errors was conducted to examine whether the association between climate change beliefs and the number of words was moderated by education or income. Again, gender, age, ethnicity, and political ideology were controlled for in the analysis. See Table 3 for the results with and without these covariates. The key results remain consistent regardless of the inclusion of these covariates.

There was a significant main effect of climate change beliefs such that people with higher climate change beliefs generated a greater number of words ( $b = 1.469$ ,  $SE = 0.602$ ,  $t(404) = 2.44$ ,  $p = .015$ , 95% CI of  $b = [0.284, 2.653]$ ,  $\beta = .128$ ). The main effects of education ( $p = .478$ ) and income ( $p = .795$ ) were not significant.

Consistent with the finding on decision to play above, we found a significant interaction between climate change beliefs and education ( $b = 1.345$ ,  $SE = 0.488$ ,  $t(404) = 2.75$ ,  $p = .006$ , 95% CI of  $b = [0.384, 2.305]$ ,  $\beta = .150$ ). Climate change beliefs were positively associated with the number of words generated in the game only among people with a high education level (+1  $SD$ ,  $b = 3.143$ ,  $SE = 0.917$ ,  $t(404) = 3.43$ ,  $p = .001$ , 95% CI of  $b = [1.341, 4.946]$ ), but not among those with a low education level (−1  $SD$ ,  $b = -0.206$ ,  $SE = 0.791$ ,  $t(404) = -0.26$ ,  $p = .795$ , 95% CI of  $b = [-1.761, 1.349]$ ) (see Figure 2). In contrast, there was no significant interaction between climate change beliefs and income ( $b = -0.137$ ,  $SE = 0.291$ ,  $t(404) = -0.47$ ,  $p = .638$ , 95% CI of  $b = [-0.708, 0.434]$ ,  $\beta = -.022$ ).

## Discussion

Study 1 found support for the hypothesis that SES would moderate the effect of climate change beliefs on pro-environmental action. Using a measure of volunteering of time for an environmental cause,

**Table 1**  
*Descriptive Statistics and Bivariate Correlations Among Main and Control Variables in Study 1*

Variable	<i>M (SD)</i>	1	2	3	4	5	6	7	8	9	10
1. Climate change beliefs	3.90 (0.89)	—									
2. Education	4.05 (1.25)	.085 <sup>†</sup>	—								
3. Income	4.23 (1.77)	-.038	.289***	—							
4. Decision to play (yes)	29.3%	.233***	.037	-.044	—						
5. Number of words	4.73 (10.17)	.159**	.060	-.030	.722***	—					
6. Gender (female)	44.0%	.094 <sup>†</sup>	-.007	-.005	.142**	.166**	—				
7. Age	33.96 (10.69)	-.091 <sup>†</sup>	.083 <sup>†</sup>	-.020	.095 <sup>†</sup>	.122*	.114*	—			
8. Ethnicity (non-White)	25.5%	.023	-.016	.002	.035	-.017	.015	-.148**	—		
9. Political ideology	3.18 (1.71)	-.562***	-.078	.174***	-.142**	-.131**	-.031	.143**	-.072	—	
10. Sense of control	4.84 (1.18)	.004	.020	.277***	-.088 <sup>†</sup>	-.117*	-.022	-.0005	.001	.196***	—

<sup>†</sup>  $p < .10$ . \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

one of the recommended behavioral assessments in environmental psychology (Lange et al., 2023), the results suggested that it is education that moderates the impact of beliefs on this environmental behavior. By contrast, income had no moderating effect on beliefs in predicting behavior. In addition, sense of control was positively correlated with income but not education, suggesting that previously shown mediation of SES influence by sense of control may be driven by income. We return to this point in the general discussion.

It is instructive to compare the effect size of Study 1 with prior findings. The size of the moderation of education in the present research ( $\beta$ s = .16 and .15 for decision to play and number of words, respectively) was comparable to the moderating effect of SES (using an index combining education and income) found in previous work ( $\beta$ s = .15 for self-reported behavior and .17 for self-reported binary donation decision; Eom et al., 2018). It is notable that in Eom et al. (2018), the moderating effect of education and income was comparable, unlike in the present research. These suggest that in actual behavior, the moderating role of education may become more prominent, not just that the role of income becomes insignificant. Taken together, the results show that income and education function differently, when examined independently. An important question to address, then, is whether this pattern of findings would generalize to other operationalizations of environmental behavior that are financially resource-dependent, such as consumer behavior. We turn to this question in a study of food and grocery consumption in Study 2.

