Article

Religiosity Moderates the Link Between Environmental Beliefs and Pro-Environmental Support: The Role of Belief in a Controlling God

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Abstract

The current research examines differences in what motivates environmentally sustainable behavior between more and less religious people in the United States. We found that religiosity moderates the extent to which environmental beliefs predict pro-environmental support. Specifically, environmental beliefs predicted pro-environmental support less strongly among more religious people than less religious people (Studies 1 and 2). Using a correlational (Study 2) and an experimental (Study 3) design, we further found that one particular aspect of religiosity—believing in a controlling god—reduced the importance of personally held environmental beliefs in shaping one's support for pro-environmental actions. Our findings suggest that motivation to act based on personal beliefs may be attenuated among people who are religious because they believe in an external source of control. Sociocultural factors, such as religion, shape the psychological underpinnings of social actions, and the present research underscores the importance of understanding psychological diversity in promoting support toward environmental sustainability.

Keywords

religion, culture, sustainability, environmental beliefs, pro-environmental action

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Environmental problems, such as pollution and climate change, have become major challenges facing people around the globe. Given the anthropogenic nature of environmental issues, understanding why humans act for or against sustainability and ultimately fostering pro-environmental actions are critical to address these issues. Psychological science has been actively responding to these urgent challenges by identifying key antecedents of pro-environmental behaviors, such as environmental values and attitudes, as well as political orientation (see Gifford, 2014 for a review). Despite these efforts, little progress has been made in understanding how these key factors operate within a larger sociocultural context (Clayton et al., 2016; Pearson et al., 2016). The limited systematic research on the role of sociocultural context is a critical limitation, given the global nature of the environmental crisis. Only recently have researchers started to uncover the role of sociocultural factors, such as cultural values, social class, and economic systems in modulating the way in which psychological factors relate to and translate into pro-environmental behavior (e.g., Eom et al., 2019; Pisano & Lubell, 2017; Tam & Chan, 2017). The present research aims to advance this work by examining the role of religion.

Religion is an important form of culture across human societies (Atran & Norenzayan, 2004). The Gallup World Poll from 2005 to 2009, using nationally representative samples from 154 nations, estimated that 68% of humans (about 4.6 billion people) regard religion as an important part of their lives (Diener et al., 2011). Given its prevalence and powerful effect on psychological and behavioral tendencies (Cohen, 2015), it is important to examine how religion shapes human responses to environmental issues.

Religion often elicits a shift in people's sense of agency. A common element in major religions is the belief in an omnipotent, supernatural agent, such as a god, who watches, controls, and runs the matters in the world (Norenzayan et al., 2016). Given the important role that sense of personal control plays in individuals' propensity to act according to their

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attitudes and beliefs (Galinsky et al., 2008; Kruglanski et al., 2015), we reason that among more religious people who believe that control is in the hands of a god, personal attitudes and beliefs may be weaker predictors of decision-making and behavior, compared with less religious people. In the present research, we examine how religiosity moderates the extent to which personal beliefs about environmental problems predict support for and engagement in pro-environmental actions.

Sociocultural Diversity in Predictors of Pro-Environmental Support

In recent years, there has been an increasing body of research on psychological processes related to support for and action toward environmental sustainability (see Gifford, 2014; Newell et al., 2014; Pearson et al., 2016 for reviews). In the literature, people's beliefs about environmental problems (e.g., concerns about sustainability, beliefs about anthropogenic climate change, awareness of environmental threats, etc.) have received a great deal of attention as a potent factor that explains pro-environmental support[1] (Eom et al., 2016; see also Milfont & Page, 2013). However, studies have found that the association between environmental beliefs and pro-environmental support is relatively weak (e.g., Fransson & Gärling, 1999). Why people's attitudes and beliefs about environmental problems are not always in line with their pro-environmental support is an important issue to resolve (e.g., Gifford, 2011; Van Boven et al., 2018).

One way to approach this issue is to identify moderating factors for the link between environmental beliefs and pro-environmental support (e.g., Landry et al., 2018; Tam & Chan, 2018). Recent research has revealed that certain sociocultural factors, such as national culture and socioeconomic status, moderate this link (e.g., Eom et al., 2016, 2018; Tam & Chan, 2017). Specifically, personally held beliefs about environmental problems are less strongly associated with pro-environmental decision-making and behavior when sociocultural contexts do not foster direct expression of personal beliefs, such as among those in collectivistic cultures or with lower socioeconomic status (Eom et al., 2019). The current research advances this literature on the sociocultural moderators of the link between environmental beliefs and pro-environmental support by focusing on religion.

Religion, Belief in a Controlling God, and Antecedents of Behavior

One necessary psychological condition for strong connection between beliefs and behavior is sense of control (e.g., Galinsky et al., 2008; Kruglanski et al., 2015). When individuals feel less in control due to personal, situational, or social reasons, they become less likely to act on their personal volitions and beliefs, compared with when they feel more of a sense of control. Religion is one factor that influences individuals' general sense of personal control. One key theme of many major religions around the world, particularly in Abrahamic religions, is belief in a powerful and intervening god (Norenzayan et al., 2016). Further, religions commonly instruct their believers to surrender one's will and control to follow a god or deity's plan. For example, the apostle Paul states in the Bible that after becoming a believer, "I no longer live, but Christ lives in me" (Galatians 2:20). Muhammad also teaches in the Qur'an, "Nothing will happen to us besides what God has decreed for us. He is our Guardian" (Qur'an 9:51). As such, enacting one's personal volition and conviction becomes less of a priority among religious people (Kim & Lawrie, 2019; Sasaki & Kim, 2011; Spilka et al., 2003; Weisz et al., 1984). Thus, though there are multiple aspects of religion that may influence psychological processes, we focus on one key psychological construct: *belief in a controlling* god (i.e., the belief that a god controls the events in the world).

Taken together, we reason that when religious people acknowledge a god, rather than themselves, as the agent who controls events in their lives, they are less likely to act based on their own attitudes, beliefs, and desires. Indeed, research shows that when primed with a god who exerts powerful control over the world, people report decreased motivation to pursue personal goals (e.g., Khenfer et al., 2017; Laurin et al., 2012). Thus, we predict that personal beliefs about environmental issues would predict pro-environmental support less strongly among more, relative to less, religious people, and that this difference is due to more religious people's stronger belief in a controlling god.

