Opposing Effects of Spirituality and Religious Fundamentalism on Environmental Attitudes

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Abstract

Religious attitudes can have a strong influence on environmental beliefs and behavior, both positively and negatively. This work investigates opposing influences of religion of environmentalism through individual differences in Religious Fundamentalism and Spirituality. In two studies with U.S. samples (total $N = 909$), Spirituality predicted stronger belief in climate change, moralization of environmental actions, and behavioral intentions to conserve energy and reduce waste, while Religious Fundamentalism negatively predicted these same attitudes. Positive effects of Spirituality on environmental attitudes were partly mediated though trait compassion, while negative effects of Fundamentalism were partly explained through differences in Right-Wing Authoritarianism. Together, opposing influences of Spirituality and Fundamentalism were better predictors of environmental concerns than general religiosity, and held when controlling for political attitudes. We conclude that religious environmentalism is best predicted through the combined effects of Spirituality and Fundamentalism as a function of underlying social-moral attitudes.

143 words.

Keywords: Climate Change; Sustainability; Religious belief; Spirituality; Religious Fundamentalism, Environmental attitudes

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1. Introduction

Religion is a source of both belief and moral values, and so has the potential to exert a powerful influence on attitudes toward the environment and climate change. But in what direction—does religious belief promote or discourage environmental care? There are reasons to suspect on both sides that religion promotes and diminish concerns for the environment, and indeed this contradiction is borne out in the literature (Preston & Baimel, 2021). This research examines separate effects of Spirituality and Religious Fundamentalism, as opposing influences on environmental attitudes.

1.1 Opposing influences on environmental attitudes

On the one hand, there is good reason to expect that religion may have a negative effect on environmental attitudes. Indeed, evidence shows that environmental concern is weaker among people who report stronger religiosity (Clements, McCright, & Xiao 2014), religious commitment (Arbuckle & Konisky 2015; Guth et al., 1995), and frequent church attendance (Boyd,1999; Eckberg & Blocker, 1989; Hand & Van Liere, 1984; Kanagy & Willits, 1993; Kanagy & Nelsen, 1995; Sherkat & Ellison, 2007). One of the most influential theories of religious environmentalism argues that religion (and Western Christianity in particular) fosters anti-environmental attitudes through themes of human dominance over nature (White, 1967). But the idea that religiousness is inherently opposed to environmental care has been challenged by others who suggest religious views could encourage greater concern for nature through central prosocial and nurturing values (Djupe & Hunt, 2009). This perspective is likewise supported by evidence that frequent prayer (Boyd, 1999), religious participation

(Kanagy & Willits, 1993: Mostafa, 2016) and quest religiosity (Muñoz-Garcia, 2014) are associated with greater environmental concern, and experimental evidence that religious beliefs can predict greater environmentalism when religious values are activated (Biel & Nilsson, 2005). Yet other work shows both positive and negative influences at work, directed by different types of religious beliefs (e.g., Shin & Preston, 202; Johnson et al., 2017; Muñoz-García, 2014).

Theory and evidence therefore show an apparent paradox of religious environmentalism where religious belief both positively and negatively influences concern for the environment and climate change. In the present work, we argue this apparent contradiction can be understood through two separate and opposing influences of *Spirituality* (Piedmont, 1999; Zinnbauer & Pargament, 1999) and *Religious Fundamentalism* (Altemeyer, 1992) on religious environmental attitudes. Religious Fundamentalism represents a dogmatic and authoritarian approach to belief, and as such is expected to predict negative attitudes toward the environment including denial of climate change and failure to moralize climate change issues. Spirituality reflects an individual's personal relationship to the divine, and is expected to predict positive environmental attitudes. Both Spirituality and Fundamentalism are related to religiosity (Saucier & Skrzypińska, 2006; Altemeyer & Hunsberger, 2004) and to each other (Labouff et al., 2010). But the two reflect starkly different approaches to religious faith and underlying social-moral attitudes (Bradley, 2009; Saroglou et al., 2005) that could direct environmental attitudes in opposite directions.