## Study 2

Food consumption is one of the biggest contributors to greenhouse gas emissions, with estimates indicating that it is approximately one third of the total amount of global anthropogenic emissions (Crippa et al., 2021). Within an individual family, it has been estimated that food consumption contributes between 10% and 30% of a household's carbon footprint (Jones & Kammen, 2011; Reisch et al., 2013). Consequently, researchers examining individual behaviors have often focused on food consumption, which is most commonly assessed via self-report instruments (for exception, see Sparkman & Walton, 2017, Study 4). For example, the Recurring Environmental Behavior Scale (Brick et al., 2017; Sherman et al., 2022) includes items designed to assess relatively carbon-intensive consumption such as "How often do you eat meat" and "How often do you eat dairy products such as milk, cheese, eggs, or yogurt" which people respond to using scales anchored at 1 = *never* to 5 = *always*.

Retroactive account of behaviors is prone to inaccuracy due to the difficulty of observing and recalling one's own behavior, the issues of memory bias, and the vagueness and ambiguity of the response options (Kormos & Gifford, 2014; Lange & Dewitte, 2019; Lange et al., 2023). Thus, the gold standard for assessing consumer behavior would be objective indicators of what people actually consumed over an extended period of time, the type of data that can best be obtained through collaboration with industry or other larger entities that record such information (Lange et al., 2023). This was the impetus behind the development by environmental economists of the Environmentally Sensitive Shopper (ESS) index which was derived from a data set containing 1 year of grocery store receipts from Tesco, a major supermarket in the United Kingdom (Panzone et al., 2013, 2016). This data set enables an examination of the actual consumption behavior of a large number of individuals<sup>1</sup> and provides an opportunity to test whether their beliefs about climate change (as assessed by a measure of environmental concern) predict their actual sustainable shopping behavior and whether this is moderated by the two indices of SES: education and family income.

## Participants

The participants were part of a larger sample of customers contacted for a survey in Panzone et al. (2016; this study is a reanalysis of the same data set used in that article, which has more detailed information about the sample). This study uses a subsample of the 110,000 Tesco shoppers in the United Kingdom, who were enrolled in Tesco's Shopper Thoughts panel (<https://shopperthoughts.com/>). The data provider contacted a random subsample of 4,759 panel members who had already answered questions on environmental attitudes. One thousand participants were targeted based on the budget. In the end, 916 participants completed the experimental tasks used in Panzone et al. (2016). Among these 916 participants, full attitudinal and demographic information were available for 783 participants<sup>2</sup> (45% male and 55% female,  $M_{\text{age}} = 50.15$ ,  $SD = 13.75$ ), which are retained in this analysis. Participants on average spent just over £3,000 in grocery a year in Tesco, which is the primary

<sup>1</sup> The data set is owned by Tesco and cannot be shared with third parties due to the contractual agreement for using it.

<sup>2</sup> Note that in Panzone et al. (2016), the sample is 763, as 20 people in the present sample did not submit a valid Implicit Association Test score, which was the focus of the other article.

**Table 2**

*Logistic Regression Examining Moderation of Education and Income on the Association Between Climate Change Beliefs and Binary Decision of Playing (or Not) Boggle in Study 1*

Variable	Model 1 (without covariates)					Model 2 (with covariates)				
	<i>b</i>	<i>SE</i>	<i>z</i>	95% CI	$\beta$	<i>b</i>	<i>SE</i>	<i>z</i>	95% CI	$\beta$
Intercept	-1.005	0.119	-8.42	[-1.239, -0.771]		-1.958	0.441	-4.44	[-2.823, -1.093]	
CCB	0.729***	0.151	4.83	[0.433, 1.024]	.334	0.707***	0.170	4.15	[0.373, 1.040]	.317
Education	-0.009	0.100	-0.08	[-0.205, 0.188]	-.006	-0.024	0.102	-0.23	[-0.223, 0.176]	-.015
Income	-0.057	0.067	-0.85	[-0.187, 0.074]	-.052	-0.048	0.068	-0.70	[-0.182, 0.086]	-.043
CCB $\times$ Education	0.277*	0.130	2.13	[0.023, 0.532]	.162	0.272*	0.130	2.10	[0.018, 0.527]	.156
CCB $\times$ Income	0.010	0.079	0.12	[-0.145, 0.164]	.008	0.006	0.079	0.07	[-0.149, 0.160]	.005
Gender						0.468*	0.228	2.05	[0.021, 0.915]	.117
Age						0.022*	0.011	2.05	[0.001, 0.042]	.117
Ethnicity						0.342	0.260	1.32	[-0.167, 0.851]	.075
Political ideology						-0.033	0.083	-0.40	[-0.195, 0.129]	-.028
Observations	414					414				
Wald $\chi^2$	26.34***					33.15***				

Note. Gender (1 = male, 2 = female); Ethnicity (0 = White, 1 = non-White). CCB = climate change beliefs; *b* = unstandardized coefficients; CI = confidence interval;  $\beta$  = standardized coefficients.