Religion and Pro-Environmental Support

Although the present research examines differences in the *strength of association* between environmental beliefs and pro-environmental support between more religious versus less religious people, we first consider how religiosity is directly related to pro-environmental tendencies. Given the correlation between religiosity and a more conservative political orientation in the United States, there is a shared perception that religiosity is negatively associated with pro-environmental tendencies (Pearson et al., 2018). However, empirical evidence has been mixed. Some studies have found a negative relationship between religiosity and pro-environmental tendencies (e.g., Eckberg & Blocker, 1989; Hand & Van Liere, 1984), while other studies have found no difference between nonreligious and religious groups in environmentalism (e.g., Biel & Nilsson, 2005; Hayes & Marangudakis, 2001) or even a positive relationship (e.g., Kanagy & Willits, 1993). Even when controlling for political orientation to better examine the net effect of religiosity on pro-environmental outcomes, the research thus far has yet to reach a clear consensus (e.g., Eckberg & Blocker, 1989 vs. Greeley, 1993). In summary, the current body of literature suggests that religiosity is not a factor

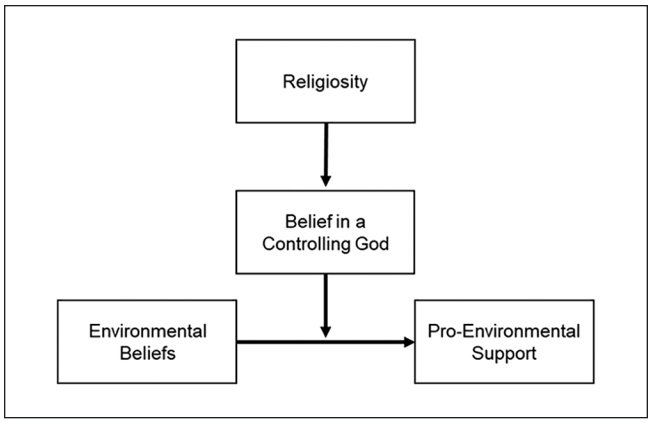

Figure 1. Hypothesized mediated moderation model.

that is reliably associated with pro-environmental tendencies. While understanding the inconsistency in how religiosity is associated with pro-environmental tendencies is beyond the scope of the article, we will return to this point in a later section. The main goal of the present research is to examine how religiosity moderates how strongly one's environmental beliefs predict their pro-environmental support, rather than examining how religiosity correlates with pro-environmental support directly.

The Present Research

The present research examined whether religiosity moderates the link between beliefs about environmental problems and pro-environmental support, using samples from the United States. We hypothesized that the relationship between environmental beliefs and pro-environmental support is weaker among more religious people than among less religious people. We also predicted that the moderating effect of religiosity is explained by a stronger belief in a controlling god among those who are more religious. To be clear, based on the inconsistency in the literature described above, we did not have a prediction about the simple correlation between religiosity and pro-environmental support (i.e., main effect of religiosity). Rather, our prediction was about the extent to which individuals who hold high or low pro-environmental beliefs act according to their beliefs by supporting or not supporting pro-environmental actions, respectively.

The hypothesized model is shown in Figure 1.

We examined this theoretical model in three studies. Study 1 provided an initial test of the hypothesized role of religiosity in moderating the association between environmental beliefs and pro-environmental support using a large nationally representative sample in the United States. Study 2 examined a psychological mediator of the moderating effect of religiosity. We tested whether belief in a controlling god explained the moderating effect of religiosity. Finally, Study 3 provided experimental evidence for the role of belief in a controlling god. In this experiment, we primed belief in a controlling god and examined whether it weakened the association between environmental beliefs and pro-environmental support. Throughout the three studies, we assessed environmental beliefs by measuring the extent to which people believed in anthropogenic climate change. Belief in climate change has been commonly measured in both public polls and scientific research (Hornsey et al., 2016), and it has been linked to people's support for pro-environmental actions (e.g., van der Linden et al., 2015). For pro-environmental support, we measured people's support for pro-environmental policies (Study 1) and intentions to perform pro-environmental behaviors (Studies 2 and 3).

Study 1

Study 1 aimed to provide the initial evidence for the hypothesized moderation of religiosity on the association between environmental beliefs and pro-environmental support. We used data from the 2016 American National Election Studies (ANES), a nationally representative sample in the United States. ANES data include measures on attitudes toward various social and political issues, including environmental issues (https://electionstudies.org/). These data have been widely used to study environmental attitudes and beliefs in social science research (e.g., Daniels et al., 2012; Ehret et al., 2017). In this study, we operationalized pro-environmental support as support for pro-environmental governmental policies. We hypothesized that among more religious people, climate change beliefs would be less strongly associated with support for pro-environmental policies, compared with less religious people.

Participants

The 2016 ANES data include responses from 4,271 U.S. citizens who were 18 years or older. We excluded participants who had no responses on our key/control variables. As a result, 3,052 respondents were used as a final sample (50.9% females; 2,332 White and 720 non-White Americans). Respondents reported their age by choosing one of the 13 age categories. The median age category was between 50 and 54 years.

Measures

Environmental beliefs. We assessed belief in climate change using the following two items: (a) "World's temperature may have been going up . . . do you think this has probably been happening, or do you think it probably has not been happening?" (1 = *probably has not been happening*, 2 = *has probably been happening*; $M = 1.83$, $SD = 0.38$), and (b) "Do you think a rise in the world's temperatures would be caused mostly by human activity, mostly by natural causes, or about equally by human activity and by natural causes?"

(1 = *mostly by natural causes*, 2 = *about equally by human action and natural causes*, 3 = *mostly by human action*; *M* = 2.24, *SD* = 0.72). We standardized and combined the two items to generate a composite of climate change beliefs, $r(3{,}030) = .36$, $p < .001$.

Religiosity. We assessed religiosity using the following two items: (a) perceived importance of religion (1 = *religion is not an important part of my life* to 4 = *religion provides a great deal of guidance in day-to-day living*; *M* = 2.48, *SD* = 1.28), and (b) attendance of religious services (1 = *never* to 6 = *more than once a week*; *M* = 2.58, *SD* = 1.71). We standardized and combined the two items to generate a composite of religiosity, $r(3{,}039) = .67$, $p < .001$.

Pro-environmental support. We assessed individuals' support for pro-environmental policies by using the following three items: (a) "Do you think the federal government should be doing more about rising temperatures, should be doing less, or is it currently doing the right amount?" (1 = *should be doing a great deal less* to 7 = *should be doing a great deal more*; *M* = 4.84, *SD* = 1.93), (b) "Where would you place yourself on this scale?" (1 = *no regulation because it will not work and will cost jobs* to 7 = *regulate business to protect the environment and create jobs*; *M* = 4.87, *SD* = 1.80), and (c) "Do you favor, oppose, or neither favor nor oppose fracking in the U.S.?" (1 = *favor*, 2 = *neither favor nor oppose*, 3 = *oppose; M* = 2.19, *SD* = 0.76). We standardized and combined the three items to generate a composite ($\alpha = .75$).

Demographic variables. Political orientation, gender, income, education, age, and ethnicity were measured. Political orientation was measured using a 7-point scale item (1 = *extremely liberal* to 7 = *extremely conservative; M* = 4.16, *SD* = 1.60). For income, participants chose one of the 28 income categories from "under US$5,000" to "US$250,000 or more" (median = US$60,000–US$64,999). Education was measured using six categories (1 = *lower than high school*, 2 = *high school graduate*, 3 = *some college*, 4 = *associate's degree*, 5 = *bachelor's degree*, 6 = *master's degree or higher*; median = associate's degree). Ethnicity was dummy-coded (White = 0; *n* = 2,332 vs. non-White = 1; *n* = 720).

Results

Bivariate correlations among variables in Study 1 are presented in Table S1 in Supplemental Material.