Religious Fundamentalism is defined by its dogmatic approach to religious belief, and its underlying characteristics of religious fundamentalism are an adherence to societal conventions and hostility towards people and ideas that conflict with the status quo (Hunsberger 1995). These hostile and rigid thinking styles can potentially direct negative and hostile attitudes towards the environment, where climate change poses an existential threat to

personal security and existing beliefs. Religious Fundamentalism is closely tied to Right-Wing Authoritarianism (RWA), the support for authoritarian and conventional values (Altemeyer & Hunsberger, 1992). Those high in RWA tend to be lower in openness and display more hostile resistance to threatening ideas (Butler, 2000) and are more intolerant of ambiguity (Altemeyer, 1981; Hunsberger, 1995; Mavor, Macleod, Boal, & Louis, 2009). In other work, RWA mediates relationships between religiosity and prejudice, which researchers conclude arises from the underlying "cognitively rigid ideologies" among the highly religious (Johnson et al., 2011). Likewise, here we looked at whether RWA among Religious Fundamentalists could predict more negative attitudes towards the environment, as these views threaten conventional view of the environment.

Spirituality is frequently defined in relation to religiosity (Zinnbauer & Pargament, 2005; Piedmont, 1999), but where religiosity refers to an individual's association with a set of formal practices, spirituality is that individual's personal experience of the divine. In contrast to Fundamentalism, Spirituality is related to many positive and prosocial traits, and is expected to predict more positive environmental attitudes through underlying moral concerns and empathy for others. Individual differences in Spirituality (but not religiosity) are correlated with trait compassion (empathetic concern for others) and these differences in compassion mediate the effect of Spirituality on prosocial behavior (Saslow et al., 2013). Spirituality includes a sense of connectedness with others (Piedmont, 1999), which can extend feelings of connection to nature (Rícan & Janosová, 2005). We argue Spirituality could encourage environmental concerns through greater empathic compassion for others, including stronger moral associations with empathy (Bradley, 2009) and universal prosocial concerns (Saroglou et al., 2005). To the extent those high in Spirituality exhibit greater underlying compassion and moral concern for others, they may also have deeper concerns for the destruction of the environment and the serious implications of climate change.

In examining the relationships between religious and environmental attitudes, we must also consider the role of political ideology. Political conservatism has been one of the most consistent and robust predictors of negative attitudes towards climate change (van der Linden, 2017) in part due to the explicit politicization of climate change issues (McCright & Dunlap, 2011). Conservative political attitudes are also associated with stronger religiosity (e.g., Malka et al., 2012), and other research suggests political conservatism may explain a third-variable influence between general religiosity and anti-environmental attitudes (Greeley, 1993; Guth et al., 1995; Kanagy & Willits, 1993; Woodrum & Wolkomir, 1997). We take special note of political ideology in these studies to account for its potential influence, but we expected that the effects of Spirituality and Fundamentalism would be largely independent of political attitudes.

1.2. Overview of Present Studies

Studies used data from U.S. samples to focus on the unique influence that American religious attitudes have on environmental action as both a major contributor to global carbon emissions (Carbon Dioxide Information Analysis Center, 2011), and a fairly religious western democracy (Pew, 2018). Two studies tested the primary predictions that: (1) individual differences in Religious Fundamentalism should be negatively associated with environmental attitudes, and (2) individual differences in Spirituality should be positively associated with environmental attitudes. To achieve this, individual religious attitudes were assessed on three measures: (1) general religiosity; (2) Spirituality; and (3) Religious Fundamentalism. As measures of environmental attitudes, we assessed three kinds of environmental attitudes: 1) belief in human-caused climate change, 2) moralization of environmental issues, i.e., is it wrong to harm the environment, and 3) intentions for environmentally-conscious action, e.g., recycling, reducing energy consumption. These attitudes are related but have important

conceptual distinctions. Belief in climate change does not always imply moralization of the issues; it is possible to believe that climate change is real, but still not treat it as a moral issue, and also possible to believe that climate change is real and a moral issue but still not take any action.

A further goal of this research is to explore underlying psychological mechanisms responsible for opposing effects. Studies measured different social-moral attitudes associated with Spirituality and Fundamentalism that might also direct environmental concerns. We focused on measures of *Right-Wing Authoritarianism* predicted to underlie effects of Fundamentalism, and trait *compassion* predicted to underlie effects of Spirituality, respectively. Study 1 also included measures of the five moral foundations (Graham et al., 2009)— purity, fairness, harm, loyalty, and authority –that may relate in different ways to religious environmentalism. We were interested especially in foundations of harm and fairness, that are conceptually similar to compassion for others. Finally, both studies included a measure of political ideology. Conservative political attitudes are associated with stronger religiosity (e.g., Malka et al., 2012) and negative environmental attitudes. This suggests that political conservatism can help to explain some negative associations between religiosity and anti-environmental attitudes (Greeley, 1993; Guth et al., 1995; Kanagy & Willits, 1993; Woodrum & Wolkomir, 1997). We therefore take note of political ideology in these studies to account for its potential influence on environmental attitudes.