\*  $p < .05$ . \*\*\*  $p < .001$ .

choice of store for 77% of the respondents. The basic demographic description of the sample is presented in Table 4.

## Measures and Materials

### Environmental Concern

In addition to sales data, the retailer also had a panel of cardholder consumers, Shopper Thoughts, where consumers can participate in surveys asking about a broad range of topics, such as social media usage, or attitudinal measures. As part of this survey, a subset of consumers responded to 13 statements, which were designed by the retailer, and devised to measure their environmental attitudes (using scales comparable to the environmental attitudes inventory; Milfont & Duckitt, 2010). A factor analysis was performed on the scale, and one factor that emerged, Environmental Concern accounted for

22.4% of the variance and had a reasonably high reliability ( $\alpha = .68$ ; relevant statistics are reported in Panzone et al., 2016) and corresponds most closely to the measure of climate change beliefs (in Study 1). The items loading onto this factor were: "I feel pressured to be environmentally friendly" (reverse-coded), "Concerns about the environment are exaggerated" (reverse-coded), and "Global warming is a serious threat to society." Participants responded on a 5-point scale (1 = *strongly disagree* to 5 = *strongly agree*).

### Sustainable Consumption Behavior

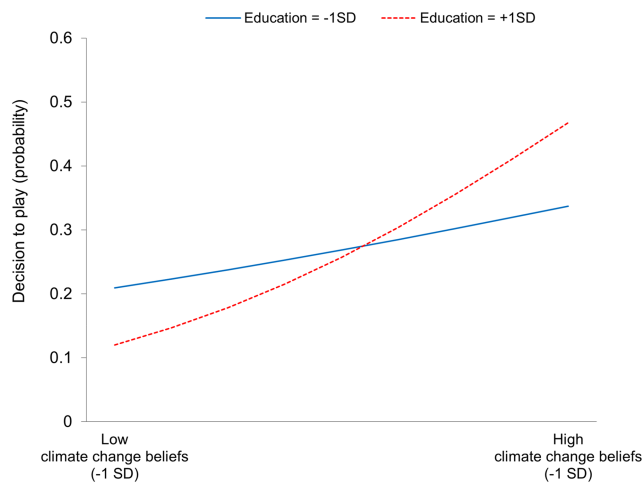
To measure participants' consumption, we use the ESS index calculated based on participants' purchases at Tesco stores. The data set uses expenditures recorded by shoppers swiping their loyalty card (Clubcard) at the check-out when shopping in-store, and therefore is unaffected by social desirability bias (although consumers might not swipe their card every time they shop). As noted in the original article, the ESS index was designed to assess the true environmental impact of a food basket, irrespective of participants' expectations of how sustainable their shopping is.

The data include household-level expenditure for six food categories in March 2012–March 2013, based on scanner data in Tesco supermarkets, three with low sustainability characteristics, and three with high sustainability characteristics. The less sustainable categories include all meat expenditures, red meat expenditures, and bottled water expenditures. The more sustainable categories include fruit and vegetable (F&V) expenditures, organic F&V expenditures, and online food shopping expenditures.

ESS index is calculated as follows (see Panzone et al., 2013 for further details regarding empirical justification for categorizations of food products of ESS index, and Panzone et al., 2016 for more details on the calculation adapted to this sample). First, we calculate the share of expenditures consumers allocated to each category relative to a key baseline category. Then, a threshold is defined to determine at what point the expenditure pattern is sustainable or unsustainable. To this end, we use the median share of expenditures allocated to that category in the consumer population as a reference point. Specifically, for less sustainable categories, food baskets are considered sustainable

**Figure 1**

*The Association Between Climate Change Beliefs and Decision to Play the Game as a Function of Education Levels*



Note. See the online article for the color version of this figure.