To examine the moderating role of religiosity in the association between environmental beliefs and pro-environmental policy support, we ran a multiple regression with climate change beliefs (mean-centered), religiosity (mean-centered), and their interaction as the predictors and pro-environmental policy support as the outcome. Political orientation, gender, income, education, age, and ethnicity were entered as control variables. As predicted, there was a significant interaction between climate change beliefs and religiosity on pro-environmental policy support, $\beta = -.037$, $b = -0.040$, $SE = 0.014$, $t(3{,}042) = -2.91$, $p = .004$, 95% confidence interval of $b = [-0.067, -0.013]$, *power* = .82. Climate change beliefs predicted pro-environmental policy support less strongly among individuals higher in religiosity (+1 *SD* above the mean), $\beta = .398$, $b = 0.398$, $SE = 0.018$, $t(3{,}042) = 22.78$, $p < .001$, 95% confidence interval of $b = [0.364, 0.432]$, compared with those lower in religiosity (−1 *SD* below the mean), $\beta = .471$, $b = 0.471$, $SE = 0.021$, $t(3{,}042) = 22.85$, $p < .001$, 95% confidence interval of $b = [0.431, 0.512]$ (Figure 2). Neither the significance nor the direction of the interaction changed when the control variables were not included in the model, $\beta = -.047$, $b = -0.051$, $SE = 0.015$, $t(3{,}048) = -3.36$, $p = .001$, 95% confidence interval of $b = [-0.081, -0.021]$, *power* = .91. See Table S2 for the comprehensive results from the analysis with and without covariates. These results supported the idea that environmental beliefs are less in line with pro-environmental support among those who are more, relative to less, religious.

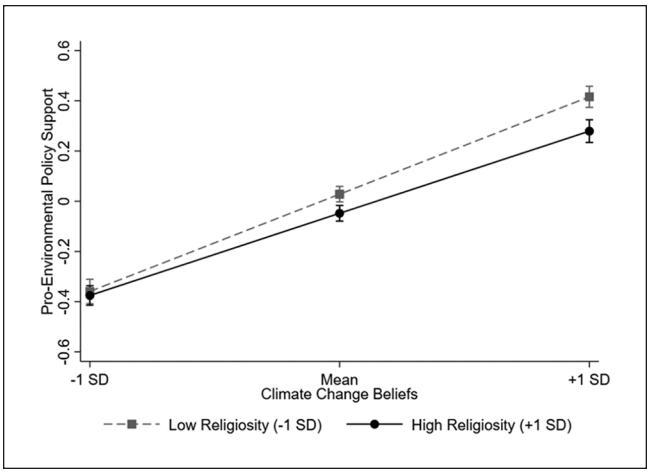

Figure 2. Pro-environmental policy support as a function of climate change beliefs and religiosity in Study 1.

Study 2

In Study 2, we examined a psychological mediator for the moderation effect of religiosity found in Study 1. We hypothesized that belief in a controlling god explains why religious individuals are less likely to act based on personal beliefs about environmental issues. To test this hypothesis, we adopted the mediated cultural moderation approach (e.g., Kim & Sherman, 2007; Uskul et al., 2009). This is a form of mediated moderation analysis (Muller et al., 2005) designed to reveal how a more proximal psychological factor(s) explain moderating effects of broader sociocultural variables (e.g., nationality, social class, religion). Taking this approach, we measured participants' belief in a controlling god (i.e., belief in a god who exerts powerful control over what happens in

the world) and examined whether this belief mediated the moderating effect of religiosity on the relationship between environmental beliefs and pro-environmental support.

In addition to this primary test of individual-level mediated moderation, we explored the moderating role of contextual-level religiosity. We sampled participants from both a non-religious and a religious college and used the type of school they attended as a contextual-level moderator. As in Study 1, for environmental beliefs, we measured the extent to which people believed in anthropogenic climate change. We measured participants' intentions to perform pro-environmental behaviors as the outcome variable.

Participants

We aimed to collect approximately 400 participants. This sample size was to detect the key interaction between environmental beliefs and religiosity on pro-environmental behavioral intentions using a multiple regression with our control variables at 80% power when the effect size is small ($f^2 = 0.02$; $\alpha = .05$). In this study, 424 undergraduate students participated. To compare non-religious versus religious individuals, we recruited participants from a non-religious public university ($n = 215$) and from a Christian college ($n = 209$), both in California. All the participants in both schools were recruited from psychology courses, and they received course credit for their participation. We excluded 14 participants who had missing data on our key/control variables. Thus, 410 participants (72.0% females; $M_{age} = 19.04$, $SD_{age} = 1.37$; 210 from a public university, 200 from a Christian college) were used as the final sample.

Measures

Environmental beliefs. We used 11 items to assess the extent to which participants believed in climate change. Sample items included "I am quite sure that global warming is occurring now," and "Global warming will bring about some serious negative consequences"; Heath & Gifford, 2006). Participants reported their agreement/disagreement with each statement (1 = *strongly disagree* to 5 = *strongly agree*). We averaged the ratings to form a composite of climate change beliefs ($M = 3.96$, $SD = 0.76$, $\alpha = .92$). Higher scores indicated stronger belief in climate change.

Religiosity. Participants' religiosity was measured using a single item, which asked "How religious do you consider yourself to be?" (1 = *not at all religious* to 7 = *very much religious;* $M = 4.00$, $SD = 2.11$).

Belief in a controlling god. We created a four-item scale to measure how strongly participants believed that a god is in control of the events in the world.[2] The four items were (a) "God is in complete control of the events happening within our college," (b) "Every single event that occurs in this world unfolds according to God's plan," (c) "There are things in the world that often occur without God's control" (reverse-scored), and (d) "The life of every creature is determined by God's pre-existing plan." Participants reported their agreement/disagreement with the statements (1 = *strongly disagree* to 7 = *strongly agree*). The scores of the four items were averaged into a composite ($M = 3.85$, $SD = 2.03$, $\alpha = .91$). Higher scores indicated a stronger belief in a controlling god.

Pro-environmental support. We assessed participants' pro-environmental behavioral intentions by asking participants to report how often they would perform a list of six environmentally friendly behaviors over the next 3 months (1 = *never* to 6 = *all the time*; scale used in Zaval et al., 2015). The measure covered a broad range of environmental engagement, including water/energy conservation ("Unplug appliances and chargers—e.g., TV, cell phone, computer—at night"), consumer behavior ("Buy green products instead of regular products—e.g., dishwashing detergent—even though they cost more"), and political participation ("Attend rallies, public events, or town hall meetings to voice my support for solving environmental problems"). We averaged the ratings on the six items to generate a composite ($M = 2.86$, $SD = 0.83$, $\alpha = .61$). Higher numbers indicated stronger intentions to perform pro-environmental behaviors more frequently.

Demographic variables. Political identification, gender, income, age, and ethnicity were measured. We assessed political identification using a 7-point scale (1 = *strongly Democrat* to 7 = *strongly Republican;* $M = 3.43$, $SD = 1.80$). For income, participants were asked to choose one of the 10 family income categories, ranging from "under US$15,000" to "over US$250,000" (median = US$100,001–US$150,000). Ethnicity was dummy-coded (White = 0; $n = 257$ vs. non-White = 1; $n = 153$).

Results

Bivariate correlations among variables in Study 2 are presented in Table S3 in Supplemental Material. We also reported demographic characteristics of the sample separated by school in Table S4 in Supplemental Material. The two groups did not differ in age, income, or ethnicity ratio (White to non-White ratio). There were significant differences in political identification and gender ratio. Participants from the religious school reported stronger identification as Republican, and there was a lower percentage of female participants in the religious school sample. We entered political identification, gender, income, age, and ethnicity as covariates in the analyses below.