1.3. Note on all studies

Ethical approval for research obtained by the Institutional Review Board at the University of Illinois at Urbana-Champaign. Participants gave written consent to participate and have data used in publication. Two additional studies not reported here were conducted, that used smaller sample sizes and included some variables not used in the present studies. These studies were excluded from the present write-up for brevity, but both excluded studies

showed similar opposing effects of Spirituality and Religious Fundamentalism as found in the

present research: https://osf.io/xp6ja/?view_only=2206884812994e928a865498f960edfc

Archived materials including data for the present research and measures:

https://osf.io/7b6a9/?view_only=36f6b9db0171415d818ba0ec7597c18a.

2. Study 1

The primary goal of Study 1 was to test for opposing influences of Spirituality and

Fundamentalism on environmental attitudes. Spirituality was expected to predict positive

attitudes towards the environment, whereas Religious Fundamentalism was expected to

negatively predict these attitudes. We expected these two components to better predict

environmental attitudes than general religiosity alone. Secondly, we were interested in testing

some potential underlying psychological mechanisms responsible for these relationships. We

specifically predicted that individual differences in trait compassion and Right-Wing

Authoritarianism, respectively, should partly explain these effects. In addition, we looked at

the Moral Foundations Questionnaire (MFQ: Graham, Haidt, & Nosek, 2009) and its five

moral concerns (*purity, harm, fairness, loyalty,* and *respect*). These five dimensions could

potentially relate to religious or environmental attitudes in numerous ways, so we included the

MFQ to explore these as potential mediators for our predicted effects, but we were especially

interested in foundations of harm and fairness as a proxy for trait compassion. We also

included measures of stewardship and dominion beliefs that have been shown to direct

opposite attitudes towards religious environmentalism (Shin & Preston, 2021), but this was

not the subject of this research. Finally, we included a measure of political ideology to control

for this as a potential third-variable influence. Though we expected political conservatism

might partly explain the influence of general religiosity, we expected Spirituality and Fundamentalism to be independent of political ideology.

2.1. Method

2.1.1. Participants. For a small correlation of $r = .20$, at least 319 participants would be needed for in order to achieve 95% power. Participants ($N = 411$) were recruited on Amazon Mechanical Turk for a small payment to participate in a 15-minute study. Two did not complete surveys, leaving 409 participants in the analysis (184 male, 217 female, 4 other, 5 non-reporting $M_{age} = 33$; $SD = 10.50$ years). Religious affiliation reported: 44% no affiliation; 41% Christian, 15% other religions.

2.1.2. Measures. Participants were directed to complete several self-report measures. Unless otherwise indicated, all items were measured on seven-point Likert scales (1 = *strongly disagree,* 7 = *strongly agree).*

2.1.2.1. *Religious Measures.* Participants completed three measures of religious beliefs. General Religiosity is a seven-item scale measuring overall level of faith and participation in one's religion (e.g*., I am strongly religious*; α = 0.97), Religious Fundamentalism (adapted from Altemeyer & Hunsberger, 2004) is a nine-item scale that measures a dogmatic support for one's religion (α = 0.94), and Spirituality (adapted from Piedmont, 1999) is a nine-item scale that measures one's relationship and experience with the divine (e.g. "I *believe that there is a larger meaning in life*"; α = 0.90).

2.1.2.2. *Environmental Attitudes.* This work measures three kinds of environmental attitudes: climate change belief (the acceptance that climate change is real and primarily caused by human actions), environmental moralization (the extent to which people consider environmental problems as moral issues with moral implications), and intentions to act on environmental issues. Though related, beliefs, moralization, and intentions for action are distinct environmental attitudes with their own psychological implications (see Markowitz &

Shariff, 2012). Participants completed scales adapted from Salomon and colleagues (2017): a two-item measure of Climate Change Belief (e.g., *"Scientific evidence points to a warming trend in climate"*, α = 0.87); a six-item measure of Environmental Moralization (e.g., *"Environmental issues are moral concerns"*; α = 0.84); and a six-item measure of Environmental Intentions (e.g., *"I try to reduce my personal use of fossil fuels (e.g., gas, oil)"*; α = 0.85).