**Table 3**

*Multiple Regression Examining Moderation of Education and Income on the Association Between Climate Change Beliefs and Number of Words Generated in the Game in Study 1*

Variable	Model 1 (without covariates)					Model 2 (with covariates)				
	<i>b</i>	<i>SE</i>	<i>t</i>	95% CI	$\beta$	<i>b</i>	<i>SE</i>	<i>t</i>	95% CI	$\beta$
Intercept	4.572	0.474	9.65	[3.640, 5.503]		1.249	1.575	0.79	[-1.847, 4.344]	
CCB	1.989***	0.524	3.80	[0.959, 3.018]	.174	1.469*	0.602	2.44	[0.284, 2.653]	.128
Education	0.415	0.397	1.05	[-0.365, 1.196]	.051	0.286	0.403	0.71	[-0.506, 1.078]	.035
Income	-0.185	0.303	-0.61	[-0.780, 0.410]	-.032	-0.079	0.304	-0.26	[-0.676, 0.518]	-.014
CCB $\times$ Education	1.441**	0.511	2.82	[0.436, 2.446]	.161	1.345**	0.488	2.75	[0.384, 2.305]	.150
CCB $\times$ Income	-0.122	0.304	-0.40	[-0.720, 0.475]	-.020	-0.137	0.291	-0.47	[-0.708, 0.434]	-.022
Gender						2.692**	1.024	2.63	[0.680, 4.705]	.132
Age						0.106*	0.046	2.30	[0.015, 0.197]	.112
Ethnicity						0.131	1.008	0.13	[-1.851, 2.112]	.006
Political ideology						-0.467	0.344	-1.36	[-1.142, 0.209]	-.078
Observations	414					414				
<i>F</i>	4.56***					3.73***				
<i>R</i> <sup>2</sup>	.052					.086				
Root <i>MSE</i>	9.964					9.829				

Note. Gender (0 = male, 1 = female); Ethnicity (0 = White, 1 = non-White). CCB = climate change beliefs; *b* = unstandardized coefficients; CI = confidence interval;  $\beta$  = standardized coefficients; *MSE* = mean square error.

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

if consumers (a) spent  $\leq 20\%$  of total food and drink expenditures on meat, (b) spent  $\leq 40\%$  of meat expenditures on red meat, and (c) spent  $\leq 10\%$  of total food and drink expenditures on bottled water. For more sustainable categories, food baskets are considered sustainable if consumers (d) spent  $\geq 20\%$  of total food and drink expenditures on F&V, (e) spent  $\geq 10\%$  of F&V expenditures on organic F&V, and (f) spent  $\geq 10\%$  of total food and drink expenditures online.

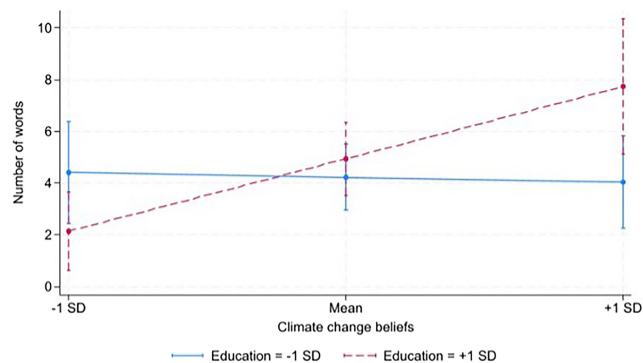
For each of these six categories, consumers received 1 “point” on the ESS if their basket was sustainable, that is, above the median expenditure share for more sustainable categories and below the median for less sustainable categories. The resulting ESS index scores individuals on a scale ranging from 0 to 6 ( $M = 2.27$ ,  $SD = 0.99$ ).

## SES

Education was assessed in terms of the number of years spent in formal education, as determined by their educational attainment.

**Figure 2**

*The Association Between Climate Change Beliefs and Number of Words That Participants Created for Environmental Causes as a Function of Education Levels in Study 1*



Note. See the online article for the color version of this figure.

Four individuals reported no education, and their value was replaced with the average of the sample ( $M = 14.21$  years,  $SD = 2.76$ ). The average annual income (in “000 GBP, for ease of reporting”) was collected in seven income bands: Up to £9,499; £9,500–£17,499; £17,500–£29,999; £30,000–£39,999; £40,000–£49,999; £50,000–£74,999; and £75,000 or more. We linearized the variable by using the median point of each band (e.g., for “£30,000–£39,999,” we used the mean of the interval), while for “£75,000 or more,” we used the arbitrary value of £85,000. One hundred and eighty-eight individuals declined to answer: 13 of these consumers reported their income in 2011, and this value was used instead; for the remaining 175, we put as income the average income of consumers in the sample with the same occupation.<sup>3</sup> The final sample had an average income of £37,762,  $SD = £20,146$ .