First, we conducted a multiple regression to examine whether religiosity moderated the association between climate change beliefs and pro-environmental behavioral intentions. The predictors—climate change beliefs and religiosity—were

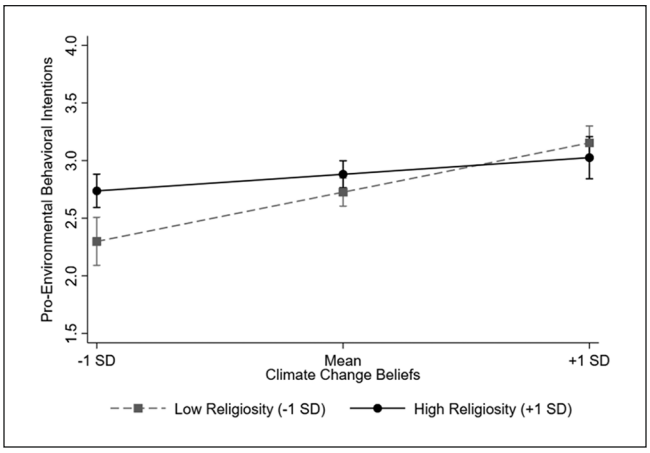

Figure 3. Pro-environmental behavioral intentions as a function of climate change beliefs and religiosity in Study 2.

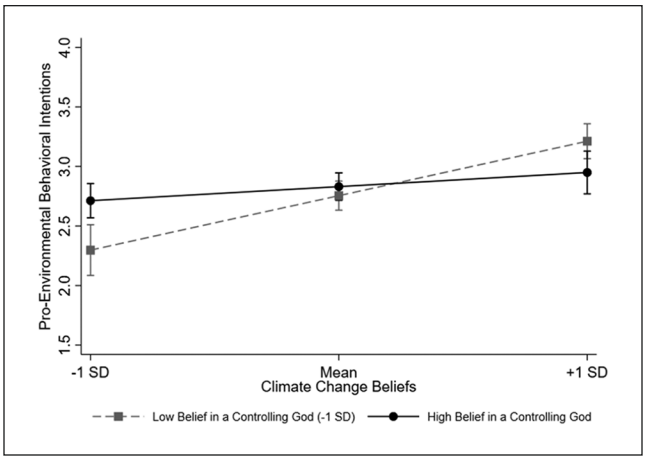

Figure 4. Pro-environmental behavioral intentions as a function of climate change beliefs and belief in a controlling god in Study 2.

mean-centered. We found a significant interaction between climate change beliefs and religiosity on pro-environmental behavioral intentions, $\beta = -.171$, $b = -0.089$, $SE = 0.025$, $t(401) = -3.55$, $p < .001$, 95% confidence interval of $b = [-0.138, -0.039]$, *power* = .95. Climate change beliefs predicted pro-environmental behavioral intentions less strongly among individuals higher in religiosity (+1 *SD* above the mean), $\beta = .173$, $b = 0.189$, $SE = 0.078$, $t(401) = 2.44$, $p = .015$, 95% confidence interval of $b = [0.037, 0.342]$), than among those lower in religiosity (−1 *SD* below the mean), $\beta = .515$, $b = 0.563$, $SE = 0.089$, $t(401) = 6.34$, $p < .001$, 95% confidence interval of $b = [0.388, 0.737]$ (Figure 3). Neither the significance nor the direction of the interaction changed when the control variables were not included in the model, $\beta = -.191$, $b = -0.099$, $SE = 0.025$, $t(406) = -4.02$, $p < .001$, 95% confidence interval of $b = [-0.147, -0.051]$, *power* = .98. See Table S5 for the comprehensive results from this analysis, both with and without covariates.

Next, we examined whether belief in a controlling god moderated the association between climate change beliefs and pro-environmental behavioral intentions by conducting another multiple regression. If belief in a controlling god explains why environmental beliefs are less aligned with pro-environmental behavioral intentions among more religious people, it would moderate the relationship between climate change beliefs and pro-environmental behavioral intentions in the same way that religiosity did. The predictors—climate change beliefs and belief in a controlling god—were mean-centered.

There was a significant interaction between climate change beliefs and belief in a controlling god on pro-environmental behavioral intentions, $\beta = -.204$, $b = -0.110$, $SE = 0.027$, $t(401) = -4.14$, $p < .001$, 95% confidence interval of $b = [-0.162, -0.058]$, *power* = .99. Climate change beliefs predicted pro-environmental behavioral intentions less strongly among people with a stronger belief in a controlling god (+1 *SD* above the mean), $\beta = .142$, $b = 0.156$, $SE = 0.077$, $t(401) = 2.03$, $p = .043$, 95% confidence interval of $b = [0.005, 0.307]$, compared with those with a weaker belief in a controlling god (−1 *SD* below the mean), $\beta = .551$, $b = 0.602$, $SE = 0.091$, $t(401) = 6.60$, $p < .001$, 95% confidence interval of $b = [0.442, 0.781]$ (Figure 4). Neither the significance nor the direction of the interaction changed when the control variables were not included in the model, $\beta = -.220$, $b = -0.118$, $SE = 0.026$, $t(406) = -4.50$, $p < .001$, 95% confidence interval of $b = [-0.170, -0.067]$, *power* = .99. See Table S6 for the comprehensive results from this analysis, both with and without covariates.

Finally, we examined whether belief in a controlling god explained the moderating effect of religiosity on the association between climate change beliefs and pro-environmental behavioral intentions. Specifically, we tested the mediated moderation model in which religiosity predicted belief in a controlling god, and belief in a controlling god, in turn, moderated the association between climate change beliefs and pro-environmental behavioral intentions. We included the original interaction between climate change beliefs and religiosity on pro-environmental behavioral intentions in the model to examine whether the magnitude of this original interaction effect decreased, while the interaction involving belief in a controlling god still significantly predicted the outcome variable. Satisfying these two conditions would indicate that belief in a controlling god mediated the moderating effect of religiosity (see Muller et al., 2005). Climate change beliefs, religiosity, and belief in a controlling god were mean-centered, and the same set of control variables were included in the model as before.

Figure 5 presents the results from the mediated moderation model. Results revealed that the mediated moderation effect was significant, $\beta = -.134$, $b = -0.069$, $SE = 0.028$, $z = -2.50$, 95% confidence interval of $b = [-0.124, -0.015]$. Higher religiosity predicted stronger belief in a controlling god, $\beta = .707$, $b = 0.682$, $SE = 0.035$, $z = 19.78$, $p < .001$,

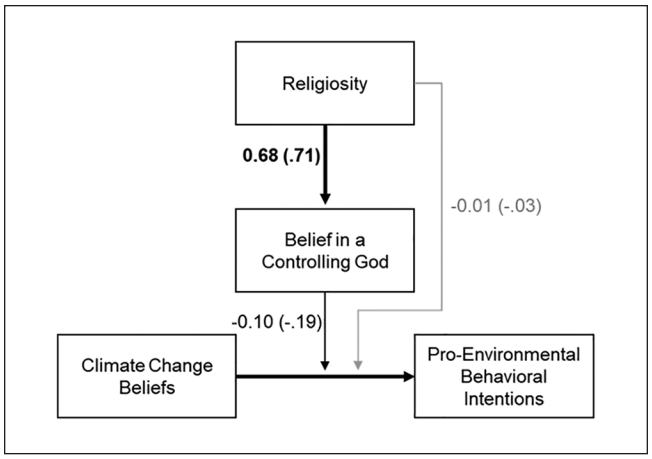

Figure 5. Mediated moderation model examining whether belief in a controlling god mediates the effect of religiosity on the association between climate change beliefs and pro-environmental behavioral intentions in Study 2.
Note. Standardized coefficients are shown in parentheses. Black lines represent significant paths (bold line: $p < .01$; thin line: $p < .05$), and the gray line represents a nonsignificant path ($p > .05$).