2.1.2.3. *Compassion and Right-Wing Authoritarianism.* Individual differences in trait compassion and Right-Wing Authoritarianism were measured as potential mediating variables of main effects. Participants completed the dispositional measure of Compassion from the DPES (Shiota et al., 2006; α = 0.92; e.g., *"It's important to take care of people who are vulnerable"*), and a nine-item Right-Wing Authoritarianism scale (RWA; adapted from Zakrisson, 2005; Altemeyer, 1981; α = 0.86; e.g., *"Obedience and respect for authority are the most important values children should learn"*).

2.1.2.4. *Other attitudes.* Explicit religious attitudes toward the environment were measured through dominion or stewardship beliefs (Shin & Preston, 2021). Participants completed a three-item Dominion scale, i.e., whether the Bible or God promotes using the land for its resources (e.g., "The Bible promotes people using the land for their own needs"; α = .67), and a 3-item Stewardship scale, i.e., whether the Bible or God promotes people taking care of the Earth (e.g., "Caring for the Earth is our sacred duty as humans"; α = .79). Participants next completed a 30-item Moral Foundations Questionnaire (MFQ) an inventory of different guiding moral values, (Graham et al. 2009) to assess the extent to which they endorse each of five foundations of moral concern: Harm/Care (α = 0.72), Fairness (α = 0.77), Ingroup loyalty (α = 0.74), Respect (α = 0.78), and Purity (α = 0.85). Lastly, participants were asked demographic questions, including political orientation (1 = *strongly liberal*, 7 = *strongly conservative*) and religious affiliation.

2.2. Results

  2.2.1 Correlations between Religious and Environmental Variables. Means and internal reliabilities were calculated for all scales before running zero-order correlations. See Table 1 for all correlations. General Religiosity was negatively correlated with Climate Change Belief, but was not related to either Environmental Moralization or Environmental Intentions. As in other research, Spirituality and Fundamentalism were positively related to each other. But key predictions were that Spirituality and Fundamentalism would predict opposite environmental attitudes. Results supported predictions. Fundamentalism was negatively correlated with all environmental attitudes, as well as with political conservatism and RWA. Spirituality was positively correlated with both Environmental Moralization and Intentions but not with Climate Change Belief. Spirituality was positively correlated with both Compassion and RWA, but was not correlated with political conservatism. (See Table 1).

  2.2.2 Regression Analyses. Having found evidence for the divergent relationships of Spirituality and Fundamentalism with environmental attitudes, we set out to establish the independence and strength of these effects relative to each other, general religiosity, and to political ideology. Linear regression predicted the environmental attitudes (Climate Change Belief, Moralization, Intentions) from all religious measures (General Religiosity, Religious Fundamentalism, Spirituality) plus political ideology. Confidence intervals (95%) are presented in brackets. General Religiosity failed to predict any of the environmental measures in the model, suggesting the zero-order correlation are better explained through its relation to other variables (e.g., Fundamentalism or political conservatism). Religious Fundamentalism was a significant negative predictor of all three environmental measures in the model. Fundamentalism predicted Climate Change Belief (b = -0.20 [-0.33, -0.07]**,** t = -

2.92, *p* <0.01), Moralization (*b* = -0.11 [-0.23, -0.00], *t* = -4.95, *p* <0.01), and Intentions (*b* = -0.16 [-0.28, -0.13], *t* = -5.63, *p* <0.01. Spirituality was a positive predictor of both Environmental Moralization (*b* = 0.27 [0.17, 0.36], *t* = 5.35, *p* <0.01), and Intentions (*b* = 0.39 [0.20, 0.38], *t* = 6.31, *p* <0.01).

        2.2.3. RWA analyses. We next tested whether Spirituality and Fundamentalism may predict environmental attitudes through values of Compassion and Right-Wing Authoritarianism (RWA), respectively. Mediation through RWA was tested on the observed negative relationship between Religious Fundamentalism and each of the environmental attitudes (Climate Change Belief, Moralization, Intentions) using bootstrapped mediation analyses with 10,000 resamples (Preacher and Hayes 2008). RWA fully mediated the relationship between Fundamentalism and Climate Change Beliefs (indirect effect estimate = -0.19 [-0.27, -0.11], *SE* = 0.04). After controlling for political ideology, RWA remained a significant mediator (indirect effect estimate = -0.09 [-0.16, -0.02], *SE* = 0.04; See Figure 1 for path analysis of Fundamentalism on Climate Change Belief through RWA controlling for political ideology. When entered together, RWA (*b* = -.19 [-.32, -.06], *t* = -2.95, *p* = .003) predicted Environmental Moralization but Religious Fundamentalism did not (*b* = -.02 [-.12, .07], *t* = -.49, *p* = .62), indicating mediation by RWA (indirect effect estimate = -.09 [-.16, -.03], *SE* = .03). When entered together, RWA (*b* = -.17 [-.29, -.05], *t* = -2.69, *p* = .007) predicted Environmental Intentions, but Fundamentalism did not (*b* = -.03 [-.12, .06], *t* = -.72, *p* = .47), indicating mediation by RWA (indirect effect estimate = -.08 [-.15, -.02], *SE* = .03).