## Results

### *Descriptive Statistics and Correlations Among Variables*

Descriptive statistics and bivariate correlations among the main and control variables in Study 2 are presented in Table 4.

### *Sustainable Shopping*

Using multiple regression, we examined whether education and income moderated the association between environmental concern and ESS. Gender, age, whether the household has children (yes vs. no), and whether Tesco was their primary shop were included as covariates in the analysis described below. See Table 5 for the full results with and without these covariates. The key interaction

<sup>3</sup> In Panzone et al. (2016), the income of these consumers was replaced with the average of those consumers who reported their income. While the regression coefficients remain similar in sign and magnitude when using one approach or the other, the current approach adds some (credible) variability due to the different occupation of participants, therefore improving inference.



**Table 4***Descriptive Statistics and Bivariate Pearson Correlations Among Main and Control Variables in Study 2*

Variable	<i>M (SD)</i>	1	2	3	4	5	6	7	8	9
1. Environmental concern	3.30 (0.90)	—								
2. Education (years)	14.21 (2.76)	.098**	—							
3. Income	37.76 (20.15)	.018	.289***	—						
4. Gender (female)	0.55 (0.50)	.125***	-.083*	-.156***	—					
5. Age	50.16 (13.75)	-.186***	-.190***	-.137***	-.105**	—				
6. Children in household (yes/no)	0.98 (0.14)	.048	.048	.051	-.005	-.082	—			
7. Total food expenditures	3,066.58 (2,460.91)	-.034	-.058	.227***	-.025	.044	.055	—		
8. Shops mainly in Tesco	0.77 (0.42)	-.048	-.092**	-.015	-.049	.083*	.092**	.341***	—	
9. ESS-bin score	2.27 (0.99)	.100**	.086*	-.071*	-.017	.009	-.006	-.165***	-.090*	—

Note.  $N = 783$ . ESS = Environmentally Sensitive Shopper.

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

results remain consistent regardless of the inclusion of covariates as reported in the table; below, we focus on the results with covariates.

There was a significant main effect of environmental concern such that those with higher environmental concern were more likely to engage in sustainable shopping than those with lower environmental concern ( $b = 0.101$ ,  $SE = 0.038$ ,  $t(773) = 2.67$ ,  $p = .008$ , 95% CI of  $b = [0.027, 0.176]$ ,  $\beta = .092$ ). The main effects of education ( $b = 0.035$ ,  $SE = 0.014$ ,  $\beta = .099$ ) and income ( $b = -0.005$ ,  $SE = 0.002$ ,  $\beta = -.099$ ) were also significant.

The main effect of environmental concern was qualified by the significant interaction between environmental concern and years of education ( $b = 0.048$ ,  $SE = 0.014$ ,  $t(773) = 3.47$ ,  $p = .001$ , 95% CI of  $b = [0.021, 0.075]$ ,  $\beta = .120$ ). Environmental concern was positively predictive of SSI at higher levels of education (+1  $SD$ ,  $b = 0.233$ ,  $SE = 0.048$ ,  $t(773) = 4.83$ ,  $p < .001$ , 95% CI of  $b = [0.138, 0.327]$ ) but unrelated at lower levels of education (-1  $SD$ ,  $b = -0.030$ ,  $SE = 0.058$ ,  $t(773) = -0.51$ ,  $p = .608$ , 95% CI of  $b = [-0.145, 0.085]$ ; see Figure 3). There was also a significant but smaller unexpected negative interaction between climate change beliefs and income ( $b = -0.005$ ,  $SE = 0.002$ ,  $t(773) = -2.32$ ,  $p = .020$ , 95% CI of  $b = [-0.008, -0.001]$ ,  $\beta = -.083$ ). Environmental concern was positively predictive of

SSI at low levels of income (-1  $SD$ ,  $b = 0.193$ ,  $SE = 0.054$ ,  $t(773) = 3.56$ ,  $p < .000$ , 95% CI of  $b = [0.087, 0.300]$ ) but unrelated at higher levels of income (+1  $SD$ ,  $b = 0.010$ ,  $SE = 0.055$ ,  $z = 0.17$ ,  $p = .863$ , 95% CI of  $b = [-0.099, 0.118]$ ; see Figure 4). Additional analysis without imputed data for robustness check is reported in the online supplemental materials.