95% confidence interval of $b = [0.615, 0.750]$, *power* = 1.00. Belief in a controlling god, in turn, moderated the relationship between climate change beliefs and pro-environmental behavioral intentions, $\beta = -.189$, $b = -0.102$, $SE = 0.040$, $z = -2.52$, $p = .012$, 95% confidence interval of $b = [-0.181, -0.023]$, *power* = .71. Climate change beliefs predicted pro-environmental behavioral intentions less strongly among people with a stronger belief in a controlling god. Importantly, the original interaction between climate change beliefs and religiosity became nonsignificant in predicting pro-environmental behavioral intentions, $\beta = -.027$, $b = -0.014$, $SE = 0.038$, $z = -0.37$, $p = .711$, 95% confidence interval of $b = [-0.089, 0.060]$. Thus, these indicated that belief in a controlling god mediated the moderating effect of religiosity (Muller et al., 2005).[3] The main findings remained consistent whether we controlled for the demographic covariates. The comprehensive results from the analyses with and without covariates are reported in Table 1.

In addition, we explored whether the association between climate change beliefs and pro-environmental behavioral intentions differed depending on the school context (nonreligious school = 0 vs. religious school = 1). Type of school significantly moderated the association between climate change beliefs and pro-environmental behavioral intentions, $\beta = -.250$, $b = -0.273$, $SE = 0.116$, $t(406) = -2.36$, $p = .019$, 95% confidence interval of $b = [-0.500, -0.045]$, *power* = .66. Climate change beliefs predicted pro-environmental behavioral intentions less strongly among participants in the religious school, $\beta = .282$, $b = 0.308$, $SE = 0.075$, $t(406) = 4.12$, $p < .001$, 95% confidence interval of $b = [0.161, 0.455]$, than among those in the nonreligious school, $\beta = .531$, $b = 0.581$, $SE = 0.088$, $t(406) = 6.58$, $p < .001$, 95% confidence interval of $b = [0.407, 0.754]$. This climate change beliefs by school interaction was marginally significant after controlling for the demographic covariates (i.e., political identification, gender, income, age, and ethnicity), $\beta = -.198$, $b = -0.217$, $SE = 0.116$, $t(401) = -1.87$, $p = .062$, 95% confidence interval of $b = [-0.444, 0.011]$, *power* = .47. Thus, there was a tendency toward environmental beliefs predicting pro-environmental support less strongly among those in a religious context than among those in a nonreligious context.

Discussion

In the first two studies, we found consistent evidence that religiosity moderated the association between environmental beliefs and pro-environmental support. Study 2 further shed light on a psychological reason for the moderating effect of religiosity. We found that one particular aspect of religiosity—believing in a controlling god—may be responsible for attenuating the link between personally held environmental beliefs and pro-environmental support.

We note that there was a difference in the main effect of religiosity between Studies 1 and 2. Higher religiosity was associated with lower pro-environmental policy support in Study 1, whereas religiosity was not significantly associated with pro-environmental behavioral intention in Study 2. This inconsistency adds to the existing mixed evidence about the relationship between religiosity and pro-environmental tendencies described earlier. One possible explanation for this inconsistency is that how religiosity influences pro-environmental support depends on the nature of this support. Study 1 measured support for governmental policy interventions in addressing environmental issues, whereas Study 2 measured the intention to engage daily in environmentally sustainable behaviors. Those who are religious and strongly believe that a god is in control of the world may not support the government taking control of the world (Campbell & Kay, 2014; Kay et al., 2010). Another possibility is that the characteristics of the samples between Studies 1 and 2 were different. Study 1 examined a nationally representative U.S. sample, whereas Study 2 examined college student samples from relatively pro-environmental contexts in California. Further systematic analyses, specifically focusing on different aspects of pro-environmental support as well as the role of regional and temporal contexts, could elucidate the seeming inconsistency.

Relatedly, it is important to note that among those who believed in climate change less strongly, more religious participants indicated higher intentions to behave pro-environmentally than less religious participants in Study 2. This finding highlights that a weaker association between environmental beliefs and pro-environmental support is not necessarily driven by religious people acting in a less pro-environmental way in general. Finally,

Table 1. Multiple Regression From the Mediated Moderation Model in Study 2.

	Model 1 Criterion: BICG				Model 2 Criterion: pro-environmental behavioral intentions			
	Model 1A Without covariates		Model 1B With covariates		Model 2A Without covariates		Model 2B With covariates	
Variable	*b*	*SE*	*b*	*SE*	*b*	*SE*	*b*	*SE*
Intercept	0.000	0.062	−0.372	0.943	2.782	0.041	3.638	0.564
Gender			−0.023	0.139			0.085	0.084
Income			−0.034	0.025			−0.009	0.015
Age			−0.001	0.045			−0.034	0.027
Political identification			0.159***	0.041			−0.068*	0.028
Ethnicity			0.297*	0.130			−0.160*	0.080
Religiosity	0.756***	0.030	0.682***	0.035	0.050†	0.029	0.055†	0.029
BICG					−0.032	0.030	−0.019	0.030
CCB					0.469***	0.056	0.390***	0.064
CCB × Religiosity					−0.022	0.038	−0.014	0.038
CCB × BICG					−0.103*	0.041	−0.102*	0.040

Note. Unstandardized coefficients shown; gender (coded as male = 1, female = 2); ethnicity (coded as White = 0, non-White = 1). BICG = belief in a controlling god; CCB = climate change beliefs.
†$p < .10$. *$p < .05$. ***$p < .001$.

although Studies 1 and 2 together provide the empirical evidence supporting our theoretical model (Figure 1), the correlational nature of the studies does not permit a causal inference about the role of religiosity and belief in a controlling god. We conducted Study 3 to address this concern.

Study 3

In Study 3, we took an experimental approach in which we manipulated participants' representations of a god. Specifically, we examined whether priming participants with the idea of a controlling god (vs. control condition) made salient their representations of a god as controlling and whether this primed belief in a controlling god, in turn, moderated the association between environmental beliefs and pro-environmental support. In doing so, we also examined the role of representing a god as loving to demonstrate the unique moderating effect that belief in a controlling god had on the association between environmental beliefs and pro-environmental support.

Participants

We aimed to recruit approximately 800 participants to detect the increase in the representation of a god as controlling by our manipulation with 80% power when the effect size is small ($d = .20$; $\alpha = .05$). We recruited only Christians, given that religious priming effects are more reliable among religious people (Shariff et al., 2016). We recruited Christians in the United States from Amazon Mechanical Turk using CloudResearch, a crowdsourcing data acquisition platform (https://www.cloudresearch.com/). Eight hundred ten participants completed our study. We excluded 77 participants who reported being non-Christians. In addition, we excluded three participants who had missing data on our main/control variables. As a result, 730 participants (54.7% females; $M_{age} = 40.74$, $SD_{age} = 13.14$) were included in the final sample. Main findings remained consistent, regardless of this exclusion.