        2.2.3. Compassion analyses. The mediating role of trait compassion was tested on the significant observed relationship between Spirituality and environmental attitudes (i.e., Moralization and Intentions). Mediation through trait compassion was tested using bootstrapped mediation analyses with 10,000 resamples (Preacher & Hayes 2008). Compassion fully mediated the relationship between Spirituality and Environmental

Moralization (indirect effect estimate = 0.16 [0.08, 0.18], *SE* = 0.02), and partially mediated the relationship between Spirituality and Environmental Intentions (indirect effect estimate = 0.12 [0.07, 0.18], *SE* = 0.03). See Figure 2 for path analysis of Spirituality on Moralization through compassion.

        2.2.3. MFQ analyses The Moral Foundations Questionnaire (MFQ) was used to explore moral concerns as potential mediators for relationships between religious and environmental attitudes. Moral concerns for Harm and Fairness were correlated with all environmental variables, and Spirituality (see Table 1) and these were followed as potential mediators for the observed positive associations between Spirituality and environmental attitudes. When Harm and Spirituality were entered as predictors in the linear model together, Harm predicted Moralization (*b* = .54 [.42, .65], *t* = 9.65, *p* < .0001, see Figure 2 for path analysis on Moralization) but Spirituality only marginally predicted Moralization (*b* = .08 [-.0009, .17], *t* = 1.94, *p* = .05), indicating mediation by Harm (indirect effect estimate = .14 [.10, .20], *SE* = .03). Harm also partially mediated effects on Environmental Intentions (indirect effect estimate = .10 [.07, .15], *SE* = .02). When Fairness and Spirituality were entered into the model together, Fairness partially mediated effects on Environmental Moralization (indirect effect estimate = .12 [.07, .17], *SE* = .03, see Figure 2), and partially mediated effects on Environmental Intentions (indirect effect estimate = .09 [.05, .13], *SE* = .02), see Figure 2 for path analysis of Spirituality on Moralization through harm and fairness. Other moral foundations (*loyalty, purity, authority)* were related to climate change beliefs, but not with environmental intentions or moralization and were not followed with mediational analyses.

        2.3. Summary. Results supported our predictions that the influence of religious belief on environmentalism is best predicted through independent paths of Spirituality and Religious Fundamentalism. Religious Fundamentalism negatively predicted belief in climate change,

environmental attitudes, and environmental intentions. Further analyses found these pathways were explained by underlying social-moral values that inform concerns for the environment. The positive effects of Spirituality on environmental moralization and intentions were explained through stronger trait-level compassion and moral concerns for harm and fairness as measured by the MFQ (Graham et al., 2009). Meanwhile the negative effects of Religious Fundamentalism on environmental attitudes were mainly explained through stronger Right-Wing Authoritarianism, a thinking style that restricts ideas and rejects change. Modest negative effects of general religiosity on environmental attitudes were largely explained through political conservatism, consistent with past evidence. In contrast, Spirituality and Fundamentalism together predicted environmental attitudes better than general religiosity, and also held when controlling for political attitudes.

3. Study 2

We followed Study 1 with a pre-registered study to replicate our central findings. Study 2 followed the same design as Study 1. Study 2 did not include the MFQ or measures of stewardship/ dominion beliefs as in Study 1, but focused on the roles of trait-compassion and RWA as mediators. Pre-registration of exclusion criteria, proposed analyses, and expected effects, are available at https://aspredicted.org/nf3jh.pdf. The central pre-registered hypotheses were: (1) individual Spirituality will predict positive environmental attitudes (i.e., stronger belief in climate change, environmental moralization, behavioral intentions to protect the environment), and (2) individual Religious Fundamentalism will negatively predict these attitudes. As in Study 1, we tested whether trait-level compassion would mediate the effects of Spirituality on positive environmental attitudes and Right-Wing Authoritarianism would mediate the negative effects of Fundamentalism.