## Discussion

Study 2 examined education level and family income separately for their moderating impact on the relationship between environmental beliefs and actual green behavior. We found that higher education level strengthened the relationship between environmental concern and sustainable shopping, as assessed by the Sustainable Shopping Index, which converted 1 year of supermarket shopping to a metric of sustainable food consumption (Panzone et al., 2016). The slope between environmental concern and sustainable shopping was significantly steeper at higher levels of education than at lower levels of education, consistent with Study 1 and the other assessments of self-report environmental behavior obtained in prior research (Eom et al., 2018; Sherman et al., 2022). Study 2 provides convergent evidence with Study 1 using a different assessment of climate change

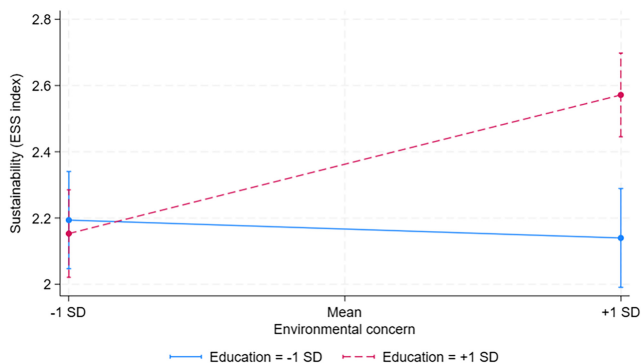
**Table 5***Multiple Regression Examining Moderation of Education and Income on the Association Between Environmental Concern and Sustainable Shopping in Study 2*

Variable	Model 1 (without covariates)					Model 2 (with covariates)				
	<i>b</i>	<i>SE</i>	<i>t</i>	95% CI	$\beta$	<i>b</i>	<i>SE</i>	<i>t</i>	95% CI	$\beta$
Intercept	2.264***	0.035	65.10	[2.196, 2.332]		2.468***	0.240	10.29	[1.997, 2.938]	
Environmental concern	0.094*	0.038	2.50	[0.020, 0.168]	.085	0.101**	0.038	2.67	[0.027, 0.176]	.092
Education (years)	0.037**	0.014	2.68	[0.010, 0.064]	.102	0.035*	0.014	2.54	[0.008, 0.063]	.099
Environmental Concern $\times$ Education (years)	0.049***	0.014	3.54	[0.022, 0.076]	.123	0.048***	0.014	3.47	[0.021, 0.075]	.120
Income	-0.005**	0.002	-2.78	[-0.008, -0.001]	-.100	-0.005**	0.002	-2.68	[-0.008, -0.001]	-.099
Environmental Concern $\times$ Income	-0.004*	0.002	-2.28	[-0.008, -0.001]	-.081	-0.005*	0.002	-2.32	[-0.008, -0.001]	-.083
Gender (female)						-0.053	0.074	-0.72	[-0.198, 0.092]	-.027
Age						0.003	0.003	1.00	[-0.003, 0.008]	.036
Children in household (yes/no)						-0.027	0.236	-0.12	[-0.491, 0.437]	-.004
Shops mainly in Tesco						-0.192*	0.088	-2.19	[-0.364, -0.020]	-.082
Observations	783					783				
<i>F</i>	8.05***					4.98***				
<i>R</i> <sup>2</sup>	.043					.051				
Root <i>MSE</i>	0.973					0.971				

Note. Unstandardized coefficients are shown; continuous variables (environmental concern, age, income, and education) have been mean-centered. Gender (0 = male, 1 = female). *b* = unstandardized coefficients; CI = confidence interval;  $\beta$  = standardized coefficients; *MSE* = mean square error.

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

**Figure 3**  
*Environmentally Sensitive Shopper Index as a Function of Environmental Concern and Education Level (Including All Covariates) in Study 2*



*Note.* ESS = Environmentally Sensitive Shopper. See the online article for the color version of this figure.

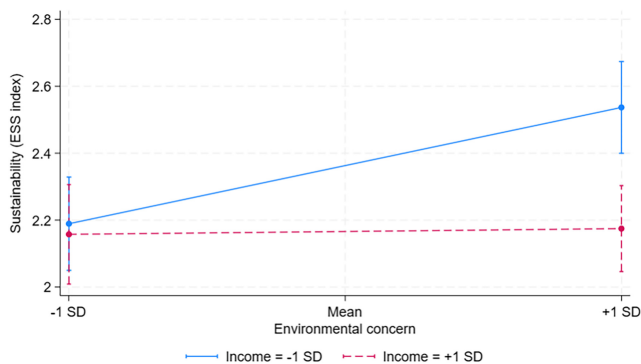
beliefs (the related measure of environmental concern), a different outcome measure (that is financially resource dependent), and in a different country (United Kingdom vs. United States).