Procedure

Participants first reported their beliefs about climate change. Then, they read different passages depending on their experimental condition. Participants in the controlling god condition read an article describing a god as the ultimate controller of the world. In contrast, those in the control condition read a nonreligious article. Afterwards, participants answered questions on their god representations. Finally, they reported their intentions to perform pro-environmental behaviors. Finally, they completed demographic items, and they were thanked and debriefed.

Measures and Materials

Environmental beliefs. Using the same 11 items as in Study 2, we measured the extent to which people believed in climate change (Heath & Gifford, 2006). Higher scores indicated stronger belief in climate change ($M = 3.72$, $SD = 0.94$, $\alpha = .94$).

Manipulation. Participants were randomly assigned to either the controlling god condition or the control condition.

Participants in the controlling god condition read an article describing a god as the ultimate controller of the world. The article included several Bible verses relevant to the notion that a god is in control, such as Isaiah 40:23, "He brings princes to naught and reduces the rulers of this world to nothing." Those in the control condition read a nonreligious article (about the planetary status of Pluto). The article explained why Pluto had been declassified as a planet. These articles were adapted from previous research using similar materials for priming god concepts (Laurin et al., 2012; Shin & Preston, 2019).

God representations. Following previous research (Johnson et al., 2016; Shariff & Norenzayan, 2011), we provided participants with four adjectives: Two pertained to a controlling god (controlling and commanding), and the other two pertained to a loving god (caring and compassionate). We asked participants to rate the extent to which each adjective was descriptive of a god (1 = *strongly disagree* to 7 = *strongly agree*). By averaging the two items for each respective god concept, we created composites for the controlling god representation ($M = 4.70$, $SD = 1.64$, $r = .61$) and for the loving god representation ($M = 6.20$, $SD = 1.14$, $r = .86$).

Pro-environmental support. We used the same six-item scale used in Study 2 to measure participants' pro-environmental behavioral intentions (Zaval et al., 2015). Higher numbers indicated greater intentions to perform pro-environmental behaviors ($M = 2.94$, $SD = 1.04$, $\alpha = .77$).

Demographic variables. Political orientation, gender, education, income, age, and ethnicity were measured. Political orientation was measured using a 7-point scale (1 = *very liberal* to 7 = *very conservative;* $M = 4.33$, $SD = 1.73$). Education was measured using six categories (1 = *lower than high school*, 2 = *high school graduate*, 3 = *some college*, 4 = *associate's degree*, 5 = *bachelor's degree*, 6 = *master's degree or higher*; median = bachelor's degree). For income, participants chose one of the eight income categories from "under US$15,000" to "over US$150,000" (median = US$50,001–US$75,000). Ethnicity was dummy-coded (White = 0; $n = 522$ vs. non-White = 1; $n = 208$).

Results and Discussion

Participants in the control condition and the controlling god condition did not differ significantly based on most of their demographic information, except the ethnicity ratio. There was a higher percentage of non-White participants in the control condition than in the controlling god condition (see Table S9 in Supplemental Material). In the analyses below, we entered political orientation, gender, income, age, and ethnicity as covariates.

The two groups also did not differ in climate change beliefs and pro-environmental behavioral intentions. However, as intended, those in the controlling god condition were significantly more likely to have a representation of a god as controlling ($M = 4.88$, $SD = 1.54$) than those in the control condition ($M = 4.51$, $SD = 1.72$), $t(728) = -3.02$, $p = .003$. There was no condition difference in representing a god as loving. In this way, our manipulation selectively strengthened the perspective of a god as controlling. Bivariate correlations among measured variables in Study 3 are presented in Table S10 in Supplemental Material.

First, we examined the moderating effect of the experimental manipulation on the association between climate change beliefs and pro-environmental behavioral intentions. The interaction was not statistically significant, $p = .519$. That is, the controlling god manipulation did not directly moderate the association between climate change beliefs and pro-environmental behavioral intentions. The lack of this moderation suggests that there might be other factors affected by the manipulation that suppressed its effect (Rucker et al., 2011).

Our analysis then focused on examining indirect effects of the controlling god manipulation through god representations. Indirect effects in mediation inform psychological processes, regardless of significance of direct effects (see Rucker et al., 2011; Zhao et al., 2010 for discussion on the value of focusing on indirect effects for theory building). We examined a mediated moderation model in which the controlling god prime increased participants' representation of a god as controlling, which, in turn, moderated the association between climate change beliefs and pro-environmental behavioral intentions. In the model, we included the effects involving the loving god representation. Climate change beliefs, controlling god representation, and loving god representation were mean-centered.

Figure 6 presents the results from the mediated moderation model. The controlling god prime (vs. control condition) increased participants' controlling god representation, $\beta = .227$, $b = 0.373$, $SE = 0.121$, $z = 3.08$, $p = .002$, 95% confidence interval of $b = [0.135, 0.610]$, *power* = .87, which, in turn, moderated the association between climate change beliefs and pro-environmental behavioral intentions, $\beta = -.086$, $b = -0.058$, $SE = 0.022$, $z = -2.69$, $p = .007$, 95% confidence interval of $b = [-0.100, -0.016]$, *power* = .77. Climate change beliefs predicted pro-environmental behavioral intentions less strongly when the controlling god representation was high (+1 *SD* above the mean), $\beta = .187$, $b = 0.207$, $SE = 0.060$, $t(718) = 3.46$, $p = .001$, 95% confidence interval of $b = [0.090, 0.325]$, than when the controlling god representation was low (−1 *SD* above the mean), $\beta = .359$, $b = 0.397$, $SE = 0.057$, $t(718) = 6.91$, $p < .001$, 95% confidence interval of $b = [0.284, 0.510]$. The mediated moderation effect for the controlling god representation was significant, $\beta = -.020$, $b = -0.022$, $SE = 0.011$, 95% confidence interval of $b = [-0.042, -0.001]$.

In contrast, the controlling god prime did not change participants' representation of a god as loving, $\beta = -.101$, $b = -0.115$, $SE = 0.083$, $z = -1.39$, $p = .163$, 95% confidence