3.1. Method

3.1.1. Participants. To observe predicted mediational effects, at least 497 participants were needed in order to achieve 95% power with a small effect. 500 participants were recruited on Amazon Mechanical Turk for a small payment to participate in a 15-minute study (248 male, 249 female; 29% no affiliation, 63% Christian, 8% other religions; M_{age} = 36, SD_{age} = 11.57).

3.1.2. Measures. Participants were directed to complete several self-report measures. Unless otherwise indicated, all items were measured on 7-point Likert scales (1 = *strongly disagree,* 7 = *strongly agree).*

All measures were on 7-point Likert scales (1 = strongly disagree, 7 = strongly agree). As in Study 1, participants completed measures for Climate Change Belief (α = 0.78), Environmental Moralization (α = 0.78), Environmental Intentions (α = 0.88); General Religiosity (α = 0.97), Religious Fundamentalism (α = 0.92), and Spirituality (α = 0.90); the compassion scale from the DPES (Shiota, Keltner, & John 2006; (α = 0.89) and Right-Wing Authoritarianism scale (adapted from Zakrisson 2005; Altemeyer 1981; α = 0.88), Lastly, participants answered demographic questions, including their political orientation (1 = *strongly liberal*, 7 = *strongly conservative*) and religious affiliation.

3.2 Results

All data archived at https://osf.io/7b6a9/?view_only=36f6b9db0171415d818ba0ec7597c18a.

3.2.1 Correlations between Religious and Environmental Variables. Means and internal reliabilities were calculated for all scales before running Pearson's product correlations. See Table 2 for all correlations. The religious measures (General Religiosity, Spirituality, and Fundamentalism) were all positively correlated with one another (rs > .24, p < .001), and the environmental measures (Climate Change Belief,

Environmental Moralization, Intentions) also were highly interrelated with each other

(rs > .64, p < .001). Political conservatism was negatively correlated with all environmental

attitudes: Climate Change Belief (r =-.41, p < .001); Environmental Moralization (r =-.47, p <

.001), and Environmental Intentions (r =.-.26, p = .001) (rs > |-.26)|, ps < .001), and was

positively correlated with all religious measures: General Religiosity (r =.50, p < .001),

Religious Fundamentalism (r =.53 p < .001), and Spirituality (r =.13, p =.003).

Key predictions concerned how religious variables would predict environmental

attitudes. Religious Fundamentalism was negatively correlated with all environmental

attitudes: Climate Change Belief (r =.-.43, p < .001); Environmental Moralization (r =.-

.37, p < .001), and Environmental Intentions (r =.-.33, p = .001), Figure 3 for scatterplots and

slopes. Measures of Spirituality were positively correlated with all environmental measures:

Climate Change Belief (r = .14, p =.002), Environmental Moralization (r =.24, p < .001), and

Intentions (r =.38, p < .001). General Religiosity was negatively correlated with Climate

Change Belief (r = -.24, p < .001) and Environmental Moralization (r = -.24, p < .001) but

was not related to Environmental Intentions (r =-.06, p =.17).

3.2.2. Regression Analyses. Next we used linear regression to predict the

environmental variables from all religious measures and political ideology. Confidence

intervals (95%) are presented in brackets. Religious Fundamentalism was a significant

negative predictor of all environmental variables including Climate Change Belief (b = -0.20

[-0.33, -0.07]**,** t = -2.92, p <0.01), Moralization (b = -0.14 [-0.23, -0.05], t = -8.50, p <0.01),

and Intentions (b = -0.38 [-0.15, -0.04], t = -3.58, p <0.01). Spirituality positively predicted all

environmental measures: Climate Change Belief (b = 0.24 [0.14, 0.34], t = 4.76, p <0.001;

Environmental Moralization (b = 0.27 [0.17, 0.36], t = 5.35, p <0.01); and Intentions (b = 0.40

[0.32, 0.48], t = 9.53, p <0.001). General Religiosity did not predict either Climate Change

Belief or Moralization but did positively predict Intentions (b = .13 [0.05, 0.21], t = 2.54, p=

0.002). This regression model shows the strong opposing relationships that Spirituality and Fundamentalism have with environmental attitudes, which hold when used simultaneously as predictors, and controlling for political conservatism.