In terms of income, however, we found unexpected results in which the relationship between environmental concern and sustainable shopping was weaker at higher income levels than at lower income levels. Given that less sustainable purchases are often more costly (indeed, income is negatively associated with ESS in this sample (see also Moser & Kleinhüchelkotten, 2018), it is possible that individuals with higher levels of income, without the offsetting impact of higher education, are less likely to compromise their eating habits in light of their environmental concerns.

### General Discussion

The present research shows that how much individuals' pro-environmental actions are related to their climate change beliefs and environmental concerns systematically varies across levels of education

**Figure 4**  
*Environmentally Sensitive Shopper Index as a Function of Environmental Concern and Income (Including All Covariates) in Study 2*



*Note.* ESS = Environmentally Sensitive Shopper. See the online article for the color version of this figure.

but not reliably so across levels of income. Across two studies, we aimed to conceptually replicate previous findings that SES moderates the link between climate change beliefs and support for pro-environmental actions. Unlike previous findings that relied on self-reported behaviors or policy support, the present research examined actual behaviors, either volunteering time for a pro-environmental organization (Study 1) or shopping sustainably (Study 2). In addition, we examined independent contributions of two key components of SES—income and education. Results from two studies consistently demonstrated the pattern in which the positive association between climate change beliefs and pro-environmental behaviors was stronger among people with higher SES background than among people with lower SES background. Interestingly, when examined for their independent role, only education, not income, moderated the relationship in a theoretically predicted way. And this pattern was consistent whether we measured pro-environmental behaviors in a financially relevant domain (shopping) or a financially irrelevant domain (volunteering time). It is also worth noting that the studies were conducted in two different countries, attesting to the generalizability of the phenomenon.

### Theoretical Contributions

In previous research (Eom et al., 2018; Sherman et al., 2022), SES (income and education combined) moderated the association between climate change beliefs and self-reports of support for environmental actions in a theoretically expected manner, and this moderation was mediated by sense of control. A theoretical explanation for this pattern of findings is that higher or lower sense of control results from greater or fewer resources available to individuals depending on their SES (Keltner et al., 2003; Kraus et al., 2009). In the present results, we found that income did not moderate the same association with actual behaviors in a consistent and predicted way, and yet, only income, not education, was correlated with sense of control (in Study 1).

A possible explanation for this seeming inconsistency may be the difference in psychological controllability of the outcomes. That is, self-reported measures, such as behavioral intentions and policy support, may be more direct and controllable expression of individuals' beliefs because there are relatively fewer contextual constraints for supporting pro-environmental policies or intending to behave pro-environmentally. In contrast, when people engage in actual behaviors, such as allocating their time or choosing groceries, the decisions are less controllable based on a particular set of beliefs because they are made against the backdrop of other noisy forces, such as personal taste and availability of time. Thus, it is possible that income and sense of control fostered by income may moderate the link between beliefs and self-reported behavior but not the link between beliefs and volunteering and consumption choices.

In contrast to income, education emerged as a highly consistent aspect of SES that moderated the link between beliefs and sustainable behaviors. These findings raise the question of psychological mechanism, given that the results indicated that education is not related to sense of control. One explanation may be that more educated individuals are simply more informed about social and political issues than less educated individuals (e.g., Ehret et al., 2017). That is, more educated individuals may be more certain of their climate change beliefs and also more aware of the environmental consequences of their actions, compared to those less educated, analogous to findings in health literacy and education

(e.g., van der Heide et al., 2013). Thus, the level of knowledge about the consequences of one's daily actions may play a role.

Moreover, education, independent from income, does not afford greater material resources. Instead, education increases social trust (Huang et al., 2009). Thus, it is possible that those who are more educated may trust their community and society to share their beliefs, concerns, and motivation to confront the collective challenge of climate change. Indirect evidence comes from studies that examined responses to epidemic and pandemic diseases (e.g., Ebola and COVID-19). These show that collectivistic individuals who have greater sense of social and institutional trust (Leong et al., 2022) also have stronger sense of efficacy in protecting themselves and their groups against disease threats (Kim et al., 2016). Thus, social trust may also be an explanation for the moderating effect of education. Another psychological factor that predicts educational achievement is self-regulation (e.g., Greene, 2017), and thus, different degrees of self-regulation may explain the differences found in the present studies. That is, it is possible that those who are more educated may be better able to regulate their behaviors to be consistent with their climate change beliefs compared to those who are less educated. The different psychological pathways through which income and education may influence individuals' thoughts and behaviors are important topics for further investigation.