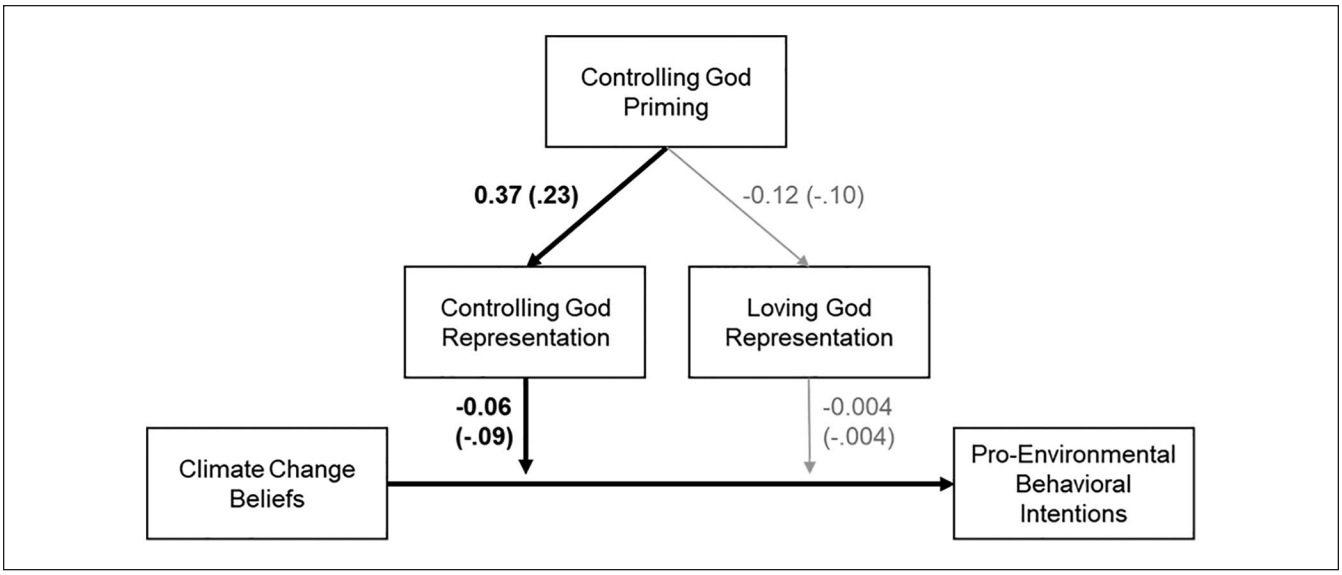

Figure 6. Model examining mediated moderating roles of the controlling god representation and the loving god representation on the association between climate change beliefs and pro-environmental behavioral intentions.
Note. Standardized coefficients are shown in parentheses. Black lines represent significant paths ($p < .01$), and gray lines represent nonsignificant paths ($p > .05$).

interval of $b = [-0.277, 0.047]$. Therefore, our manipulation selectively increased the representation of a god as controlling. Moreover, the loving god representation did not moderate the association between climate change beliefs and pro-environmental behavioral intentions, $\beta = -.004$, $b = -0.004$, $SE = 0.034$, $z = -0.12$, $p = .902$, 95% confidence interval of $b = [-0.071, 0.062]$. As shown in Figure 7, the controlling god representation, but not the loving god representation, moderated the association between climate change beliefs and pro-environmental behavioral intentions. The main findings remained consistent whether we controlled for the demographic covariates. The comprehensive results from the analyses with and without covariates are reported in Table 2.

In sum, Study 3 provides experimental evidence for the idea that believing in a controlling god weakens the association between environmental beliefs and pro-environmental support. Furthermore, by showing the null moderating effect of the loving god representation, Study 3 confirms that it is specifically the belief in a controlling god, rather than a general belief in a god, that attenuates the link between environmental beliefs and pro-environmental support.

General Discussion

The present research demonstrates that the extent to which environmental beliefs predict pro-environmental support depends on religiosity, at least among Americans. Environmental beliefs were correlated with pro-environmental support less strongly among more religious individuals than among less religious individuals. We further found that this

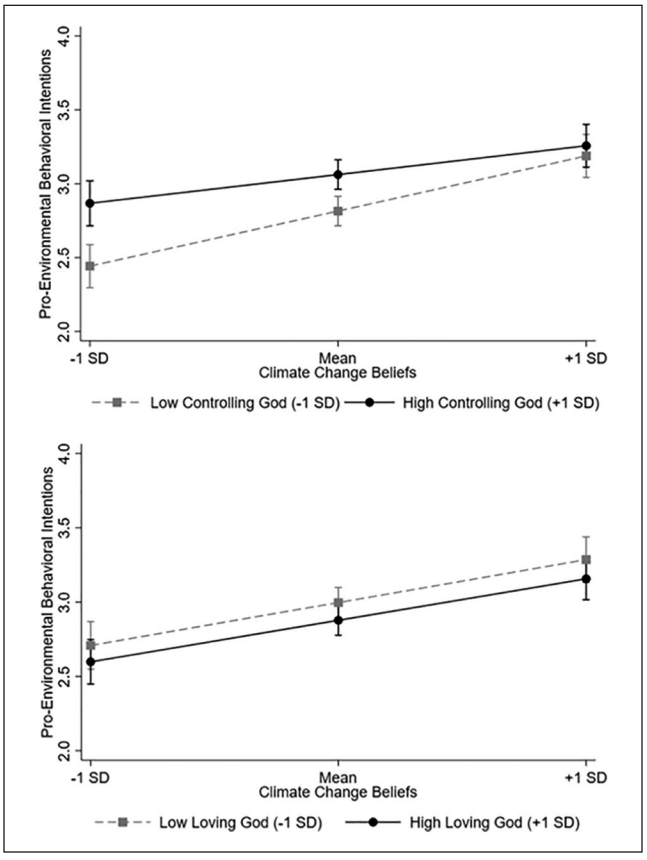

Figure 7. The association between climate change beliefs and pro-environmental behavioral intentions as a function of a controlling god representation (top) and a loving god representation (bottom) in Study 3.

Table 2. Multiple Regression From the Mediated Moderation Model in Study 3.

	Model 1 Criterion: CGR				Model 2 Criterion: LGR				Model 3 Criterion: pro-environmental behavioral intentions			
	Model 1A Without covariates		Model 1B With covariates		Model 2A Without covariates		Model 2B With covariates		Model 3A Without covariates		Model 3B With covariates	
Variable	*b*	*SE*	*b*	*SE*	*b*	*SE*	*b*	*SE*	*b*	*SE*	*b*	*SE*
Intercept	−0.184	0.086	−0.630	0.407	0.057	0.060	−1.060	0.277	2.939	0.036	2.910	0.245
Political orientation			0.045	0.036			0.123***	0.024			−0.005	0.025
Gender			0.075	0.123			0.249**	0.084			−0.160*	0.073
Education			0.071	0.051			−0.023	0.035			0.111***	0.030
Age			−0.004	0.005			0.005	0.003			0.004	0.003
Income			−0.014	0.036			0.006	0.025			−0.078***	0.021
Ethnicity			0.133	0.139			0.256**	0.095			0.151†	0.083
CGM	0.365**	.121	0.373**	0.121	−0.113	0.084	−0.115	0.083				
CGR									0.079***	0.022	0.075**	0.022
LGR									−0.061†	0.032	−0.052	0.032
CCB									0.320***	0.039	0.302***	0.046
CCB × CGR									−0.060**	0.022	−0.058**	0.022
CCB × LGR									0.004	0.035	−0.004	0.034

Note. Unstandardized coefficients shown. Gender (coded as male = 1, female = 2); ethnicity (coded as White = 0, non-White = 1). CGM = controlling god manipulation (coded as control condition = 0, controlling god condition = 1); CGR = controlling god representation; LGR = loving god representation; CCB = climate change beliefs.
†$p < .10$. *$p < .05$. **$p < .01$. ***$p < .001$.

moderation effect of religiosity was explained by religious people's belief in a god who is in control of the events in the world.