3.2.3 Right-Wing Authoritarianism. The role of Right-Wing Authoritarianism (RWA) as a mediator between Religious Fundamentalism and each of the environmental attitudes (Climate Change Belief, Moralization, Intentions) was tested using bootstrapped mediation analyses with 10,000 resamples (Preacher & Hayes 2008). Both RWA (b = -.34 [-.49, -.18], t = --4.17, p < .001) and Fundamentalism (b = -.35 [-.51, -.19], t = -4.34, p < .001) predicted Climate Change Belief, with partial mediation by RWA (indirect effect estimate = -.24 [-.37, -.11], SE = .07). RWA also predicted Moralization (b = -.45 [-.59, -.32], $t(500)$ = -6.62, p < .001), but Fundamentalism was no longer a significant predictor (b = -.11 [-.24, .03], $t(500)$ = -1.59, p = .11), indicating full mediation by RWA (indirect effect estimate = -.33 [-.45, -.22], SE = .06). RWA was not found to be a significant mediator between Fundamentalism and Environmental Intentions (indirect effect estimate = -.10 [-.19, .03], SE = .06).

3.2.4 Compassion. The role of underlying trait compassion was tested as a follow-up on the observed relationship between Spirituality and each of the environmental attitudes (Climate Change Belief, Moralization, Intentions). Mediation through trait compassion was tested using bootstrapped mediation analyses with 10,000 resamples (Preacher & Hayes 2008). For Climate Change Belief, Compassion was a significant predictor (b = .37 [.24, .51], $t(500)$ = 5.29, p < .001), but Spirituality was not (b = -.004 [-.14, .14], t(500) = -.06, p = .96), indicating complete mediation (indirect effect estimate = .20 [.12, .29], SE = .04). Compassion was also a significant mediator of the relationship between Spirituality and Environmental Moralization (indirect effect estimate = .25 [.17, .35], SE = .05) and Environmental Intentions (indirect effect estimate = .22 [.14, .30], SE = .04).

3.3 Summary

Results of this pre-registered study replicate those of Study 1 that found opposing influences of Spirituality and Religious Fundamentalism on environmental attitudes. As in Study 1, Spirituality predicted positive environmental attitudes through underlying differences in trait compassion, and Fundamentalism predicted negative environmental attitudes through Right-Wing Authoritarianism (though RWA did not mediate the effect on moralization). As in Study 1, Fundamentalism and Spirituality together proved to be better predictors of environmental attitudes than measures of general religiosity, and also were independent of political conservatism. Together findings indicate there is no single force of religion on environmentalism, but two independent opposing influences through Spirituality and Fundamentalism.

4.0 General Discussion

With over 80% of the global population identifying as religious (Pew, 2012), religion can be a powerful social influence on attitudes and action toward climate change. Past research shows that religious belief has both positive and negative associations with environmental attitudes, an apparent contradiction. We resolve this contradiction through separate opposing effects of Spirituality and Fundamentalism on environmental attitudes. These two dimensions predicted environmental attitudes better than measures of general religiosity. This work is first to show Religious Fundamentalism and Spirituality predict opposing environmental attitudes, and also points to the psychological factors underlying Spirituality and Fundamentalism that guide attitudes toward the environment. Political conservatism partially explained some negative associations between general religiosity and environmental attitudes, did not explain the opposing effects of Spirituality and Fundamentalism. Rather, the relationships with Spirituality and Fundamentalism were best explained through their underlying social and moral values relevant to environmental issues.

Positive associations between Spirituality and environmental concerns were explained by trait-level compassion and moral concerns for harm and fairness, consistent with the idea that Spirituality promotes prosociality through an empathic moral concern for others. Meanwhile negative relationships between Religious Fundamentalism and environmental attitudes were partly explained through underlying Right-Wing Authoritarianism (RWA), an ideological orientation characterized by rigid thinking and resistance to new ideas.

4.1 Other religious factors

We examined the issue of religion and the environment through individual differences in Spirituality and Religious Fundamentalism, but this opens the possibility that alternate components of religion may also direct positive and negative environmental attitudes in similar ways. However, we expect that if other kinds of religious factors predict environmental attitudes, these differences would likely overlap with Spirituality and Fundamentalism. Tellingly, negative associations between religion and environmental concern are stronger within denominations of Christianity which also tend to be more Fundamentalist in their ideas (Hand & Van Liere, 1984; Sherkat & Ellison, 2007). Likewise, biblical literalism, religious orthodoxy, and having a stern image of God—variables that relate to Fundamentalism—are each negatively correlated with environmental concern (Boyd, 1999; Eckberg & Blocker, 1989; Greeley, 1993; Schultz & Stone, 1994), suggesting that Religious Fundamentalism has an overall negative influence on environmental attitudes.