The present research set out to test whether previous findings with self-reported measures of pro-environmental behaviors generalize to actual behaviors. The existing pattern of results was conceptually replicated in a theoretically predicted way. This generalizability is important for two reasons. First, understanding and predicting what people actually do has a particular significance given the consequential nature of the actions. Thus, whether people actually perform pro-environmental actions beyond self-report is more than a theoretical question. Second, the present findings offer some validation to previous findings using self-reported measures. Previous research found fairly weak relationship between self-reported and actual behaviors (Kormos & Gifford, 2014). Although the present research does not directly test the consistency between self-reported environmental behaviors and actual pro-environmental behaviors at an individual level, it does show that, at least at an aggregate level, the patterns of results are consistent.

### Limitations and Future Directions

It should be noted that the present findings stem from correlational designs, and thus, one limitation is that we cannot make causal claims about education level and environmental concern interacting to produce changes in actual environmental behavior. Although we sought to rule out alternative explanations by controlling for a range of factors (depending on the study and available variables) such as gender, age, and political ideology, future research needs to establish causal roles further by using different experimental designs. Given that it would be difficult to manipulate education levels experimentally, one strategy to bolster causal evidence would be to manipulate the proposed mediators outlined above, such as knowledge level about climate (Ranney & Clark, 2016) or trust in government (Gulliver et al., 2023). The prediction would be that the Education  $\times$  Beliefs interaction would be weaker when knowledge level or trust in government is low because those who are lower in education levels (and

presumably lower in knowledge and trust) would have that boosted by the manipulation. Future research should also experimentally manipulate climate change beliefs or environmental concern (S. L. van der Linden et al., 2015) and assess whether measured education levels interact with this manipulated variable in ways consistent with the present findings. These different directions for future research would build on and strengthen the understanding of the links between education levels, environmental concern, and environmental action.

An additional open question stemming from this specific set of studies are the particulars of the behaviors that we used and whether the findings would generalize to other voluntary environmental behaviors, such as political activism or financial donation, and other consumer behaviors, such as clothing consumption (e.g., Nielsen et al., 2022). Research should also test generalizability of the finding across time. People's understanding and experience of climate change has changed (and is changing) over time, and thus, it would be beneficial to track time-related changes in the phenomenon. For example, it is worthwhile to examine whether the increase in climate concerns over time (J. R. Marlon et al., 2022) would differentially lead to pro-environmental daily actions in the field, such as grocery shopping, for people with different levels of education. Study 2 of the present research was conducted approximately a decade ago, and replication of the study would provide a valuable opportunity.

### Implications for Climate Science and the Climate Crisis

The present research underscores the importance of understanding diversity in human psychological experiences in climate science research. The goal of research in the area is to understand not just what individuals believe but rather why and how individuals do what is needed for the environment. Changing people's beliefs matters only because it is an important gateway to changing their actions. Our results suggest that the strategies to motivate pro-environmental actions should reflect such human diversity. For example, previous research suggests that for people from some sociocultural groups (e.g., those from more collectivistic cultures and from lower SES backgrounds), what motivates their pro-environmental actions more effectively is the perception of strong environmental norms rather than individual climate change-related beliefs (Eom et al., 2016, 2018). As another example, studies have found that among more religious people, it is their belief in stewardship as a religious duty that predicts their pro-environmental support, whereas among less religious people, it is their climate change beliefs that predict support (Eom, Tok, et al., 2021). Given that, more research should examine population-specific ways to increase necessary actions so that the meaningfully different groups can be most appropriately targeted with environmental information.

Educating the public about the climate crisis and its causes has been an important goal for environmental activists, educators, and fellow citizens concerned about the planet and its future. After decades of education, coupled with ever-increasing weather-related disasters, most humans do believe in human-caused climate change (Fagan & Huang, 2019; J. Marlon et al., 2020) and that it is a threat to their lives (Poushter et al., 2022). Now is the time when other strategies should be considered to translate these beliefs into actions that are actually consequential. Making such efforts, researchers, activists, and policy makers should not assume that

there is a one-size-fits-all strategy. The present research, along with our previous research, urges consideration of human environments and understanding the conditions that foster psychological diversity. As Wallace (2021) eloquently wrote, knowing the inconvenient truths about climate change is not enough. But it appears that knowing the inconvenient truths is even “less enough” for some people than it is for others. It is the research community’s responsibility to uncover why and how these differences arise and how to unleash this understanding to effectively foster pro-environmental actions to cope with the truly universal challenge of climate change.

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