Theoretical Contributions

Our research contributes to an understanding of the role that religion plays in pro-environmental support. Beyond the question of whether religiosity increases or decreases pro-environmental tendencies (e.g., Biel & Nilsson, 2005; Eckberg & Blocker, 1989; White, 1967), the present research investigates how religiosity affects psychological processes underlying individuals' support for pro-environmental actions. The nature of the basic association between religiosity and pro-environmental tendencies is unclear even after much research, probably due to its inherent sensitivity to multiple factors, such as the nature of the pro-environmental actions and social contexts, as well as the intersectionality between religiosity and other demographic variables (e.g., Cohen et al., 2009; Sasaki & Kim, 2011). Moreover, being religious involves internalizing various concepts and beliefs. Some, such as stewardship, increase pro-environmental tendencies, while others, such as religious literalism, decrease these tendencies (Johnson et al., 2017; Sherkat & Ellison, 2007). Because of this, even brief situational cues can shift religious people's attitudes toward the environment (Schuldt et al., 2017; Shin & Preston, 2019). In fact, within the present research, we found both negative (Study 1) and null (Study 2) relationships between religiosity and pro-environmental support, even after controlling for demographic factors. However, our key finding that religiosity and the belief in a controlling god moderated the link between environmental beliefs and pro-environmental support was reliable across a large nationally representative U.S. sample, a college student sample, and an experiment with an online sample. Taken together, this research presents a novel and perhaps more reliable approach to consider in examining how religion influences pro-environmentalism.

Our research also contributes to the literature on the psychology of religion. Although previous research has suggested that self-expression of personal attitudes and beliefs is not a prioritized goal among religious people (e.g., Spilka et al., 2003; Weisz et al., 1984), no research has directly compared more versus less religious people in terms of how strongly their personal attitudes and beliefs are predictive of their action. We tackled this issue directly by examining the difference in the correlations between personal beliefs and action among more versus less religious people (or primed with a religious or nonreligious thought). Our findings provide direct evidence supporting the view that expressing personal attributes is not necessarily a primary motive among religious people (Kim & Lawrie, 2019).

Our research underscores the value of considering broad sociocultural factors to advance a psychological understanding

of environmental behavior. Sociocultural factors, such as religion, can operate as an important force in shaping psychological processes related to environmental behavior. Despite the increasing attention to the role of sociocultural factors (e.g., Milfont & Schultz, 2016; Tam & Chan, 2017), they have not been fully integrated into the current understanding of the psychology of environmental action (see Clayton et al., 2016; Eom et al., 2019; Pearson et al., 2016 for discussions). How sociocultural factors interact with other key psychological variables related to environmental behavior, such as environmental beliefs and social norms, would be a fruitful direction for theoretical advancement in the areas of environmental psychology, cultural psychology, and social psychology.

Limitations and Future Directions

There are several limitations in the current research. First, our outcome variables were assessed using self-report measures. The fact that self-reported and objective measures of pro-environmental behavior have a large effect size correlation (Kormos & Gifford, 2014) increases our confidence that the current findings are relevant to actual environmental behavior. Moreover, policy support (Study 1) at an aggregate level has direct implications for local and national policies. However, we acknowledge that future research should test the model with actual decision-making and environmental behavior.

Second, we assessed religiosity with one- or two-item measures. These concise measures have been widely used and found to be effective in measuring general religiosity (e.g., Gebauer et al., 2013). Thus, we believe that these are valid ways to assess general religiosity. Nevertheless, it would be useful to adopt full scales of religiosity that can capture multiple facets of religiosity (e.g., intrinsic vs. extrinsic religiosity) for a more nuanced understanding of the role that religiosity plays in environmental behavior.

Third, our sample included only participants in the United States. Given the prevalence of the belief in a powerful and intervening supernatural agent across major religions (Norenzayan et al., 2016), we believe that our model, which centered on the belief in a controlling god, applies beyond the context of the United States and Christianity. However, we note that societies differ in how strongly people endorse the belief in an intervening god or gods (Botero et al., 2014), and further, that there are nontheistic religions that do not focus on the belief in a god(s), such as Buddhism (Southwold, 1978). Therefore, the observed effects of religiosity in the current research may vary across societies or religions. Future research should examine the generalizability of the model to these other contexts.

We also note some intriguing questions for future research. First, there is a large body of research examining how characteristics of attitudes determine the consistency between attitudes and behavior. For example, attitude strength (e.g., attitude certainty and importance) influences how strongly attitudes predict behaviors (e.g., Howe & Krosnick, 2017; Petrocelli et al., 2010). It is an interesting possibility to consider that more religious people may be less certain of their environmental beliefs (due to their belief in an omnipotent and omniscient god), compared with less religious people, and this difference in attitude strength may serve as a psychological reason for the weaker association between environmental beliefs and pro-environmental support among more religious people.

Second, the current studies focused on why and how personal beliefs are *less* predictive of behavior among religious people but did not address what is *more* predictive of behavior among religious people. Given that religion, in general, places a strong moral emphasis on purity and sanctity (Graham & Haidt, 2010), a perception that environmental problems undermine the purity and sanctity of the natural world may lead religious people to approach environmental protection as a moral and religious duty. Future research should identify which factors are more important in driving religious individuals' commitment to sustainability. Relatedly, Feinberg & Willer (2013) found that framing environmental issues in terms of purity, a moral value important among conservatives (a dimension correlated with religiosity), eliminated the difference in environmental attitudes between liberals and conservatives.[4] Combined with these existing findings, our research suggests that pro-environmental interventions should tailor their strategies to fit the thinking of religious versus nonreligious communities to maximize their effectiveness at increasing pro-environmental support.

Third, although the current research is centered on the environmental domain, our framework potentially may apply to other domains. Religiosity may operate similarly in decision-making and behavior surrounding other social issues, such as prejudice, inequity, and immigration. For example, support for inequity-reducing actions may be less dependent on personal beliefs about social justice among people who are more, relative to less, religious. An important future direction of research would be to test the theoretical model in the present research across different domains, establishing its generalizability as well as boundary conditions.

Conclusion

Targeting attitudes and beliefs is a widely used approach to foster citizens' pro-environmental support (Gifford, 2014; Stern, 2011). An assumption underlying this approach is that a change in attitudes or beliefs would lead to behavioral change. Our findings suggest that the relevance of this assumption depends on cultural worldviews associated with religion. When people hold the belief that a god exerts primary control over the world, personal environmental beliefs become relatively unimportant in deciding whether to support pro-environmental actions. Accordingly, a change in personal attitudes or beliefs may not necessarily lead to

behavioral change. More broadly, the present research highlights the importance of identifying the differences across individuals, groups, and communities, who often have distinct cultural worldviews, in how their environmental decision-making operates (see Eom et al., 2019 for a relevant discussion). Such an understanding of psychological diversity would inform how to draw active support from various groups of people within and between societies to address urgent global challenges.

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Supplemental Material

Supplemental material is available online with this article.

Notes

1. We use *pro-environmental support* as an inclusive term that refers to various forms of individuals' support and engagement in working toward pro-environment goals, such as supporting pro-environmental policies and performing daily sustainable behaviors.
2. We initially generated five items but dropped one item due to its low factor loading. Detailed descriptions of the item selection and principal component analysis are presented in Supplemental Material.
3. Due to the high correlation between religiosity and belief in a controlling god ($r = .78$), we examined multicollinearity in the regression model where we entered religiosity, belief in a controlling god, and their interactions with climate change beliefs. No variance inflation factor (VIF) was higher than 3.00 (highest one was 2.83 for religiosity). Thus, we did not observe serious multicollinearity issues in the model.
4. In their studies, religiosity was not controlled for. Thus, some part of their effects could be relevant to religiosity.

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