We note the few other findings with opposing influences on environmentalism also seem overlap with the differences we observe in Spirituality and Fundamentalism. Muñoz-García (2014) found environmental concerns were predicted by differences in quest religiosity vs. biblical literalism. Similarly, Johnson and colleagues (2017) observed differences between mystical vs. authoritarian God concepts in environmental attitudes. These other divisions can be seen to map onto differences in Spirituality and Fundamentalism – for example, quest

religiosity and mystical God concepts both share the experiential component and transcendent emotion of Spirituality, while literal thinking and stern god concepts are important aspects of religious Fundamentalism. In other works, those authors also note that different dimensions may direct environmental attitudes through factors outside of their religious content – such as rigidity and the emphasis on existential well-being (Muñoz-García, 2014). We note these reflect similar underlying orientations in values of compassion and Right-Wing Authoritarianism, further evidence that it is these underlying differences which direct opposite religious environmental attitudes.

4.2 Cross-Cultural Effects

The United States is a relatively religious western democracy (Pew, 2018) and a major contributor to global carbon emissions (Carbon Dioxide Information Analysis Center, 2011). Religious attitudes of Americans thus have a special potential to motivate meaningful environmental action by influencing government policy and personal consumption, and we therefore chose to use data samples from a U.S. population to focus on this influence. But this does raise the issue whether these results would be reflected in non-American cultures. There is certainly great complexity and diversity in religious beliefs across cultures, and relationships between religion and environmental attitudes may vary across culture as well (Haluza-DeLay, 2014). In some cross-cultural research general religiosity is found to be more positively related to environmentalism (Mostafa, 2016), but these do not examine different orientations toward individual Spirituality and Fundamentalism.   Forms of Religious Fundamentalism and Spirituality do exist in all major religions and cultures, and we can use the lessons from this work to address religious environmental concerns cross-culturally. In India, for example, tree biodiversity is better conserved in sacred groves than secular protected forests (Rath et al., 2020). Biblical literalism—closely associated with Fundamentalism, has been found to be negatively related to environmental attitudes in a study

of 15 countries, including the U.S. (Schultz, Zelezny, & Dalrymple, 2000). In other work with a non-U.S. sample, Buddhists and atheists/agnostics were the most likely to believe in climate change and support environmental policies, whereas Christian literalists had opposing views to this and were least likely to believe in anthropogenic climate change (Saroglou & Dupuis, 2006). In another study of Europeans, Muñoz-García (2014) found similar differences between biblical literalism and quest religiosity as observed in our American sample. Those opposing relationships bear conceptual overlap with concepts of Fundamentalism and Spirituality, and their differences may reflect an overall difference in individual orientations toward these approaches to belief. For the most part, we expect that results of Spirituality and Fundamentalism on environmental attitudes should generalize to other cultures may even help to explain some cross-cultural differences where spiritual vs. fundamentalist thinking is more dominant.

4.3. Conclusion

Climate change is the greatest issue of our time, and religious beliefs can serve as powerful motivators and influences on these attitudes. This work helps to untangle an apparent paradox of religious environmentalism by showing separate and opposing influences through Spirituality and Religious Fundamentalism. Religious Fundamentalism was associated with negative environmental attitudes, mediated through Right-Wing Authoritarianism, suggesting an underlying resistance to new and threatening ideas. But on the upside, Spirituality was positively associated with environmental attitudes, through stronger underlying compassion. Despite the negative effects of Fundamentalism observed, positive effects of Spirituality give cause for optimism and suggest possibilities to promote religious environmentalism. Growing numbers of people also consider themselves spiritual but not religious (Saucier & Skrzypińsk, 2006; Willard & Norenzayan, 2017; Johnson et al., 2018), suggesting that appeals to spirituality may be effective for religious and secular

individuals alike. As the threat of climate change looms closer, the need to understand how religious beliefs affect environmental attitudes becomes more urgent. This work illustrates the strong influences of Spirituality and Fundamentalism on these attitudes, and the capacity to affect religious environmentalism through their underlying social and moral concerns.

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